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The limits of destruction
A critical analysis of the collateral
damage *dispositif*

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At hyggjandi sinni skylit maðr hræsinn vera, heldr gætinn at geði.

Hm 6

DECLARATION

This thesis is solely the candidate's own work. It has not been published elsewhere or submitted for a degree at another university.

ABSTRACT

‘Collateral damage’ is a ubiquitous term in modern warfare. When a wedding convoy is mistaken for a group of terrorists and struck by a missile fired from a drone overhead, it is often portrayed as a tragic accident, the punctuation of an otherwise unprecedentedly clean war. Technological advances and the newest martial implements have raised expectations about the military’s conduct, it is argued. Does this newfound beneficence reflect a changing character of warfare or does it rather signify deep-seated biases and structural problems in the way US armed forces prefer to fight?

Responding to this historiographical impasse, this thesis instead asks how the armed forces themselves developed the theories, expertise, and tools to define and manage civilian casualties today. Drawing on the historical methods of Michel Foucault, it critically engages with the narrative of progress towards precise and discriminate bombardment. Through careful examination of airpower practice and discourse, it posits the gradual and uneven replacement of an indiscriminate and enormously destructive regime, or *dispositif* of ‘bonus damage’ with one of ‘collateral damage’. While ostensibly benign, this new *dispositif* gives rise to new types of victims and adverse effects. This web of regular affirmations, ever-smaller weapons, and fine-grained predictive methods obscures such effects and depoliticizes civilian casualties.

The thesis demonstrates that the *dispositif* of collateral damage emerged as a diverse and growing set of procedural and technical methods as well as enduring theories of victory. In this way, risks to civilians have become subject to a set of endogenized legal, strategic, and computational practices. Rather than simply accept the constraints of modern war, American armed forces have been instrumental in defining the limits of their own destructiveness and the scope of political control.

ABBREVIATIONS

Adm	Admiral
AFB	Air Force Base
AFCENT	United States Air Forces Central Command
AP	Additional Protocol(s) (to the Geneva Conventions of 1949)
BDA	Battle/bomb damage assessment
BE	Bombing/Basic Encyclopedia
BGen	Brigadier General
BLU	Bomb live unit
C3	Command, control, and communications
CAS	Close air support
CDE	Collateral damage estimation
CDET	Collateral Damage Estimation Tool
CENTCOM	United States Central Command
CEP	Circular error probable
CHECO	Contemporary Historical Examination of Current Events
CIA	Central Intelligence Agency
CINCPAC	Commander-in-Chief Pacific
CJCS(I/N/M)	Chairman of the Joint Chiefs of Staff (Instruction/Notice/Manual)
COIN	Counterinsurgency
Col	Colonel
COMUSMACV	Commander, United States Military Assistance Command Vietnam
COS	Chief of Staff
CT	Counterterrorism
DGZ	Designated ground zero
DIA	Defense Intelligence Agency
DoD	Department of Defense
FAST-CD	Fast Assessment Strike Tool for Collateral Damage
FM	Field Manual (U.S. Army)
FMV	Full-motion video
GBU	Guided bomb unit

Gen	General
GWAPS	<i>Gulf War Air Power Survey</i>
ICBM	Intercontinental ballistic missile
ICRC	International Committee of the Red Cross
IHL	International humanitarian law
IS	Islamic State
ISAF	International Security Assistance Force
ISR	Intelligence, surveillance, and reconnaissance
JAG	Judge Advocate General
JCS	Joint Chiefs of Staff
JDAM	Joint Direct Attack Munition
JMEM	Joint Munitions Effectiveness Manual
JSTPS	Joint Strategic Target Planning Staff
JTCG/ME	Joint Technical Coordinating Group for Munitions Effectiveness
LGB	Laser-guided bomb
LOAC/LOW	Law of armed conflict/laws of war
LOC	Line of communication
LtCol	Lieutenant Colonel
LtGen	Lieutenant General
MACV	Military Assistance Command Vietnam
Maj	Major
MGen	Major General
NCV	Noncombatant and civilian casualty cutoff value
NGA	National Geospatial-Intelligence Agency
NGO	Non-governmental organization
NSA	National Security Agency
ONA	Office of Net Assessment
PACAF	Pacific Air Force
PGM	Precision-guided munition
POL	Petroleum, oil and lubricants
R&D	Research & development
RAdm	Rear admiral

RAND	Research and Development (Corporation)
RMA	Revolution in Military Affairs
ROE	Rules of engagement
RS	(Operation) Resolute Support
SAC	Strategic Air Command
SAM	Surface-to-air missile
SDB	Small diameter bomb
SIGINT	Signals intelligence
SIOP	Single Integrated Operational Plan
TAC	Tactical Air Command
TEA	Target engagement authority
TNW	Tactical nuclear weapon
UAV	Unmanned aerial vehicle
USAF	United States Air Force

1 INTRODUCTION

1.1 THE BURDEN

In 1956, Strategic Air Command (SAC) – the nuclear arm of the U.S. Air Force at the time – finished their *Atomic Weapons Requirements Study for 1959* (Strategic Air Command, 1956). The document contains 300 pages of targets with coordinates to be attacked in case of war with the Soviet Union. It outlines two missions in order of priority: the ‘Air Power Battle’ and the ‘Systematic Destruction’ of Soviet war-making capabilities. In line with official targeting policy developed in the early 1950s, it distinguishes between BRAVO (blunting Soviet strategic forces), ROMEO (retarding a Soviet offensive) and DELTA (industrial) targets. This distinction, the study notes, gives the impression of a “compartmented and sequential approach towards targeting”, but in view of the “greatly compressed time factor” governing a nuclear exchange and war in general, SAC planners included elements of all three in the first mission. The desolation of the Soviet Union, in other words, would happen almost instantaneously. Of the many target categories assigned to facilities and installations, perhaps the most conspicuous is target category 275, simply denoted ‘population’, which appears more than 1600 times with aimpoints in what is now Germany, China, Poland, the Czech Republic, etc. In addition, some of the airfields targeted were very close to major cities, including Berlin, with major fallout likely to ensue were a plan like this ever executed (Burr, 2015). Civilian casualties from the execution of such a plan would certainly run into the millions. Yet Gen Thomas White, then Chief of Staff (COS) of USAF, explained at a talk at the National War College in 1960:

Our strategic striking power has not been developed for the sole purpose of killing Russians. It has been designed to contain the necessary strength to destroy the war-making capacity of two potential and powerful enemies--the Soviet Union and Communist China. It is true that a megaton nuclear weapon exploded over Moscow might well kill thousands of Russians; and, as a matter of fact, probably would kill most of them three times over— by blast, by thermal, and by nuclear radiation. But it might take several such weapons to assure destruction of a single hardened Soviet ICBM site; and destruction of military targets is the primary objective. (T. D. White, 1960)

Four decades later, on the night of May 7, 1999, five laser-guided joint direct attack munitions (JDAMs), a type of guided bomb, struck the Chinese embassy in Belgrade,

killing at least three and wounding as many as 27. Sino-US relations froze and Chinese backing for Operation ALLIED FORCE sharply declined. Probably the most controversial of all incidents of so-called *collateral damage* during the war, the embassy had been erroneously identified as a Serb communications facility (Daalder & O'Hanlon, 2000). This glaring targeting failure had passed undetected from a CIA operative through a Department of Defense (DoD) review. "Not in one's wildest dreams did we think that we could make an error of that magnitude," remarked then UK Air Marshal John Day ("Nato's nightmare: collateral damage," 1999). "[A] real stunner", then Supreme Allied Commander Europe Gen Wesley Clark gravely put it (quoted in Ignatieff, 2000, p. 103). Recounting his experience of the operation, Clark (2002) cited unintentional injury to innocent civilians as NATO's greatest vulnerability on the public-relations front. Few voices dissented from the view that the blame lay with CIA and was not systemic (Myers, 2000). Nevertheless, despite assurances that such grave mistakes would not be repeated, the 'myth' of error-free war had been destroyed (Ignatieff, 2000). George Tenet, then Director of Central Intelligence, in his statement to the House Permanent Select Committee on Intelligence put the dilemma in somber terms:

Mr. Chairman, the nature of warfare has changed. When cities were struck in past wars, none doubted that civilians, embassies, hospitals, and schools would be in harm's way. Today, our ability to strike precisely has created the impression that sensitive sites can be safe in the middle of a war zone. Our desire to protect innocents in the line of fire has added an enormous burden on all of us that we accept. (Tenet, 1999)

Neither of these conceptions of civilian casualties was a historical or institutional singularity. As the agent of the strategic mission, SAC dwarfed the other departments of the Air Force, its ideas and assumptions dominating the service (Braestrup, 1959; Meilinger, 2012; Moody, 1995). Its planning efforts as well as similar efforts across the services had been part of a postwar scramble to produce coherent plans for the impending confrontation with the Soviet Union. Preparations for nuclear war would not only come to significantly define the services themselves but also thinking about future war at the national level, culminating in contingency plans that effectively institutionalized mass thermonuclear bombardment (Arkin & Pringle, 1983; Ball & Toth, 1990; Kristensen, 2013; Sagan, 1987). As for SAC's priorities, they incorporated in particular experiences from the bombing of Japanese and German cities during World War II, carrying area

bombardment tactics over into the atomic age (Futrell, 1989b; Searle, 2002). Some authors have even argued that the basic philosophy of population targeting remains encoded in modern doctrine (Hippler, 2017; Selden, 2009; Sherry, 1989).

Nor was the issue of collateral damage unique to the war in Serbia, but has historical antecedents and appears to be equally institutionalized in the routines and doctrine of the armed forces today. As a term, collateral damage had already been established in the public imaginary at least a decade before the Chinese embassy incident, moving from the vocabulary of military strategy and into the public sphere (see e.g. Crossett, 1998; Smart, 1998). “[It’s] the new buzz phrase of the Persian Gulf War”, wrote a retired US Army colonel as the Persian Gulf War was coming to an end (Summers, 1991). A decade after Belgrade, in 2009, it was the “inability to minimize collateral damage” that resulted in the deaths of between 86 and 147 civilians in Granai, Afghanistan (Farmer, 2010), leading to a host of new, stringent methods and operating procedures to avoid similar cases in the future (e.g. HQ ISAF, 2009; Petraeus, 2010). Yet such cases continue to occur. In 2017, a Mosul building collapsed after a strike, killing not only two ISIS snipers but also 101 civilians sheltering there, prompting CENTCOM’s defense that all legal procedures had been followed (CENTCOM, 2017). Collateral damage has become an important and ingrained part of military operations and vocabulary.

The two cases above raise questions about changes in the way civilian casualties are viewed through the lenses of military strategy, law, and technology – changes that have happened in the space of half a century. What is the historical significance of this apparent change of sensitivities toward civilians in war? Was there a specific turning point, such as the Persian Gulf War, or does the new term mask an underlying continuity? How and why would armed forces accept, even develop and self-impose this ‘burden’, i.e. measures that restrict their ability to wage war? What are the political consequences of technological developments, such as precision weapons, that appear made to reduce risk to civilians in war?

1.2 A PUZZLING HISTORY

This historical development is central to the manner in which civilian casualties are understood and spoken about today. On the one hand, technological developments are cited as a driving force for more discriminate, careful warfare. John Brennan, then head

of CIA, remarked in 2012 that “[with] the unprecedented ability of remotely piloted aircraft to precisely target a military objective while minimizing collateral damage, one could argue that never before has there been a weapon that allows us to distinguish more effectively between an al-Qa’ida terrorist and innocent civilians” (quoted in I. G. R. Shaw, 2013, p. 43). Secretary of State Condoleezza Rice remarked in 2006 of the enemies in the so-called War on Terror that “[the] moral high ground in this war is that the United States and our allies are fighting people who kill innocent people wantonly. They don’t kill innocents as collateral damage. They intend to kill innocents.”¹ Senior spokespeople often stress that the US military is the “best in the world” (US Department of State, Office of Press Relations, 2016) and take all necessary measures (e.g. The White House, 2014, 2016; US Department of Defense, 2014) to avoid such damage. Admissions of civilian casualties are occasionally made, but such comments are usually undergirded by a belief in continuous improvement of the processes that hinder further mistakes. In a 2016 press conference, Obama remarked that “what I can say with great confidence is that our operating procedures are as rigorous as they have ever been and that there is a constant evaluation of precisely what we do.” (The White House, 2016c) These assurances can be found repeated by senior military leadership in the context of specific military operations (e.g. US Department of Defense, 2015, 2016a, 2017a, 2017b). Such statements add to Tenet’s in suggesting that discriminate warfare is a result of technological development.

Yet on the other hand, when collateral damage does happen it is often justified with reference to inherent uncertainties in prosecuting a war. In January 2017, American commandos conducted a raid in Yakla, Yemen, that left several women and children dead, as well as a Navy SEAL. In a hearing, CENTCOM commander Joseph Vogel said he found no indicators of incompetence, poor decision-making, or bad judgment. Senator John McCain added that “when you have women and children killed, as you pointed out; loss of a \$70 million aircraft; you do not capture anyone [that] was part of the mission, that mission is not a success. But that happens in war. There’s a thing called the fog of war. They did the best they could under very difficult circumstances.” (*US Central Command and US Africa Command*, 2017, p. 91) A few months later, Andrew Exum,

¹ Quoted in US Department of State (2006a). The Secretary of State used similar language in a number of other interviews (see e.g. US Department of State, 2005, 2006b; US Department of State, 2006c). Successive Secretaries of State have made similar remarks (see e.g. Kerry (2016a, 2016b); US Department of State (2011)).

former Deputy Assistant Secretary of Defense for Middle East Policy, wrote on an airstrike in Mosul that killed upwards of 200 civilians that “there is no clean way to prosecute a war” and that “once you intervene, you lose some control” due to the ‘friction’ of war (Exum, 2017). Despite the possibilities offered by new technology, in other words, certain unmanageable aspects make war a risky enterprise.

While the public debate on collateral damage thus offers conflicting interpretations of the significance and lineage of the notion, it is certain that the history of thought and doctrine on civilian casualties is politically charged. In other words, the history of collateral damage itself is involved in political strategies to justify civilian deaths (Conetta, 2004; Crawford, 2013). Yet despite efforts to predict and avoid civilian casualties, and with cases nevertheless continuing to occur, there is a sense in which this history of technological progress masks issues or patterns that may be systemic – that is, they cast doubt on the nature of the developments that have ostensibly taken place since the time of indiscriminate bombardment à la SAC.

For that reason, it is perhaps tempting to write off ‘collateral damage’ as yet another entry in a long list of attempts by the military to ameliorate civilian losses (Coady, 2008). ‘Collateral damage’, along with terms such as ‘surgical strikes’ and ‘limited war’, has variously been accused of belonging to the “world of doublethink, a hall of mirrors” (Hilgartner, Bell, & O'Connor, 1982, p. 209), being ‘insidious to the cause of peace’ by rationalizing warfare (Beres, 1983, p. 18), symbolizing ‘male-gendered dominance’ over foreign policy issues (K. J. Warren & Cady, 1994, p. 13), concealing the harsh realities of modern warfare (Alvarez, 1997), and negating the ‘emotional fallout’ normally associated with such realities (Cohn, 1987a, p. 17). Even in the more conservative literature, collateral damage has commonly been acknowledged to be euphemistic (e.g. Allen, O'Loughlin, Jaspersen, & Sullivan, 1994; Davis, 2002; Gray, 1977; Quester, 1986) or to belong to the “dully menacing language of strategic studies” (Etzold, 1975, p. 80). Yet despite the opprobrium, the terminology has stuck.

There is something revealing about the manner in which the language of collateral damage contributes to the framing and construction of modern warfare. In questioning narratives of technological progress, Maja Zehfuss (2010) has found that Western warfare not only relies on the ethics of noncombatant protection but argues that praise for precision also in itself *produces* Western warfare as ethical, which statements like

Condoleezza Rice's exemplify. Similarly, when civilians are killed in regrettable 'accidents', as Feldman (2019) has argued, the event itself must be continuously constructed as such: they are relegated to the 'fog of war'. It has been argued that the ambiguity of progress and the 'innate' risks of war serves the role of 'necessary moral hypocrisy' (Quester, 1989) or moral exculpation from an 'unavoidable' feature of war (Conway-Lanz, 2006; H. Jones, 2017). In sum, the distribution of statements on collateral damage is not merely symptomatic of a particular view on the limits of discriminate bombing, but in and of themselves part of warfare.

These critiques rightly point out the legitimizing function of public statements on collateral damage as well as the depoliticization that follows when the suffering and hardships inflicted on civilians is reduced to a feature of war or subsumed under the logic of technological innovation. However, even if 'collateral damage' signifies some measure of distance from the phenomenon of civilian deaths or the destruction of civilian property, that does not in itself explain the changes that have occurred: how statements such as Gen White's have become unimaginable, why ever-more precise weapons have been developed, and how the armed forces have come to develop and employ intricate computational methods to model and predict collateral damage before strikes (McNeal, 2013). Indeed, the supposed changes or transformations in the nature of warfare have been the topic of intense debate, with scholars positing fundamental changes to the conduct, style, and images of war in the wake of the war in Serbia (e.g. Beier, 2006; Boot, 2003a; Coker, 2004; Dillon, 2008; Duffield, 2001; Ignatieff, 2000; Kaldor, 1999; McInnes, 2002; M. Shaw, 2005). There *is* a real sense in which the terms of warfighting have changed, with consequences for the manner in which civilians are treated, both at the level of discourse and practice. Therefore, notwithstanding certain justificatory discourses encapsulated by the term 'collateral damage', changes at the level of statements and methods rather than necessarily a wholesale, benevolent transformation of warfare require further and closer scrutiny. This thesis expands on the literature with a more fine-grained analysis that views these historical developments in terms of the practical changes to warfighting encapsulated by the notion of collateral damage.

There are good reasons to examine the issue in greater depth at this time. First, because collateral damage remains an understudied but emerging field in both qualitative and quantitative security research (Condra & Shapiro, 2012; Conway-Lanz, 2006; Cronin,

2018; Downes, 2008; Rothbart, Korostelina, & Cherkaoui, 2012). This dissertation builds on and adds to this growing literature. Second, because of new and emerging technologies, which accentuate the same problematics of civilians in war. Remotely operated drones and autonomous machines exacerbate not only the moral vicissitudes, but also the political difficulties of waging modern warfare. With progressively greater scope for decision-making left to machines through algorithms and sensors, understanding historical biases towards the management of these problems becomes increasingly important (Roff, 2014; Strawser, 2013). In addition, new battlefields including cyberspace – where collateral damage may take the form of power outages, denial of essential services, financial losses, etc. - present similar issues (Farwell & Rohozinski, 2011; Romanosky & Goldman, 2017). A deeper understanding of how we arrived at the present will permit for a better appreciation of similar issues in the future.

1.3 RESEARCH QUESTION

To foreground the role of the armed forces and the historical contingency of the present, the research question directing the thesis is as follows:

How did discourses and practices of ‘collateral damage’ emerge and evolve within US air forces?

More generally, what does the history of collateral damage tell us about changes in the conduct of war? What do changes in the practices of avoiding collateral damage tell us about the contemporary nature of warfare? Answering these questions will allow for a new, comprehensive, and historically grounded understanding of a persistent phenomenon of warfare while contextualizing our understanding of the present.

By ‘collateral damage’ I mean the sum of techniques (including operating procedures, technologies, designs, etc.) in use by US air forces designed to avoid civilian casualties and the destruction of civilian property as well as public statements explaining, defending, or promoting said techniques. Borrowing from the French philosopher Michel Foucault (see chapter 3), this dissertation approaches collateral damage as a *dispositif*, understood as an ensemble of techniques, practices, ideas, and discourses on a political concept across a range of actors. It explores the possibility that the *dispositif* of collateral damage, which appears coherent and necessary, is in fact made possible by the continuous

efforts of a web of institutions, including the air forces themselves, that contest and expand on it. This approach offers a new and distinctive approach to the study of war and civilian casualties. Building a ‘genealogy’ of the notion of collateral damage, it historicizes claims about transformation. It brings to light the contestation of the concept of collateral damage shows the fault lines, the institutional priorities, and the pathologies of particular ways of waging war. In other words, identifying the dispositive subverts the depoliticizing effects of an assumed benevolent transformation of warfare. The thesis also moves beyond existing critical perspectives by addressing the complexity of the field rather than reducing collateral damage to a mere expression of domination. It enhances our critical understanding by explaining the contingency of the particular, historical forms of domination that have emerged.

In the space of less than 50 years, Western states appear to have abandoned a practice of bombing that was enormously destructive and costly in terms of human life, ostensibly replacing it with one that is far more discriminate and precise. At the same time, the notion of collateral damage has become ubiquitous. Since collateral damage has become so pervasive in the conduct and legitimacy of modern warfare, studying it offers the opportunity to view these changes through the lens of new discourses and new practices that restrict and govern warfare.

1.4 SCOPE OF THE THESIS

This thesis works from an intermediate position between longitudinal, conceptual works and contemporary diagnoses of collateral damage. In doing so, it strikes a balance between the present and the past while incorporating a historical counterpoint, i.e. a past of supposedly indiscriminate bombardment, in order to question it². It foregrounds latent nuclear airpower to locate and interrogate the discontinuity of targeting practice thought to be concomitant to the introduction of precision weapons.

In this section, I outline and justify the parameters under which the investigation is conducted. Specifically, I explain the thematic and empirical selection and how it aligns

² A wider historical lens would therefore also have been possible: the notion and intellectual concept of collateral damage might have been introduced to strategic airpower theory in the late 1950s (e.g. Crawford, 2013), yet unsurprisingly such theories were in part reformulations of earlier theory infused with the experiences of the past war. These theories in turn are tied to events and concepts even prior to that, but those histories have already been written (see e.g. T. D. Biddle, 2002; Crane, 1993; Schaffer, 1985).

with the requirements of the research question. First, I argue that collateral damage resulting from aerial attacks, or airpower, offers the most promising angle: while it is the most common point of departure for studies on the topic, most engagements have left out the vital postwar nuclear history that is essential to understanding the emergence of the concept of collateral damage. Thus, although collateral damage is mainly associated with conventional weapons in the present, an essential component of the historical lineage is lost if the association with precision conventional weapons is taken for granted. Second, because the thesis aims to uncover the techniques and statements surrounding collateral damage, the natural starting point is targeting and associated military doctrine. A broad conceptualization of doctrine guides the selection of sources. Third, the historical scope of the investigation is the postwar period to the present, since this offers an opportunity to engage with the changes that have ostensibly occurred during this time frame. In the fourth subsection, I discuss the implications for the contribution of the thesis as a whole.

1.4.1 Airpower

The thesis is concerned with collateral damage as it results from aerial attacks, conventional or nuclear. This is the empirical starting point for the puzzle and has become mainstream in the literature on civilian casualties, both historical and contemporary (Conway-Lanz, 2006; Crawford, 2013; Cronin, 2018; Perice, 2007; Rockel, 2009; Rosén, 2016; Selden, 2009; but see also Downes, 2008). In the time frame selected for the study (see below), collateral damage has usually been associated with munitions delivered from the air, and by implication by USAF³. Undoubtedly in a greater historical perspective, including prior to the invention of the airplane, bombardment from the sea or by land artillery constituted the focal point of discussions about civilian casualties⁴. More recently, *ex gratia* payments during counterinsurgency campaigns in Iraq and Afghanistan have also attracted attention to collateral damage caused by modern ground operations (E. Gilbert, 2015). Because the current concept of collateral damage emerged in concert with technologies that were also highly visible (especially nuclear weapons), the frame of

³ During World War II, air forces were a subset of the Army, namely the Army Air Forces. An important exception is Navy aircraft, which will be explicitly mentioned in the narrative if they are involved in a separate capacity, i.e. under a different command and thus subject to different institutional dynamics than that of USAF. A second exception is unmanned aerial vehicles operated by other users than USAF.

⁴ This is attested in earlier international humanitarian law, especially laws of siege (see Best, 1994), but will not be addressed here.

reference has historically been and continues to be weapons delivered from the air. That places this thesis squarely within a field of military doctrine, theory, and operations often referred to as *airpower*.

Engaging with the problematic topic of civilian casualties in postwar nuclear war planning is both controversial and necessary since it constitutes an important moment in the history of airpower and the conceptual history of collateral damage. At first glance, the destructive extremes of such planning seem far removed from contemporary methods of warfighting. At closer inspection, however, continuities in practices, statements, and even certain technologies, justify closer scrutiny. Since the objective of the thesis is a conceptual history rather than a history of precision weaponry, studying developments within the armed forces entails questioning established categories that might themselves be subject to historical contingency, such as the link between precision and conventional munitions. In his historical narrative of early postwar airpower theory, Edward Kaplan explains how the postwar period has often been split into two different strands of literature: airpower and nuclear deterrence:

Histories of airpower focus on operations in Europe, Korea, and Vietnam ... Historians, naturally attracted to topics with concrete events to study, ignore the methodologically difficult topic of latent air-atomic power. Such works can become Whiggish histories of precision airpower, ignoring an era when raw violence replaced precision. (E. Kaplan, 2015, p. 4)

At the same time, the topic of ‘air-atomic power’ must be discussed because it serves as both as a counterpoint for public justifications of contemporary bombardment practice, such as George Tenet’s, and as a bridge between (conventional) wartime bombing practices and postwar airpower theory. The common error, argues Kaplan, is to not combine these literatures:

A second literature stems from deterrence theory, including works of strategists and histories of nuclear strategy. ... Those early works are vital to understanding why air-atomic strategy was flawed in its final years. However, they ignore the historical roots of nuclear strategy, which lie in conventional ideas about airpower and wartime experience. (ibid.)

Combining these literatures is thus necessary to excavate the historical contingency of collateral damage as a concept. In other words, to avoid regarding collateral damage as a function of conventional weapons, precision technology, or drones – with which they are commonly associated – the scope of the investigation goes beyond these basic

associations. The implication is that ‘airpower theory’ does not make the same distinction between nuclear and non-nuclear weapons as international political discourse might, where nuclear weapons became subject to a norm of non-use, or ‘taboo’ (see esp. Tannenwald, 2009).

Instead, approaching collateral damage through the lens of knowledge-laden, institutionalized processes and procedures shows that the distinction between conventional and nuclear weapons varies according to the institutional context. Looking beyond the taboo in international politics reveals a number of possible conceptions in the armed forces, including criteria for usefulness and role in military operational planning and formulation of requirements. In short, they remained part of the organizational routine (Ball, 1986). Knowledge about the destructive effects and the appropriate targeting regimes is not given by the weapons themselves but are institutionally constructed, as Lynn Eden has argued in *Whole World on Fire* (2004), which concerns nuclear weapons devastation and the inability of US armed forces to predict the destructiveness of mass fires, or firestorms, following a nuclear explosion. Despite the fact that such mass fires are often significantly more destructive than blast damage, the American military-scientific community was unable to predict it for decades and unwilling to allocate resources to it because they were operating within a ‘blast damage frame’. This institutionalized cognitive frame, she argues, in fact predated the invention of nuclear weapons, since it had been routinized on the basis of conventional bombs used in World War II. This disparity explains the ‘overlap’ between thinking about nuclear and conventional weapons, which is only an overlap insofar as a strict separation is maintained; technology is not bound to certain social concepts and vice versa, since technologies are socially constituted in and of themselves.

In sum, focusing on airpower is both an established angle of attack and an opportunity to move beyond a narrow conceptualization of collateral damage as something invariably associated with conventional weapons. The nuclear component of this history of collateral damage is not a history of its emergence *ex nihilo*, but a fixture in a conceptual history often portrayed as though weapons of mass destruction were something completely different in nature, a prehistory of imprecision and wholesale destruction that forms the basis of a historical trajectory of progress. Thinking about civilians in aerial warfare did not begin with nuclear weapons; rather, it was a stage in the

development of theories about the role of civilians in warfare and the maturation of USAF, the institution that would later produce the first instances in Vietnam of what would then also be called collateral damage.

1.4.2 Targeting doctrine

Since the purpose of the thesis is to interrogate the notion of collateral damage at the level of discourse and practice, the appropriate empirical object is the business of targeting. Targeting, according to Ducheine, Schmitt, and Osinga (2016a), “serves as a coordination and decision-support mechanism that synchronizes the application of military and non-military means to produce both physical and non-physical effects.” (p. 3). In this way, it allows officers to plan and execute operations, and ultimately for military commanders to use force. The authors note that the targeting process “adapts to, and reflects, technological and social developments” (p. 4), particularly the admonishment to avoid collateral damage. Choices of how and when to use, apportion, or withhold force – and how changes to this have occurred - constitute the crux of the puzzle to be solved.

To grasp the ideas and the practices through which such choices are articulated, I engage with *doctrine*. In his classic definition, Barry Posen (1984) offers a broad outline of military doctrine worth quoting at length:

Military doctrine includes the preferred mode of a group of services, single service, or a subservice for fighting wars. It reflects the judgments of professional military officers, and to a lesser but important extent civilian leaders, about what is and is not militarily possible and necessary. Such judgments are based on appraisals of military technology, national geography, adversary capabilities, and the skills of one's own military organization. (p. 14)

This dissertation operates with a twofold interpretation of doctrine: first, as knowledge about the appropriateness of particular types of targets, the right weapons, and the necessity of the use of force as well as the military and strategic significance of civilians. In this way, military doctrine is understood not only as codified doctrine but also as practices and discourse surrounding such documents as well as the actual conduct of targeting. Stephen Peter Rosen's (1991) account of the development of strategic bombing doctrine before and during World War II illustrates this point. The notion that German industry constituted good targets for bombers depended on the efforts of intelligence agencies to produce evidence that destroying ball-bearing plants, synthetic oil refineries, and other industries essential to the war effort. The doctrine of destroying such facilities,

including their civilian laborers, thus reflects both a prevailing idea and a set of practical processes. Second, as the institutional anchoring point for the generation and propagation of this knowledge. Military doctrine not only carries with it a certain ontology, i.e. a range of views on technology, adversaries, the strategic environment, etc.; military institutions are also, as A. P. Jackson (2013) notes, bearers of a particular epistemology, that is, a particular way of generating knowledge, commonly based on earlier conflicts and incidents of collateral damage. Thus, knowledge produced by the armed forces fuses notions of targeting and concepts of collateral damage. This conceptualization is necessary to foreground the armed forces as a developer of notions of concept of collateral damage rather than a simple bearer or receiver. It is also necessary to highlight the institutional dynamics of an ensemble of the producers of such knowledge, from engineers and weaponeers to lawyers, operations planners, and strategists, i.e. the actors that produce the dispositif of collateral damage.

The sources used to discover and map targeting doctrine vary according to the historical context. Generally speaking, sources will include public pronouncements on strategy, specific incidents of collateral damage and evaluations thereof; war plans, deliberations on targeting philosophies and actual target selection, orders, and high-level guidance; historical examinations of the conduct of wars, whether official or independent, as well as memoirs; legal codes, particularly the Geneva Conventions, and deliberations on such codes, and their implementation; discussions on airpower and the use of new and future weapons in the professional journals of the USAF as well as those of military engineering; congressional debates, hearings, and reports; third-party investigations of current events, including newspaper articles and reports by nongovernmental organizations. This selection has emerged as the result of a recursive process of engagement with the historical material whereby the contingencies of the period have come into view.

Finally, there are three empirical delimitations. First, focusing on the *internal* workings of the armed forces through the lens of targeting necessarily excludes accounts of the victims of collateral damage. The human costs of collateral damage are thus addressed only insofar as they enter into the technical or legal logic and deliberation of the military, often before the fact. This is consistent with the notion that the American collateral damage ‘regime’ is largely predictive (Sewall, 2016). The human costs of

contemporary warfare have been covered more convincingly elsewhere, particularly by NGOs (e.g. Cavallaro, Sonnenberg, & Knuckey, 2012; Holewinski & Shah, 2012; Serle, 2018). Second, I am concerned with *American* practices and discourses on collateral damage⁵. Aside from being the primary contributor to most recent large-scale military conflicts, collateral damage methodologies developed in the U.S. are widely used by other armed forces and taught to e.g. NATO targeteers (NATO School, 2019). The modern military usage of the term originated in the US and thus for a large part was addressed to a specifically American audience of strategists and politicians, later NATO, and finally the public. The US has since been instrumental in defining its meaning and use⁶. This is not to say that there are no peculiarities of American warfare, nor am I suggesting that the conclusions from this thesis would apply uniformly to other Western states, but the bulk of the conceptual and practical work undertaken under the heading of ‘collateral damage’ has involved US air forces. Third, a considerable and understudied component of collateral damage is the *ex post facto* practice of bomb damage assessment (BDA). Excluding BDA from the thesis is not only consistent with the line of argument above, it is also often prohibitively difficult to access information on it⁷, especially when such information is not always collected by the military authorities themselves. For these reasons, BDA will be mentioned in the context of specific investigations and targeting practices but a systematic study is unfeasible within the scope of this dissertation and is left to future researchers to carry out.

1.4.3 The postwar experience

As the introductory juxtaposition indicates, I am concerned with the postwar period to the present. This position engages both the ‘latent’ and understudied nuclear past of airpower and the present ‘era’ of precision-strike weapons. In doing so, I advance a distinct argument that connects and builds on existing literature.

⁵ In a few cases I have relied on current military officials to broadly verify the technicalities of procedures surrounding collateral damage estimation and avoidance; they spoke to me on the condition that they were neither cited nor attributed.

⁶ Furthermore, it has been noted that the Soviets, a comparable power for decades in the historical period under study, in fact had no similar concept in the early Cold War (T. Greenwood, 1975).

⁷ Only a few post-hoc studies exist. William Arkin, for one, carried out an extensive survey of all DGZs after the first Gulf War (Arkin, 1998); more recent efforts include New York Times journalists visiting hundreds of airstrike sites in Iraq (Khan & Gopal, 2017).

The literature on collateral damage has reached a historiographical impasse, and there is no established precedent for any particular periodization. At one end are approaches that favor a more conceptual and longitudinal view of history characterized by continuity. Rosén (2016), for instance, claims that collateral damage is a primordial problem of human error which has different manifestations throughout history that are indicative of the same basis in Judeo-Christian culture. Rockel (2009), who in his overview of collateral damage takes his point of departure in colonial history, argues that the current era is the “heyday” of collateral damage (p. 4). Summers (1991) posited after the Persian Gulf War that the ‘reality’ of collateral damage goes back to the very first American wars, but that the Vietnam War marked a turning point. Towards the other end of the scale are accounts that emphasize disjunctures or local, but paradigmatic historical experiences. Selden (2009) sees in the firebombing of Japanese cities during World War II a blueprint for later American airpower strategy. Conway-Lanz (2006) has argued that the particularly American emphasis on intent in the evaluation of legitimacy derives from key events in the postwar period and the Korean War, especially the massacre at No Gun Ri. Cronin (2018) posits the end of the Cold War and the conflicts that followed as the inflection point for the emergence of a strategy of calculated recklessness towards enemy civilians; and Crawford’s (2013) analysis of moral accountability begins with America’s post-9/11 wars. Finally, Bauman’s (2011) diagnosis of contemporary social policy as a generalization of collateral damage speaks to the idea that the present is somehow infused with a special historical significance of this erstwhile military metaphor (see also Perice, 2007).

1.4.4 Contribution

The thesis advances the current literature both in methodological, theoretical and empirical terms. First, while the thesis builds on existing approaches derived from the works of Michel Foucault, it applies them to a field that has traditionally been dominated by chronological histories, especially military history, but is now the object of an increasing number of critical interventions. The approach taken also follows the lead of an emerging literature that does not separate military doctrine according to the weapons employed, thereby circumventing the separation of nuclear conventional weapons because that distinction is involved in the justification of contemporary precision-strike warfare. In letting collateral damage ‘speak for itself’, it approaches it on the terms of the

same techniques, ideas, and theories that render it possible and necessary in its everyday practices. While this is also a trend in the newer literature on collateral damage, this thesis applies that method across a much longer period of time, thereby providing an extensive investigation of the developments that underpin and condition the present. It links together a variety of empirical material that has not previously been related in a single study, addressing *inter alia* the technical aspects of munitions and casualty estimation as well as the specifics of nuclear plans and airpower theory as they come together in the articulation of concepts of collateral damage. In keeping this consistent focus on how collateral damage is constituted through time, it provides the historical basis for future studies. This is not merely an academic endeavor, but speaks more broadly to the construction of discriminate and humane warfare in the public domain.

Second, in theoretical terms it provides an intervention into the literature on modern warfare. It does so not by focusing exclusively on changes in technology or military strategy that might have altered the landscape of civilian casualties, nor the legal practices that underpinned such changes. Instead, by homing in on the emergent network of all three elements, the strategic and political significance of collateral damage becomes clear. This approach asks how discourses and practices within each, owing to the linkages that make them effective, produce a particular kind of warfighting. It also thereby asks how this network enables, constrains, and conditions the manner in which civilians can be classified, understood, and acted upon politically. The approach subverts and redirects conventional lines of causality (i.e. between technology and collateral damage) to critically engage with notions of externally imposed restraint that threaten to depoliticize or trivialize the prevailing techniques of avoiding civilian casualties and ultimately the contemporary mode of warfare. Second, it complements the literature as a contextualization of the present by tying together elements of the history of collateral damage that were previously disconnected, into a single narrative spanning the postwar period to the present. It thus offers a different and non-linear appraisal of events, discourses, and institutions whose importance to the conduct of modern warfare has already been established.

Third, in empirical terms, the thesis provides insight into areas that have so far remained understudied. First, it offers a corrective to the historiographical impasse that characterizes the literature on collateral damage specifically. Second, it casts light on the

phenomenon of bonus damage, a competing discourse and basis for practices that is usually subsumed under the heading of total war but which has continued to exert influence on war planning far into the Cold War. ‘Bonus damage’ serves as the backdrop of the thesis and the discussion of the historical counterpoint in arguments like Tenet’s. Rather than exposing a secret unchanging truth about American warfare, I am proposing to recover the contingency of the present and to show how this by now disturbing notion illustrates the kinds of resistance that we still find in the promulgation and implementation of the self-evident virtuosity, legality and discrimination of warfare today. Recovering this historical contingency allows for a critical reengagement with the teleological histories used in public legitimation of collateral damage.

1.5 THESIS STRUCTURE

The thesis consists of seven chapters. Chapter 2 surveys existing accounts of the history of collateral damage. How did the concept of collateral damage emerge? The existing literature offers two sets of explanations. First, accounts that portray collateral damage as primarily the result of recent technological and political developments whereby the issue of civilian casualties has gained enormous importance. These help to contextualize changes in warfare, especially as they posit collateral damage as a strategy of new modes of governance that ensure legitimacy and order and transfer risk away from Western armed forces (Boot, 2003a; Buley, 2008; Coker, 2009; Dillon & Reid, 2009; Duffield, 2001, 2007; Kaldor, 1999; McInnes, 2002; M. Shaw, 2005; Tomes, 2007). However, they run the risk of reducing collateral damage to an epiphenomenon of larger historical developments in security governance and the nature of warfare. A second cluster of approaches conceptualize collateral damage as a feature of an idiosyncratic military or national culture of warfare, viz. a Western or American ‘way of war’ (Carr, 2015; Carvin & Williams, 2014; Grenier, 2005; Hope, 2015; Mahnken, 2008; Rosén, 2016; Weigley, 1977). In the view of some critical authors, ‘collateral damage’ is largely a fiction that masks reckless warfighting techniques and indiscriminate bombardment resulting from structural racism or lopsided military confrontations (Bauman, 2011; Cronin, 2018; M. Mandel, 2004; Perice, 2007; Rockel, 2009). These approaches rightly emphasize the historically contingent distinctness of styles of warfighting, but lose sight of recent changes. They foreground the depoliticizing maneuvers into which collateral damage

enters at the expense of careful scrutiny of changes in practice and discourse. While they rightly bring out the pathologies of current political discourse that makes warfare appear to be benevolent or humanitarian, they risk flattening the actual changes made by the armed forces in propounding a particular notion of civilian casualties. This thesis takes as its point of departure the gap between changes in the nature of warfare and enduring preferences for certain types of warfighting that have given rise to the concept of collateral damage. It builds on existing historiographies but incorporates the perspective of ‘bonus damage’, the predecessor of collateral damage, in order to question such points of inflection entirely.

The change in the nature of warfare whereby collateral damage came to circumscribe and define contemporary military operations should be approached in its historical contingency lest a depoliticized space is reproduced. It is commonly rendered as an epiphenomenon of technology, a subset of a contemporary mode of governance, or a fiction masking the real conduct of violence. To recover the complexity and contingency of how collateral damage came to be a major undertaking of the armed forces in the present day, the third chapter sets out to solve four tasks in developing a suitable method. First, to *rehistoricize* the notion of collateral damage, that is, to excavate the historical contingency of collateral damage in the way warfare is conducted and taken for granted today. Second, to recover the *complexity* of a field that involves a host of different legal, military and political institutions which is otherwise subsumed under a ‘way of war’. Third, to reintroduce an element of *contingency* in the use of technology in order to avoid the pitfalls of technological determinism in explaining away collateral damage and to bring the organic development of concepts of collateral damage back into focus. Finally, to illuminate the *depoliticization* of current discourses on collateral damage by reappraising the techniques of power hidden beneath the apparent internalization and development of methods to ensure ‘clean’ war. It argues that a genealogical method based on the work of Michel Foucault is an appropriate tool that will allow for a historical appraisal without losing sight of the major disjunctures in the evolution of collateral damage and without resorting to monocausal analysis. By tracing the ‘lines of descent’ of collateral damage, it brings out subtle shifts in political rationality rather than sweeping ‘transformations’ (Walters, 2012). Through a focus on discourse and practice, it avoids notions of a particular ‘way of war’. And finally, by viewing these as part of a network

of power and knowledge about the political effects of bombing – the *dispositif* - sustained by the institutional and ritual affirmation of legitimacy, it critically engages with the depoliticization of the contemporary concept of collateral damage.

The fourth chapter deals with the emergence of the concept of collateral damage in the postwar period, tracing the institutional and discursive changes that led to the gradual rejection of ‘bonus damage’ in strategic theories and the actual practices of bombardment in the Vietnam War. The concept of bonus damage has received little attention in the literature, but stands as a routinized and institutionalized artefact of total war thinking in the immediate aftermath of the war which was first carried over to early nuclear planning and eventually largely replaced by a notion of collaterality. It contains multiple pivotal events, including the making of the first Single Integrated Operational Plan (SIOP) and practices of bombing in Vietnam, including prominently Operations ROLLING THUNDER, ARC LIGHT, and LINEBACKER. I cast light on the supposed historical counterpoint in the specific historical, intellectual and institutional context during which a concept of collateral damage emerged. I argue that break with the past must be qualified in order to appreciate the complexity and institutional contingency of collateral damage in its early conceptualization.

Chapter 5 discusses the 1991 Operation DESERT STORM, the offensive component of the Persian Gulf War. A distinguishing moment for the post-Cold War order, the air campaign was thought to herald a new era of warfare, especially in terms of the technological superiority of Coalition forces, but in doing so repeated the legacy of strategic bombing. Rebuilding the historical context of the strike on the al-Firdos shelter in Baghdad, I investigate the arrangements in place at the time to avoid civilian casualties along two lines: an emergent regime of the destruction of points rather than areas, and the development of an operational concept of law that would be built into the chain of command. As a truly public matter for the first time, a network of discourses and practices of collateral damage comes into view, and its pathologies and blind spots become increasingly apparent.

Chapter 6 proceeds to question the disjunctures of warfare after 9/11, focusing on changes and continuities in targeting philosophy derived from counterinsurgency doctrine and the shifting of the ‘center of gravity’ to people. This is juxtaposed with the explosive rise of the use of unmanned aerial vehicles, which themselves appear to have not only

reshaped the battlefield, but also cast doubt on the norms of targeting established in the wake of the Vietnam War. I contrast this notion with the quiet and incremental growth of practices and technical implements beyond munitions to estimate and govern collateral damage before the fact, and how these tie together with the regime of precision air warfare ‘among the people’ to make it a governed yet universal fact of warfare. Friction and inconsistencies in the institutional adaptations of the concept of collateral damage continue to exist and emerge owing to new institutional arrangements and the negotiation of drone use, but the web of discourse and often automated practice from the everyday to the strategic has rather expanded than fundamentally changed.

Finally, chapter 7 concludes the thesis. These conclusions are drawn along three lines by which collateral damage is and has been conceptualized by the armed forces and through which changes in warfare can be viewed. These developments have often been organic, reasserting the necessity and possibility of lethal force in a reality seen as politically constrained. The first is spatial: here, a decisive transformation from area to point bombardment has been facilitated by the gradual managerial and technical movement from a circle of destruction to a synthetic, pre-modeled reality of collateral hazard that enables as much as it constrains military operations, especially urban. Second, the gradual shift of subjectivities and forms of victimization at the level of practice. The indistinction in early postwar practices does suggest that the noncombatant norm has become entrenched. It has become central to modern warfare not only via the growth of the legal apparatus in the military chain of command, but also emerging strategic priorities such as those of counterinsurgency. Yet at the same time, a constant struggle for a practicable targeting philosophy has also generated contestation, including the presumed combatants outside the politically sensitive areas of Vietnam or those collateralized by drones in the borderlands of Pakistan, Yemen, and Somalia. Finally, the concept of precision must be understood as a collective of discourses and practices which masks the politics of targeting underneath the technicalities of accuracy, rather diffusing risk than transferring it outright. The strategic utility of accuracy must be understood in relation to a changing field of objectives which have gradually, especially after the Vietnam War, come to incorporate the protection of civilians. The power of these hegemonic discourses in marginalizing other modalities of targeting, military or diplomatic action altogether is not a centralized one, but rather one that is efficacious on

account of its existence at all levels of the chain of command and constant affirmation in public enunciations.

1.6 CONCLUSION

What made the Belgrade incident particularly serious in the eyes of commanders and other officials was not the scale of destruction, but the fact that it happened at all given the sophistication of weapons, the commitment to noncombatant immunity, and the extensive if ultimately ineffectual approval mechanisms. It punctuated the well-oiled machine of systematic, pinpoint destruction and rehearsed reassurances of a clean war. In fact, what this brief introductory narrative illustrates is that collateral damage is never simply pure accident. A closer look at the context of collateral damage, that is, all the standard operating procedures, technicalities, knowledge about targeting that circumscribes and leads up to the perpetrated strike or aborted strike – reveals the network of bureaucratic and technical practice and expertise that continually stages Western warfare as legal, ethical, and efficient.

Just four decades earlier, an altogether different apparatus seems to have been in effect, one that attributed less political significance to civilian deaths. Rather than assume the present to be the outcome of a necessarily enlightened progress against the unadulterated barbarism of the world wars, the very history of collateral damage warrants closer inspection. This dissertation questions and interrogates the hard break with past practices and discourses of targeting that cast the development of precision-strike weaponry and discriminate warfare as necessary, natural, and moral. It does so at the level of doctrine, understood as the conduct and ideas about targeting, that constitutes the decision-making complex around the use of force. Focusing on the postwar period until the present, the thesis foregrounds the understudied but significant concept of bonus damage that constitutes the juxtaposition to the ‘benevolent’ bombing of the present day. It proceeds through the air campaigns of the Vietnam, Iraq, and Afghanistan wars, contextualizing each in terms of the network of targeting practices and discourses that made them appear logical, natural, or revolutionary.

Scrutinizing the uses of the history of collateral damage yields empirical and critical insights. Between the timeless ‘facts’ of war and a belief in progress is a space of collateral damage, an envelope of action that is politically palatable and militarily possible.

The history of collateral damage itself enters into political narratives and is enlisted to legitimize the present. In the literature, too, a heightened sensitivity to historical contingency is revealed by the variety of approaches that either regard the present as a rupture, a continuation of practice, or a deeply ingrained national culture with different paradigmatic expressions. Leveraging these insights, I argue that further lines of descent can be traced at the level of discourse and everyday practice that add significant complexity to the story while challenging dominant narratives. This complexity in turn allows for a reappraisal of the manner in which the armed forces developed and internalized a concept of collateral damage and an opportunity to re-historicize and re-politicize a topic that is only set to gain further significance in the wars to come.

2 NEW WARS, OLD PROBLEMS? THE CHANGING ROLE OF CIVILIANS

2.1 INTRODUCTION

Reflecting on his experiences as a Coalition commander in Afghanistan Mart de Kruij, Commander of the Royal Netherlands Army, wrote:

The targeting process has evolved from having a primarily kinetic/lethal emphasis, with hardly any consideration for collateral damage, to our current operational domain, characterized by operations among the people and heavily influenced by modern (social) media. ... For example, rules of engagement became more restrictive and the availability of resources increased. In addition, armed unmanned assets entered into the inventory. Throughout, the watchful eyes of the social and regular media were constantly upon us, impacting on our military operations. As a primary reaction, our targeting process tended to shift from one that attached scarce resources to identified and prioritized targets to a process that primarily avoided collateral damage. This was not the solution. We found that the information domain had to be included as well. (Quoted in Ducheine, Schmitt, & Osinga, 2016b, p. v)

Collateral damage has ostensibly gained enormous importance owing to a changing nature of war, public scrutiny, and the fielding of new technology, restricting militaries and forcing them to be especially careful. This is reflected in targeting practice, reinforcing the idea that altered circumstances of warfare have compelled the armed forces to adapt. On the other hand, management of the ‘information domain’ warrants close attention to the active role of the armed forces in shaping the narrative and the history of low-collateral damage operations.

The purpose of this chapter is to explore both avenues of inquiry, to synthesize insights from both, and to define the requirements for a framework that will allow for a reengagement with the history and practice of collateral damage. First, I engage with existing accounts of how changes in the context of armed conflict have required that militaries avoid civilian casualties in contemporary operations. This provides an overview of strategies and paradigms under which armed forces have responded to changes in warfare by developing and promoting certain ideas about civilian casualties, often emphasizing the role of technology. Second, I turn to a different literature that emphasizes stable norms, cultures, and prejudices of the armed forces in their approach to civilians, discussing how military cultures and paradigms shape the selection and promotion of particular solutions to problems such as the one encapsulated by the notion of collateral

damage. Where accounts of the change in the nature of warfare highlight transformations in the way civilians are managed, this body of research emphasizes ingrained biases and deep-seated ‘regimes’ that conceal enduring pathologies and blind spots. Building on insights from these two literatures, I carve out a space for a further investigation into collateral damage, one that is both sensitive to the historical contingencies of present-day warfare and critical of the political implications of new ways of organizing and managing violence against civilians.

2.2 THE CHANGING NATURE OF WAR

This section reviews existing explanations for changes in the way civilians are handled by the armed forces in the context of a changing nature of warfare. Accounts differ on the emphasis placed on the driving force of this change, whether focusing primarily on transformations of the nature of the conflicts being fought, the technical implements with which they are fought, or the place of war in a broader societal and political sense. First, I discuss the claim that operations have begun to take place ‘among the people’, thus making civilians more vulnerable and simultaneously more in need of protection. Specifically, the thesis of ‘new wars’, advanced in the late 1990s described what was perceived as a new type of conflict that has increasingly exposed civilians to harm. This, along with the increase in the legal function and the extensive reach of the media, has exacerbated negative attention to the civilian costs of war, especially given the post-Cold War tendency of wars involving the US to be highly asymmetrical and thus raising expectations of ethical conduct. In the second subsection, I discuss changes in the conduct of military operations arising in response to this new environment. Changes in technology, notably the so-called revolution in military affairs and the widespread use of precision weapons and surveillance technology have been highlighted as the guarantors of swift and discriminate operations, as well as the notion that the risks of these new wars are subject to careful management.

2.2.1 New wars: Heightened insecurities

It has been argued that contemporary conflicts, especially following the end of the Cold War, are potentially deadlier and threaten civilians. One influential development in this regard is the emergence of the concept of “new wars” (Duffield, 2001; Kaldor, 1999), a type of identity-based, disconnected form of warfare occurring outside traditional

interstate boundaries in which a network of state and non-state actors participate. Ethnic conflicts in the Balkans and civil wars in Africa have been cited as examples thereof. These conditions, it was held, especially the fact of conflict along ethnic lines, threaten to seriously imperil norms and practices of civilian immunity (P. Gilbert, 2007; Kalyvas, 2001; A. Roberts, 2010). The concept has been discussed and criticized in the decade following its espousal (Berdal, 2003; Henderson & Singer, 2002; Newman, 2004), but the sense that war had fundamentally changed is widespread. At the same time, Western engagement in these and other conflicts has tended to be lopsided in technological and numerical terms, favoring America and her allies. With the demise of Soviet Russia and with the qualitative lead in military capabilities afforded by new technologies, it seemed certain to American policy-makers that 'asymmetric' warfare was here to stay (M. Shaw, 2005).

Asymmetric warfare raises the stakes by obscuring traditional categories of combatants and noncombatants, requiring armed forces to adapt legally and strategically. Legally, because the codified principles of necessity and proportionality bend in unpredictable ways under conditions of asymmetric warfare, particularly because such distinctions become difficult when 'terrorists' and private military companies abound (Gross, 2010). At the same time, Western militaries have more incentive to avoid perceptions of wantonness. One of the novel mechanisms by which dissident groups might conduct information campaigns is *lawfare*, or the 'weaponization' of the laws of war (LOW) to discredit Western armed forces in particular (Dunlap, 2008a, 2009). Here, high-profile cases of collateral damage serve as ammunition for political opponents. The US has in fact been the forerunner in the development and application of so-called operational law, that is, the interpretation of the LOW for military operations, and the corresponding use of military lawyers to advise commanders (A. Roberts, 2011; Rogers & Stewart, 2015). Concerns over lawfare thus drove further conceptualization of collateral damage in a legal sense to avoid accusations of war crimes.

The perceived brutality of 'new wars' is thus offset by the expectation of clean fighting on the part of the West. At the strategic level, post-9/11 wars and contingency operations, particularly the international coalition in Afghanistan, were seen as challenging the established wisdom of warfighting, particularly with respect to the care needed to protect civilians (Cassidy, 2008). Operations would now take place 'among the

people' (R. Smith, 2006)⁸. This strategic imperative intersects with the international legal regimes governing the protection of civilians: in practice, they now function as the baseline, whereas more ambitious protective efforts may be required to accomplish military objectives (e.g. 'hearts and minds'), particularly in counterinsurgency (COIN) operations (McNeal, 2013). Ganesh Sitaraman, recounting the development of the laws of war during times of conventional conflict and discussing the problematics of the War on Terror, goes so far as to argue that "instead of seeing law and war in conflict, with law placing a humanitarian constraint on destructive military operations, counterinsurgency rejects destructive operations, thereby aligning military strategy and humanitarian aims." (2013, p. 23). This transformation of warfare significantly challenges the assumptions of extant ethical norms since the victory condition depends upon the survival of civilians. Thus, COIN doctrine itself draws inspiration and legitimacy from adherence to the rule of law, as McLeod (2015) has argued. In sum, the brutality and asymmetry of new wars has forced the US military on the path to greater discrimination and safety for civilians.

In the critical literature, the decisive transformation is rather one of conscious strategies of security governance than the inevitable result of emergent insecurities. The combination of increased intervention and careful management of force has been theorized as the expansion of a novel form of governance, a kind of *policing*. This strategy establishes a legitimate noncombatant subject under a regime of protection and the rule of law. Conversely, dangerous elements - which do not adhere to national boundaries - must be discriminately dealt with separately from the civilian population (Bell, 2015; Holmqvist, 2014; Hönke & Müller, 2016). This metaphor has been applied as a form of governance of international society developed from Agamben (esp. 1998) and featured prominently in Hardt and Negri's *Empire* (2000). Dillon and Reid, for instance, taking their cue from breakthroughs in information technology, posit an amalgamation of strategy and *biopolitics*, the political management of bodies, in a liberal way of war premised on the protection of a human-species from rogue elements (Dillon, 2008; Dillon & Reid, 2009). The political rationale of this effort is what Grégoire Chamayou (2015)

⁸ Thomas Barnett's influential book *The Pentagon's New Map* (2004) distinguished between two camps within the Department of Defense to characterize the reaction of the defense community: the Leviathan, operating like a 'SWAT team' globally with precision-strike capabilities and setting up for the 'Sys Admin' peacekeeping force. Each reflects a particular preference for fighting certain types of wars, but in each case collateral damage must be kept to a minimum to ensure order and security.

calls *social defense*, the provision of population security as the foundation of the stabilization effort. Under this paradigm of self-care, international intervention is construed as a police effort by which liberal strategies of containment and securitization are globally expanded (de Larrinaga & Doucet, 2015); civilians thus cannot be targeted per se, but terrorists and other threats may well cohabitate with them⁹. The extensive use of military lawyers in the long wars of intervention creates spaces of exception (Aradau, 2007) or new ‘geolegal complexes’ altogether in the remote and otherwise ‘ungoverned’ peripheries of Pakistan, Afghanistan, and Iraq (M. D. Smith, 2014). Operational, legal, and strategic ‘rationalities’ (M. Dean, 2006) intersect at the point of collateral damage, particularly when warfare is seen as a contest for the most credible provision of security. At the limit of these rationalities is collateral damage, which marks civilian casualties as unfortunate accidents of a police effort rather than illegitimate or illegal.

Collateral damage is thus part of a contemporary production of lawfulness and proper civilian subjects which simultaneously also produce the opponent as potentially unlawful. Dworkin (2006) argues that “changes in the nature of armed conflicts are likely to put accepted standards of humane war-fighting under continuing strain, by further undermining the idea that the enemies against whom Western nations find themselves are legitimate and worthy opponents.” (p. 235) One response to this crystallized with the Bush Administration’s refusal to recognize ‘terrorists’ as legitimate enemies (Maxwell, 2012), a move that was compounded by a wave of skepticism of international law, including the laws of war, among key lawyers in the Bush administration in particular (Ohlin, 2015). Furthermore, these norms and strategies of casualty-aversion hardly apply, it has been argued, when it comes to detrimental secondary effects stemming from the destruction of critical infrastructure (Cronin, 2018; Downes, 2008). In this way, the ordering of policed spaces creates a new potential to use ‘collateral damage’ as a delimiting device, distinguishing between proper and improper warfare and signifying the limits of feasible care.

⁹ In this way, police function serves the two functions of the temporal hinge between prevention and punishment, and the inevitable patriarchal element of *discretion* (Dubber & Valverde, 2006, pp. 4-5). The latter resonates with Walter Benjamin’s assertion that police violence “is law-making, for its characteristic function is not the promulgation of laws but the assertion of legal claims for any decree, and law-preserving, because it is at the disposal of these ends.” (1978, pp. 286-287).

2.2.2 New technologies and the transfer of risk

Parallel to transformations of the characteristics and types of belligerents of war has been the transformative impact of new technology. Here, the emphasis is on changes in the style of warfighting resulting from the deployment of more precise weaponry. In the field of military science, one of the most debated developments was the supposed ‘revolution in military affairs’ (RMA) that took place in the 1990s (esp. FitzSimonds & van Tol, 1994; Krepinevich, 1994; Cohen, 1996; Marshall, 1993). The thrust of the argument is that advances in information technology in particular irrevocably change the battlespace, enabling for unprecedented surveillance and visual capabilities enshrined in such doctrines as *Shock and Awe* or *full spectrum dominance* whereby an adversary could be overwhelmingly defeated with little risk. MGen Charles Wald, USAF, declared in a 1998 speech that air forces had “become the instrument of choice in American foreign policy ... because they are extremely accurate and less vulnerable than ground forces.” (quoted in Hickey, 2012, p. 221) The same conflicts of the 1990s that brought the RMA into its own seemed to vindicate the use of airpower and reinforce its position as a low-risk instrument of foreign policy (Cohen, 1994, 1996; Gillespie, 2006; Summers, 1991), especially given the increased attention to the conduct of Western air forces. While collateral damage is acknowledged to gain increasing importance, it is styled as a technical issue.

The debate marked a conscious distancing from an era of massive, indiscriminate firepower, expressed in World War II, Korea, and Vietnam, towards small special forces accompanied by precision airpower used to great effect in the opening years of the war in Afghanistan. Russell Weigley’s post-Vietnam *American Way of War* (1977) had famously argued that the United States favors a strategy of annihilation towards the goal of unconditional surrender. That time had now passed, argued the conservative military historian Max Boot as the invasion of Iraq had been completed, citing a new American way of war: “Spurred by dramatic advances in information technology, the U.S. military has adopted a new style of warfare that eschews the bloody slogging matches of old. It seeks a quick victory with minimal casualties on both sides. Its hallmarks are speed, maneuver, flexibility, and surprise. It is heavily reliant upon precision firepower, special forces, and psychological operations.” (2003a, p. 42) It is a display of the expectation that

technology drives ethical, legal, and political transformation, with fewer civilian casualties as a result.

This wave of jubilant ‘transformational’ literature has since been derided as techno-fetishism (Beier, 2006) or hubris (McMaster, 2008), and the examples of the Iraq and Afghanistan wars have been called into question (esp. S. Biddle, 2002, 2004). “In particular,” writes Beier, “the idea of reliably accurate PGMs has affected the discursive bases of what count in the popular imaginary as legitimate warfare practices, such that only the most technologically advanced militaries can manage any pretense to meeting the standard.” (Beier, 2003, pp. 412-413) The legitimacy of continued collateral damage is thus tied up with high-technology warfare, referring back to the illegitimacy of guerrilla methods by the adversary (Zehfuss, 2010). Similarly, a number of writers (e.g. Adas, 2006; Brigety, 2007; H. White, 2007) locate a significant change in the introduction of precision-guided munitions which lower the political threshold of uses of force, and the employment of humanitarian assistance as a strategic advantage. Frederick Kagan (2006), for instance, argues that the main transformation of American policy since the end of the Cold War has in fact been to substitute destructiveness and low collateral damage for clearly defined political objectives. Benjamin Buley (2008) has argued that American military culture has become dominated by a vision of ‘immaculate warfare’ in recent years, especially during the invasion of Iraq in 2003, with an expectation that overwhelming technical mastery of the battlefield would produce correspondingly overwhelming political outcomes. In this way, narratives that elevate technological progress and essentialize culture implicitly depoliticize high-technology responses to political and moral questions.

Technological development does not only apply to munitions and weaponry, but also to the possibility of seeing and transmitting war. The effect with respect to collateral damage has been theorized along two opposing lines. First, the capacity of the media to transmit cases of civilian death rapidly and globally further accentuates the condition of lawfare, noted above, thereby ‘revitalizing’ the laws of war (Beard, 2009). Second, paradoxically, the heightened prominence of the ‘martial gaze’ (Bousquet, 2018), i.e. the priority attached to seeing simultaneously produces a distance that threatens to desensitize populations and soldiers from the risks of war, especially to noncombatants in theater. In his study of the war in Kosovo, Ignatieff (2000) succinctly argued that “[t]echnological

mastery removed death from our experience of war. But war without death – to our side – is war that ceases to be fully real to us: virtual war.” (p. 5). It is not only the fact of its unfolding in distant places that makes it virtual, he argues: public engagement at all levels (consent, mobilization, participation) becomes virtual. Stripped of its ‘passions, phantasms, finery, veils and violence’, the Gulf War was virtualized to the point that it never even existed, as Baudrillard (1995) famously claimed. James Der Derian (2009) goes even further, claiming that war is ascending to a plane beyond the virtual, at the level of the *virtuous*, devoted to spreading democratic peace, actualizing violence at a distance with no or minimal losses. Common to these approaches is the role accorded to the media in furthering what Bauman (1991) termed the *social production of distance*, constructing ‘virtual’ or even ‘spectator sport’ wars (M Clarke, 2001; Coker, 2001; McInnes, 2002). With an almost videogame-like relation between the soldier and the means by which he is engaging targets, war is not only distant, but also *disconnected*, threatening to disrupt the battle for ‘hearts and minds’ (Coker, 2016; Pugliese, 2016; Rae, 2014; Singer, 2009b).

Yet the reduction of risk – or the virtual semblance thereof – hides a problematic reality of collateral damage. “Qualifying certain destructive effects of military action as ‘collateral’ suggests that those effects were not taken into account at the time the operation was planned and the troops were commanded into action; or that the possibility of such effects was noted and pondered, but was nevertheless viewed as a risk worth taking,” writes Bauman in *Collateral damage* (2011), an account of the ramifications of contemporary social, political, and economic inequality. The question of *risk* is thus the military subset of a more overarching societal concern of modernity, with collateral damage the consequence of a particular mode of governance¹⁰. The critical insight is that these adverse effects do not necessarily fall evenly upon those affected, nor are they predictably reproduced according to conventional (class) struggles (Beck, 1992). This extends to the realm of military operations. Martin Shaw in *The new Western way of war* (2005) argued that developments in risk management have led to a peculiar type of ‘risk-

¹⁰ In his *Modernity and the Holocaust*, Bauman (1991) interpreted risk as the condition of modernity, specifically the *Unsicherheit* of private individuals against which safety and security becomes the overriding concern. Fortune and chance are replaced by a risk of accident, which is trusted to be minimal thanks to systems of expertise (Giddens, 1990). Building on Bauman’s diagnosis of modernity as one of an ‘endemic unfinishedness’, Christopher Coker argued that the anxieties of societal complexity and unmanageable risk inadvertently propel Western societies into endless war which must be managed (Coker, 2009; see also Chandler (2010)). Amooore and de Goede (2008) have similarly argued that the War on Terror is a specific mutation of the risk society to the anxieties of post-9/11 politics.

transfer war' whereby risk is transferred from Western soldiers to (distant) civilians who become mere collateral damage. Henry Shue (2011) notes that the precision of modern munitions has driven greater latitude in target selection, which in turn puts civilians under increasing strain without targeting them directly. In the same vein, Bruce Cronin (2018) posits that risk-transfer warfare and the American preference for technological solutions has created an environment of reckless endangerment with civilians bearing the brunt of the accidents and miscalculations that do occur.

The introduction of armed unmanned aerial vehicles is often understood to intensify the harmful effects from new technologies. The negative attention attracted by drone strike casualties has been compounded by the array of problematic practices associated with them (Cockburn, 2015), a process of 'technical, organizational, and ethical slippage' concealed by the expectation that drones will invariably be used in a way that minimizes suffering (Gusterson, 2016). A misconstrued 'silver bullet' of Western democracies likely only to lead to more war-mongering (Sauer & Schörnig, 2012), drones contribute to a regime of 'computational actors' that advance a 'possibilistic, preemptive culture of technosecurity' (Weber, 2016). Thus detached from 'ground realities', the new and complex virtuality of drone warfare is in fact a different reality altogether conditioned by the 'techno-cultural' accomplishments of targeted killing, not merely the technicalities of vision (Gregory, 2011b; Holmqvist, 2013). These new ways of seeing feed into the typologies and distinctions between combatants and noncombatants: as Medea Benjamin (2012) has shown, merely carrying a weapon may lead to one's characterization as a militant. Drones instantiate a space of unbridled sovereignty, where all humans are assimilated to the sight of the drone and 'necropolitical' decisions of life and death (Allinson, 2015; Mbembe, 2003). Legitimizing this conduct is a new 'necro-ethics' of manhunting (Chamayou, 2015), based on a biopolitical logic of surgery and expediency in rooting out unwanted elements (Schwarz, 2016). Drones, in other words, are thought to exacerbate the same risk-transfer warfare that earlier high-technology, high-precision solutions offered. Here, 'collateral damage' serves as a fig leaf that masks the raw violence beneath the ostensibly precise and discriminate technologies.

2.2.3 Pathologies of transformation

To summarize, a host of explanations of collateral damage take as their point of departure recent transformations of warfare: increased victimization of civilians, heightened

attention to conduct owing to the reach of the media, and an enhanced legal awareness of due care. Against such forces of history, developing tools and procedures to protect civilians is the historically contingent result. Here, the influence of technology has often been portrayed as favorable and remedial to the cause of civilians. In a sense, collateral damage thus marks the difference between a military actively laboring towards more just and discriminate warfare.

Critical interventions have both affirmed and questioned these lines of change, showing that while there is a real sense that war has shifted along several lines, these perceived changes also serve strategic purposes in the articulation of national security policy and the use of military force. Two important conclusions follow. First, whether legitimizing armed intervention or targeted killing, the notion of collateral damage effectively is effectively a strategy of *depoliticization*: it reduces American and Western modes of fighting to a question of technological progress towards ‘clean war’ while masking the structural injustices and pathologies of a high-technology regime. Second, by *historicizing* the notion of collateral damage as a dynamic development whereby the practitioners of national security policy and military intervention do not merely react to changing conflicts or innovations in technology, instead actively managing and governing these processes.

At the same time, these approaches raise questions about the reality and historical novelty of collateral damage as such. Regarding it as merely discourse designed to legitimize current operations risks reducing it to an epiphenomenon of larger changes in war and obscuring the local discourses and practices where the power of judgment and decision on civilian lives is instantiated. It also obscures the institutional dynamics of collateral damage practice as given by disparities in implementation and targeting philosophy. Moreover, by focusing heavily on the present it loses sight of possible historical precedents for recent changes in warfare, discussed below.

2.3 CULTURES OF WAR, CONTINGENT CHOICES

A different set of explanations for the emergence of the notion of collateral damage regard it primarily as the contingent result of a ‘style’ of warfare peculiar to the armed forces or air forces specifically. Rather than fundamental changes since the end of the Cold War, these accounts often posit the existence of relatively stable norms and cultures that delimit

and frame historical processes of decision-making out of which collateral damage emerged as a solution. This section surveys the ‘way of war’ debate, turning from technology to broader cultural and societal influences introduced in recent writings that influence the armed forces’ doctrinal concepts of civilian damage. It then zooms in on the peculiarities of the Air Force and the institutional drive for technological solutions. The special historical legacy of airpower opens a space for a critique of precision technology as the driving force for the concept of collateral damage, pointing instead to enduring institutional biases for technical solutions to political and strategic problems and the pathologies thereby created.

2.3.1 Enduring styles of war

Where Conway-Lanz (2006) sees intention as the hallmark of American thinking about legitimate civilian casualties, Rosén (2016) argues that collateral damage refers to an ancient Judeo-Christian problem of error in warfare. Such cultural biases and institutionalized priorities have long been debated in the literature, with particular attention to what styles of warfighting cater to specific services, militaries, governments, or societies and with broad consequences for the manner in which civilian casualties are perceived. Following or rejecting Weigley’s thesis, additions to the literature have looked to history of evidence for an accumulation of experience in a particular mode of conflict, identified governing rationalities, or discovered norms, values, or cultures that guide the use of firepower. This debate was reinvigorated particularly after the turn of the millennium with a number of celebratory accounts of a particular Western ‘way of war’ heavily inspired by Samuel Huntington’s *Clash of Civilizations* (1996) and founded in a belief of cultural superiority and the stability of key norms of fighting (Hanson, 2002; Keegan, 2001). Others have suggested that irregular or asymmetric warfare have been part and parcel of US military engagement since its inception (e.g. Boot, 2003b; Linn, 2002, 2007).

Calling into question both the beneficence of existing norms and the historical backdrop of their ideas, new critical additions to the field have sought to contextualize the manner in which armed forces develop concepts about civilians. Engaging directly with the foundational violence of the American nation, John Grenier (2005) identified the ‘petites guerres’ during the conquest of the American West as the foundational moment of a ‘first’ American way of war, unlimited and irregular and directed with great

viciousness against noncombatants. Matthew Carr (2015) has posited that Civil War Gen Sherman's old adage that 'war is hell' continues to hold sway despite the illusion of surgical destruction. This notion speaks to the legitimization of collateral damage as an unavoidable feature of war and subject to the economy of 'friction'. In a similar vein, Carvin and Williams (2014) see the foundational problem of American military intervention in the dialectic between perfect security and humane and liberal ways of warfare, to which responses have favored scientific solutions. And through examinations of American antebellum military science, Hope (2015) finds that notions of perfect knowledge of war as a means of fighting it were synthesized from European Enlightenment ideals, becoming an early American way of war at the nascent West Point academy. Such preferences are not simply determined materially, but are rather an expression of an ongoing historical struggle within the armed forces with a range of possible points of inflection.

2.3.2 Regimes of airpower: The allure of technology

The notion that new technologies change the nature of war per se is subject to historical contingency, i.e. an institutionalized preference for technological solutions. Dependence on (high) technology has often been posited as a feature of American culture in general, but particularly military culture after the invention of the atomic bomb (see Klein, 1994; Peoples, 2010). Perhaps nowhere is this the case more than in the Air Force (Donnithorne, 2013; Futrell, 1989b). Carl Builder's influential *Masks of War* (1989), for instance, advanced the view that the American armed services have individual 'faces' or identities, with USAF traditionally favoring a technology-centric approach. In some formulations, this identity derives from the nature of the fight itself (e.g. Murray, 1999), or from the fact that pilots dominate decision-making (Lake, 2019). John Worden's influential *Rise of the Fighter Generals* (1998) explored the organizational impact of the ousting of the so-called 'bomber generals' after the Vietnam War, leading to a new emphasis on fighter training and technology. Rather than organizational 'facts', however, these preferences are subject to historically contingent changes of institutional peculiarities in the use and demand for new technologies (Mahnken, 2008). Striking a middle ground is Sewall (2016), arguing that while minimizing civilian casualties emerged as a collateral benefit of a separate technological development, it quickly became desirable for USAF to support

further such innovations. Practices to avoid collateral damage are shaped in a complex interaction of technology and institutional preferences rather than one driving the other.

Critical writings in the field interrogate the ramifications and purported beneficence of the high-technology style of American airpower, showing instead how civilians often become targets. James William Gibson's original and highly critical *Technowar* (1986) linked the fetishization of high-technology production in American political economy to an unrelentingly quantitative war machine that yielded the infamous body count metrics of the Vietnam War. A few years after the Persian Gulf War, Conrad Crane wrote that "[t]he idea that the American way of war tends toward an overall technological onslaught against an enemy society is a legacy of American strategic bombing in World War II." (Crane, 1993, p. 159) Similarly, Michael Sherry (2009) sees in the 'technological fanaticism' of the bomber offensive against Japan a counterpoint against the perceived human fanaticism of the Japanese¹¹. The very possibility or even illusion of a technological remedy to a human problem is contingent upon such enduring doctrinal biases, which in turn shape dominant discourses and practices.

These notions feed into the problematic historical legacy of airpower, particularly the fate of civilians. While it has been noted that the foundations of American airpower theory were progressive on paper, the realities of early bombardment rarely favored civilians (T. D. Biddle, 2002; Clodfelter, 2011). For a number of critical historians, the violence hiding behind the alibi of 'collateral damage' not only has colonial roots, it is also deeply racial and prejudiced against the poor (Atwood, 2010; Perice, 2007; Rockel & Halpern, 2009). On the topic of drones specifically, L. Parks and Kaplan (2017) as well as Neocleous (2013) contend that the push for aerial reconnaissance and surveillance must be seen in light of the colonial roots of airpower, especially British imperial policing in Iraq in the 1920s. Fascination with the technological innovation of unmanned aerial vehicles distracts from these historical continuities of their employment and the discourses by which they come into play (Satia, 2014). More broadly, the doctrines and regimes held to be associated with the transformation of warfare are also seen to reflect longstanding institutionalized pathologies. In this way Hippler argues that the defining

¹¹ Patrick Porter's *Military Orientalism* (2009) shows that these orientalist notions have substantial historical pedigree, with the War on Terror marking a modern American attempt to pursue "intimate knowledge about foreign societies and turning that knowledge into strategic payoffs" (P. Porter, 2009, p. 192). The turn to operations 'among the people' must similarly be located within an enduring system of knowledge that accords special strategic significance to civilian deaths.

characteristics of the ‘new wars’ were already present in the interwar years, and the notion of ‘police action’ already connected to airpower from the early twentieth century (Hippler, 2013, 2017). Other authors have argued that *Shock and Awe* was merely the continuation of a trajectory of the targeting of morale, usually involving the destruction of civilian facilities (Anderson, 2013; Coward, 2013; Young, 2009). These literatures speak to the interaction of technology and doctrine which shapes preferences for certain uses of airpower, dressing up violence in a teleology of technological progress that masks the structural prejudices at work.

2.3.3 Ways of war and constancy of doctrine

A range of scholarship following in the wake of Weigley has called into question the neutrality of the technological narrative, namely that precision technology enabled and spurred the development of a concept of collateral damage, or that such a concept simply emerged since precision weapons had become available. Enduring institutional priorities and a deep-seated cultural preference for technological solutions intersect with a long legacy of colonial airpower to reproduce collateral damage as a necessary fiction masking the reckless disregard for, or even deliberate targeting of civilians and civilian facilities.

Such scholarship accomplishes two things with respect to the history of collateral damage. First, with the premise that the use of technology itself is negotiated as part of the culture or ideational baggage of a nation or a service, these works reveal the *contingency* of the supposed change in the nature of war. Rather than simple external pressures, the armed forces shape technology in line with existing doctrinal concepts of civilians in war. It offers a historical canvas for the ascendancy of collateral damage as public and military concern, especially in the context of aerial bombardment. Second, because it directs attention to the development of concepts such as collateral damage within a longitudinal history which is potentially lost if a shorter historical horizon is applied. Enduring issues of targeting thereby become available as fixtures that situate the history of a historically contingent concept of civilian death. These lost histories contribute to the depoliticizing effect of reducing collateral damage to questions of technology or exogenous changes in the nature of warfare.

At the same time, *complexity* is lost when appealing to essentializing and vague notions of strategic culture (Echevarria, 2014). Specifically, the contribution of collateral damage as a peculiar historical development is lost if assumed to be a part of an

overarching, longitudinal history that was founded at the dawn of airpower, rather than a dynamic set of historically idiosyncratic practices and discourses.

2.4 CONCLUSION: TOWARDS A CRITICAL HISTORY

The variety of explanations for the prominence and character of collateral damage grouped above into two main categories provide the starting points for an extended investigation. They point to seeming contradictions in the management and governance of modern warfare: greater security at greater risk for civilians, more precise technology subject to enduring pathologies of targeting, and so on; but they differ on the historiography thereof. The pattern that ties these contradictions together is collateral damage, encompassing both the modernist belief in deliverance from harm through technology *and* its seemingly persistent and ineradicable presence as a side effect of warfare per se. Thus, building on the literature while advancing it requires us to take collateral damage seriously as an object of study in its own right, as recent writers have done (Conway-Lanz, 2006; Crawford, 2013; Cronin, 2018; Rockel & Halpern, 2009; Rosén, 2016).

Continuing in this emerging field, the objective of this dissertation is to zoom in on collateral damage while contributing to the historiography of collateral damage and our understanding of its pathologies. The above engagement has highlighted the importance of four methodological attributes of a new engagement with the topic of collateral damage. First, the depoliticizing effect of historical narratives that either lose sight of the active managerial aspects of warfare or the larger historical patterns. Second, the necessity of historicizing the concept of collateral damage as such, i.e. of sensitivity to actual changes in practices associated with new technologies, such as drones, or new military functions, such as law; in short, the collection of practices and discourses that make up the doctrine of collateral damage. Third, the contingency of the choices made by the armed forces in the development thereof, particularly in the case of the Air Force a special relationship with technology. Fourth and finally, the complexity of concepts of civilian death that is neglected if such concepts are implicitly assumed to be epiphenomena of changes in warfare or necessary fictions masking new forms of domination.

With this foundation in place, a critique of collateral damage as a historical formation of discourses and historical practices, doctrine, in view of the changing character of war, becomes possible.

3 RECONSTRUCTING THE PRESENT

3.1 INTRODUCTION: A CRITICAL HISTORY

To deal with the methodological challenges posed by the subject of collateral damage, I here introduce the method of genealogy and explain my usage of it. The genealogical method used here is derived primarily from the works of Michel Foucault, especially *Discipline and Punish* (1977) and *The History of Sexuality* (1978), but has since become established in a variety of academic disciplines, including international security studies and international politics more generally. The methods of Foucault are associated with much academic debate and are too long to treat exhaustively here¹². Instead, I offer a focused reading of Foucault's genealogical method.

Genealogy has been deployed in the field of international relations or international security where it has been deployed to (re)historicize political concepts, technologies, and military doctrine¹³. In doing so, it connects knowledge about governance with instruments or strategies of violence. In his study of the conflict in Northern Ireland, Allen Feldman (1991) showed that models of counterinsurgency governance inform the rules and vocabularies of paramilitary violence. These practices produce particular, historically contingent subjectivities of criminals, victims, and law enforcers. Jens Bartelson's *Genealogy of Sovereignty* (1995) demonstrated the enduring influence of knowledge in understanding the historical lineage of sovereignty as a political concept. Bartelson's central claim is that rather than look for a transcendental definition of what sovereignty *is*, it is more prudent to ask how it has been approached as an object of knowledge. Likewise, Patricia Owens' (2015) genealogy of counterinsurgency accentuates the models of governance (of the household as in colonized territories) that underpin contemporary stability operations and provide legitimacy for particular strategies and tactics. In this way, rehistoricizing collateral damage by way of genealogy is simultaneously an opportunity for sustained engagement with the manner in which civilian casualties have been made the object of knowledge. It makes sense of doctrine, which connects violent implements to political objectives.

¹² For general discussions of how genealogy fits into Foucault's body of work, see e.g. Deleuze (1988); Koopman (2013); Mahon (1992); Raffnsøe, Gudmand-Høyer, and Thaning (2008).

¹³ For a comprehensive discussion, see Vucetic (2011).

While instructive, such approaches often diverge on the specifics of method, offering little by way of a blueprint for a genealogical investigation. Bartelson, for instance, takes an ‘episodical’ approach of situating paradigms of knowledge, gleaned from texts by theorists of the state, of sovereignty, etc., within distinct historical periods, namely the Renaissance, the Classical Age, and modernity. In her study of the war in Bosnia, Hansen (2006) deploys what she terms a ‘comparative-moments’ style operating within a much shorter time frame than Bartelson. Rather than a single concept throughout historical episodes, she traces different representations of Bosnia in the West using a variety of historical and contemporary texts. Yet another strategy is given by the approach of Feldman (1991), whose genealogy of the conflict in Northern Ireland traces this history through an ‘ethnography of surfaces’, that is, the sites and bodies whereupon the history of the struggle is inscribed. Here, political narratives are approached through local and violent practices of surveillance, killing, and incarceration. Rather than one universal method, genealogy is thus subject to a range of epistemological specificities and adaptations to the subject matter.

To further specify the approach of this dissertation, I build on William Walters’ (2012) typology of genealogical approaches. “All genealogical studies,” he explains, “are dedicated to the task of denaturalizing objects and subjects, identities and practices that otherwise appear given to us, lessening the stranglehold they exert on our political imagination. They all strive to show that things do not have to take their present form; that other identities and existences are possible. All of them struggle to unsettle the boundaries and encrusted shapes we inhabit.” (p. 118) Walters distinguishes between three styles of genealogy: lines of descent, counter-memory and re-serialization, and uncovering subjugated knowledges. Out of these, it is the former that promises to unravel the seeming self-evidence of collateral damage. With the style of lines of descent, “it is usually a matter of tracing the pathways by which something significant and valued in the present came to take the form that it has.” (ibid.) Similarly, the central puzzle here is the emergence of the contemporary mode of governing airpower through the lens of the concept of collateral damage.

Appraising Collier and Lakoff’s studies of the governance of emergency planning, Walters finds two features of this type of genealogy that make it particularly suitable for the present investigation. Both of these derive from the method of decomposing things

that appear whole, reconstructing pathways to the present, and revealing, in the case of Collier and Lakoff, securitization to be “a composite, and no doubt, contradictory ensemble of a number of different practices of security” (Walters, 2012, p. 123) rather than a coherent policy. First, he finds that genealogy is “well equipped to detect subtle shifts in political logics, rationalities and imaginations that are easily missed by more macroscopic or structuralist accounts”, something that resonates with the need to avoid subsuming collateral damage under an overarching style of governance or ‘way of war’. Second, Walters argues, genealogy is significant “because it helps us get at specificities and move debate beyond the discussion of homogenized processes” (p. 122). Here, it is the specificities of governing civilians that have to be brought out rather than reduced to a changing nature of war or a consequence of simple technological development.

In the following, I limit my interpretation of the genealogical method to four elements of Foucault’s approach that render it particularly suitable to apply to the question of collateral damage, which will then be used to structure this section. These are the rejection of metahistory, the polymorphic approach, the study of regimes of practice, and the identification of a *dispositif*. Through readings of Foucault’s texts, lectures, and interviews, I argue that these facets of the genealogical method respond directly to the demands of rehistoricization, complexity, contingency, and repoliticization. A genealogical history of the present allows, in the words of M. Dean (1994), for a *critical and effective history: critical*, because it is opposed to modernist notions of progress or the advance of technocratic reason exemplified in Enlightenment narratives, which also applies to the belief in ever-more precise weapons. And *effective*, because it problematizes philosophies of history that would ascribe an inherent meaning to it or promise a rupture that would finally reconcile man with himself. This effectiveness is suited to question the implicit assumptions of a benign and discriminate ‘way of war’.

3.1.1 Metahistories

An approach is needed that (re)historicizes collateral damage to advance our understanding of collateral damage and to lay out the internalization of the concept within the armed forces. This thesis attempts to show the historical process that made the present situation possible. A decidedly historical approach also has the advantage of improving our understanding beyond what is possible under the panoply of a particular ‘way of war’, i.e. as something that may merely be inferred from the paradigmatic style of warfare

pertaining to a particular era. In other words, I challenge the position that collateral damage is the ambiguous compromise between technology and military necessity - even if it is unable to resolve that dialectic - or as a 'residual' or third type of civilian death (Rosén, 2016). Instead, I inquire as to the conditions that have made this depoliticizing synthesis possible. Rather than falling into the trap of reproducing this problematic residual notion, an approach is required that emphasizes the historically contingent nature, or *historicity*, of the conditions that led to its existence and tacit acceptance today.

Public legitimization of collateral damage, as both Conetta (2004) and Crawford (2013) have shown, tends to oscillate between the position that some level of civilian casualties is ultimately unavoidable in war, and the position that technological progress continuously renders civilian casualties less likely. These positions are effectively *metahistories* of collateral damage: they either evoke what Foucault calls an anthropological or world-historical constant (on the nature of war) or posit a teleology (technological progress towards the elimination of civilian deaths), and going beyond such metahistories is essential for a critical study to be effective. It is also necessary conceptually in order to bring out collateral damage in and of itself rather than a derivative notion or an epiphenomenon of the histories of other forces, concepts, or cultures.

In a 1971 essay entitled *Nietzsche, Genealogy, History*, Foucault laid out his relationship with Friedrich Nietzsche, especially the latter's genealogical method, through an interpretation of Nietzsche's key concepts. Through it, he advanced ideas that would inform the writing of *Discipline and Punish*. Genealogy, argued Foucault, is the study of descent rather than the search for origins insofar as origins are taken to reveal the secret nature or essential truth about a particular phenomenon. Identifying the descent, rather, means

to maintain passing events in their proper dispersion; it is to identify the accidents, the minute deviations - or conversely, the complete reversals - the errors, the false appraisals, and the faulty calculations that gave birth to those things that continue to exist and have value for us. (Foucault, 1977, p. 81)

This opposition to metahistory informs much of Foucault's work. In *Discipline and Punish*, Foucault argues against a tradition which sees incarceration as inherently more 'humane' than older practices of punishment. In the *History of Sexuality*, he seeks to challenge the so-called 'repressive hypothesis', viz. the notion that the bourgeoisie began to repress and circumscribe certain sexual practices in the 18th century. In Foucault's

earlier work on psychiatry, too, there is a strong undercurrent of anti-modernism, especially in his *History of Madness* (2006a), where the self-evidence of benign psychiatric motives is exposed as a gradual process of confinement, exclusion, and subjection to an emergent science of the individual.

The study of collateral damage in a genealogical fashion thus leads to the immediate rejection of a belief in the teleological motion of progress and in a scientific program of identifying the 'essence' of war. Genealogy, continues Foucault, must instead record the absences and discontinuities in the appearances of the object in question, and find the conditions for the history of an object within itself rather than at the privileged distance of the historian or philosopher. These attitudes towards history simultaneously imply that the striking 'barbarism' of the past, such as the indiscriminacy of World War II bombing, must be understood in light of the discursive formations that made them possible, even desirable. Effective histories do not subject events to a continuity culminating in the self-evidence of the present. In the same way, the obviousness of the principles of distinction and proportionality or the inherent necessity of precision in warfare are not the results of a history of humanitarianism and the gradual dressage of unadulterated military power, but artifacts of specific discourses and practices.

I operationalize this epistemological stance by means of Foucault's notion of *eventalization*. During a roundtable discussion of his work on punishment in the late 1970s, Foucault elaborated further on his preference for analyzing events in their time rather than relying on ahistorical concepts as causal agents. Proceeding by way of this principle of eventalization means

constructing around the singular event analyzed as process a 'polygon' or rather a 'polyhedron' of intelligibility, the number of whose faces is not given in advance and can never properly be taken as finite. (...) the further one breaks down the processes under analysis, the more one is enabled and indeed obliged to construct their external relations of intelligibility. (1991b, p. 77)

In this way, rather than by way of a linear or institutional history, this thesis will reconstruct the conditions of intelligibility of events, thereby casting light on a historical contemporary that is otherwise hidden. There is no 'age' of collateral damage, just as there is no age of discipline or of security (Foucault, 2007, p. 8). Instead, argues Foucault, discourses undergo mutations as new utterances are added to it in which a given concept

is deployed (Foucault, 1991a, p. 54). Such transformations will be interrogated at the level of the event rather than that of metahistory.

3.1.2 Polymorphism

The practices and discourses associated with collateral damage and the avoidance thereof cut across institutions, actors, and professions within the armed forces. In the contemporary, collateral damage is thus a legal, strategic, political, and technological issue all at once (Ducheine et al., 2016a). Consequently, any concept of civilian death ‘as such’ is subject to interpretation and use at different ‘sites’ where practices are carried out. It employs military lawyers, targeteers, commanders, politicians, and pilots, to name a few; and it is used to legitimize current practices, criticize enemy malfeasance, justify incidents of civilian deaths, and promote the continued development of ever-more precise munitions. While this condition may complicate a comprehensive historical appraisal of the concept of collateral damage, the empirical basis also holds the key to an approach that engages anew with the complexity of the topic. To generate new insights on the construction and development of concepts, technologies, and techniques of collateral damage within the armed forces, a method is required that is sensitive to this complexity.

Privileging the concept of collateral damage and its associated techniques of power is crucial. Foucault’s method, because it works as the historical study of concepts rather than actors and institutions, is effectively *adisciplinary* (M. Dean, 2017). In particular, Foucault’s notion of *polymorphism* responds directly to the many facets of the problem and the necessity to tackle these at the same time, rather than discretely. This epistemological attitude refers back to the stated objective of this thesis to engage with the web of processes that surround the event. Foucault distinguishes between polymorphism of elements (in *Discipline and Punish*, from prisons to pedagogy, army regimentation, divisions of labor), of relations (the application of theory, use of technical models, tactics of government), and domains of reference (from mutations in technical details to new techniques of power) (Foucault, 2001, pp. 227-228). Polymorphism is effectively an attitude of anti-reductionism and does not imply that the resulting set of elements, relations, and domains of reference can be subsumed under one essential productivity. In his *History of Sexuality*, Foucault tasked himself to uncover the “polymorphous techniques of power” at work in the ordering and regulation of human sexuality (1978, p. 11) to critique the monocausal repressive hypothesis. In the lecture

series entitled *The Birth of Biopolitics*, Foucault teased out various instantiations of liberalism, a polymorphic concept since it is put to use both as critique and as regulatory schema (Foucault, 2008, p. 320). Rendering apparent the “polymorphous interweaving of correlations” (1991a, p. 58) is Foucault’s substitute for the simple allocation of causality.

The same polymorphic analytic can be applied to collateral damage. A generalized example of present-day collateral damage is instructive: under a principle of polymorphism, one would be obliged to reconstruct its elements (legal evaluation, targeting philosophy, techniques of public disclosure, strategic valuation), relations (use of models, command, government of dangerous individuals, organizations, etc.), and domains of reference (from ‘lessons learned’ to paradigmatic changes in the conceptualization of civil-military relations). Polymorphism thus refers to the systematic necessity of engaging with the heterogeneity of the subject matter as it appears in discourse and in practice: the multiplication of analytical objects is an opportunity to engage with the subject matter in a novel way that recognizes and utilizes its complexity. Rather than assigning causality to particular developments (legal, political, technical, strategic) in the history of collateral damage, it explores the manner in which collateral damage as discourse was contingent upon mutations between fields.

3.1.3 Practices

To avoid reproducing derivative metahistories of collateral damage as a function of technological progress, an approach is needed that regards technology not as an exogenous determining factor but as endogenous to the decision-making processes and actions that lead to collateral damage. This requires broader reflection on the distinction between technology and politics, an issue that has been approached by sociologists since the 1980s (see esp. Bijker, Hughes, & Pinch, 2012). Langdon Winner, for instance, argued in *The Whale and the Reactor* (1986) that the “construction of a technical system that involves human beings as operating parts brings a reconstruction of social roles and relationships.” (1989, p. 11) In *The Sources of Military Doctrine* (1984), Barry Posen concluded that “the influence of technology is seldom direct, and is usually filtered through organizational biases and statesmen's perceptions of the international political system.” (p. 236) And Mackenzie (1990), in his sociology of nuclear missile guidance, similarly notes that

Technology in the nuclear world is not above politics as an autonomous determining factor, nor beneath it as a dependent effect, but part of it. [...] Perhaps the most important reason for the separation of technology and politics is that technologists and program managers work hard to maintain it. (pp. 412-414)

More generally, professional communities might be said to claim ‘jurisdiction’ over a task through practices of classification, diagnosis and treatment that employ expert knowledge and technological objects (Abbott, 1988). In other words, technology does not exist separately to exert a uniform influence on decision-makers. What is suggested here is rather that the separation of technology and politics itself serves a strategic purpose: technology might be discursively constructed as a force and opportunity for progress and solutions to political problems or cited as an external source of insecurity, often simultaneously (cf. Peoples, 2010).

In the same way, insofar as collateral damage today is construed as a technical issue by the armed forces, that is, a set of predictive techniques, precision-guided munitions, and accurate methods of surveillance and targeting, etc., methodological care is needed to untie the seemingly self-evident trajectory of technological development and to interrogate the interpretation involved in the use of these technologies. In his study of the Fleet Ballistic Missile (*Polaris*), Graham Spinardi finds that nuclear weapons “comprise a technological system which requires many parts of the physical and the social world to be held in place (under control) if they are to ‘work’ ... It is these *social networks*, not just the artefacts themselves, that constitute a technology.” (1994, p. 191; italics in original) The targeting process, likewise, can be viewed as a social technology that requires a variety of parts – some human, such as pilots and commanders, and some non-human, such as computer models, aircraft, and munitions – to be organized according to particular routines and places in order to produce ‘kinetic effects’ as intended. In sum, technology can neither ontologically nor analytically be extricated from the sociopolitical context. In devising a methodology for the study of collateral damage, it is thus essential that the technologies to avoid civilian casualties are regarded in these terms: not as mutually generative, but rather as something inseparable styled as discrete entities.

Genealogical methods have been used in the literature to generate new, critical insights on the social construction of technology by which it is made effective in strategies of governance or violence. Richard Price’s (1997) *Chemical Weapons Taboo* is one such, demonstrating that genealogies of technology yield important insights beyond linear

histories. Similar to the purpose of this thesis, Price in his book “seeks to remedy the deficiencies of essentialist and deductive approaches” (p. 6) that derive political consequences from inherent features of chemical weapons rather than historically contingent formations of meaning attached to them. Price identifies a number of ‘defining moments’ in the history of the emergent norm of non-use and the political odium surrounding these weapons. In more recent works, Chamayou (2015), with a nod to Foucault’s analysis of surveillance, provides a genealogy of the MQ-1 *Predator* drone, the sudden popularity of which he situates within a contemporary paradigm of manhunting. The genealogy proposed in this thesis is thus a continuation of an established methodological tradition of strong conceptual claims underpinned by a solid empirical foundation: it is concerned not only with political strategies or abstract claims about collateral damage, but also the socially constructed technicalities of airpower theory, weapons, and warfighting.

In this dissertation, I regard technology as part of regimes of practices that make them effective in institutions and discourses. In his work on prisons, rather than analyzing institutions, theories, or ideology, which have an air of the extra-historical, Foucault’s aim was to understand *regimes of practices*, that is, “programmes of conduct which have both prescriptive effects regarding what is to be done (effects of 'jurisdiction'), and codifying effects regarding what is to be known (effects of 'veridiction')” (Foucault, 1991b, p. 75). In *Discipline and Punish*, effects of jurisdiction might include specific penal procedures, while conversely pronouncements on the relation between the body and the soul, particularly the capacity for dressage of the body and correction of delinquency, fall into the category of veridiction. The same distinction can be applied to Foucault’s *History of Sexuality*, in which an emergent sexual politics hinges on a veritable science of confession and classification. It also runs through his work on psychiatry and medicine, especially the 1974-75 lectures on normality (2003a)¹⁴, in which an emerging medico-legal science accompanies methods of partitioning according to emergent classificatory systems rather than wholesale exclusion from society. Indeed, claims Foucault, it is through discourse that power and knowledge meet, and they are inseparable without being reducible to each other. The sciences of law, of military engineering, and of airpower are

¹⁴ Foucault’s *Birth of the Clinic* (2003b) is also concerned with medical perception but applies a method of *archaeology* which, simply put, exposes the discursive underpinnings of the sciences rather than their practices.

all constitutive of collateral damage but maintain boundaries in order to be effective at the level of theory, each prescribing and codifying conduct proper to their domain.

Focusing on practices provides an opportunity to engage with technology not as static objects removed from discourse or power, but as part of and subject to the same. Foucault did not propound a general theory of technology, and his use of the term is ambivalent and changing throughout his *oeuvre* (Behrent, 2013; see also Sawicki, 2003). His notion of technologies of power, however, especially as it is developed in *Discipline and Punish*, speaks to the same enmeshment of the social in the technology that collateral damage represents. In laying out the objectives of the study, he argues for doing so “on the basis of a political technology of the body in which might be read a common history of power relations and object relations.” (1995, p. 24) So too may collateral damage be regarded as a set of political techniques and technologies. It refers to domains of knowledge the purpose of which it is to direct implements of force within limits established by a science of lethality in order to achieve political objectives. Foucault does not seek to collapse the difference between the human and the non-human insofar as they might both be objects or subjects in same strategy, but rather decenters the human to question the privilege of agency in any theory. He asks how the emergence of such strategies may be generative of new subjectivities (and objectivities) such as the delinquent, the patient, and the pervert, but also conversely the doctor, the prison warden, and the psychiatrist. In a similar manner, it is necessary to enquire as to the changing subjectivities implied by a ‘strategy’ of collateral damage. We might conceive of it as Rosén (2016) does, for instance, as a ‘third category’ that structures interactions between soldier and civilian; or instead subvert the argument, as Cohn (1987b), and claim that the subjects of strategic paradigms are really the weapons themselves, leaving civilians as collateral damage. It will be the objective of this thesis to analyze and interrogate the manner in which such subjectivities change as technological and human elements are mobilized and come into play under the various circumstances of collateral damage.

The internalization and development of concepts and practices of collateral damage within the armed forces cannot be seen as purely negative or imposed. Foucault emphasized on numerous occasions, including in the introduction to *Discipline and Punish*, that the forms of power under scrutiny cannot be considered to be purely negative, that is, taking away freedoms or restricting different types of movement. Instead, they are

productive of behaviors and abilities in the body of the condemned. In the same way, the concern for civilian casualties cannot be understood *prima facie* as simply a negative requirement placed upon the armed forces. Instead, it must be approached as something constitutive of bombing tactics, doctrine, strategy, and so on. Genealogy, it should be emphasized, is not an exercise in counterfactual argumentation, and it is not the point of the thesis to speculate whether certain technologies might have been invented at all had it not been for the specific formation of discourses on civilian casualties. Rather, the uncovering of the specific conditions for their emergence, and the institutional and intellectual priorities that led them to survive in the face of alternative technologies, is the objective of the genealogy. Awareness of the historical contingency of such developmental processes gives the intellectual ballast needed to pursue a critical evaluation of statements and discourses which now portray the opportunities offered by these technological advancements as matters of course and common sense.

3.1.4 The dispositif

“Is it possible”, asks Didier Bigo, “to use the terminologies of a “global complicity” of domination ... Does there, in practice, exist a single strategy that unifies different groups of professionals at the transnational level — whether they be agents of the police, the military, or the intelligence services, with a common policy of policing and sharing the interests of the elite of the different professionals of politics[?]” (Bigo, 2008, pp. 10-11) Bigo’s answer is in the negative: the relation between these different elements, argues Bigo, does not produce a unified strategy, but is rather an effect of multiple forces that *nevertheless* produce domination. In a similar manner, if the totality of practices and discourses that produce collateral damage are constituted through the actions and pronouncements of a highly diverse set of local actors and institutions within the armed forces, what do we make of the ‘policy’ as a whole? It suggests that public agencies and their associated procedures, techniques, and technologies, are organized around a common goal, namely the reduction or elimination of civilian casualties in warfare. This notion is depoliticizing because it obscures the institutional power of the armed forces as well as the strategic interest they might take in pursuing that goal. Rather than assume these expressions of policy to propagate hierarchically and from the top down - as formulations of intent or law through operationalization and finally to specific ways of doing things, SOPs, doctrine, handbooks, etc. – it is the network between the different

practices and discourses at work that must be understood as to the pathologies or effects of domination produced, unwittingly or otherwise.

The polymorphic analysis of practices outlined above provides a more fine-grained analytical lens: not only are the institutions involved dissimilar in terms of their purpose, composition, history, etc., they are also in and of themselves possible sites of resistance and variation in the implementation of policy, such as when a matter of military necessity must be judged by a military commanders against the prevailing conditions on the ground, or when advances in precision are subject to the capabilities and working procedures of the external actors that produce it operationally, mechanically, or fiscally. These disparities, in turn, call into question the feasibility of studying collateral damage as an overarching policy, where such conceptual unity might mask a variety of disagreements as well as differences in implementation and interpretation. Rather than subsume these elements under one ‘complicity’ of domination that would eliminate such specificity, they can be retained in their difference so as to illuminate the web of actors and institutions which produce and contest concepts of collateral damage, in turn producing pathologies and effects of domination. In this way, the historical and local contingencies of the emergence of collateral damage within the armed forces come to light.

A recurring theme of Foucault’s scholarship is his analysis and deconstruction of the notion of sovereignty. In this regard, he critiques the ‘juridico-legal theory’ of sovereignty which posits sovereignty as indicative of an opposition between the State and civil society or bourgeoisie and working class. In doing so, it negates the local sites of resistance against hegemonic technologies of power, such as political rights (Foucault, 1980, p. 103; 1991c). In a discussion on the emergence of a common conception of the rights of man, Foucault writes,

Dialectical logic puts to work contradictory terms within the homogeneous. I suggest replacing this dialectical logic with what I would call a strategic logic. A logic of strategy does not stress contradictory terms within a homogeneity that promises their resolution in a unity. The function of strategic logic is to establish the possible connections between disparate terms which remain disparate. The logic of strategy is the logic of connections between the heterogeneous and not the logic of the homogenization of the contradictory. (Foucault, 2008, p. 42)

The *dispositif*, sometimes translated as *apparatus*, is the analytical object that achieves this and ties the genealogical approach together. It is also a potent methodological device

that avoids the pitfalls of representing ‘collateral damage’ as one united, coherent strategy of the United States or any one military service. In a discussion hosted shortly after the publication of the first volume of Foucault’s *History of Sexuality*, Foucault defined the *dispositif* as

a thoroughly heterogeneous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions - in short, the said as much as the unsaid. Such are the elements of the apparatus. The apparatus itself is the system of relations that can be established between these elements. (in Foucault, 1980, p. 194)

Identifying the *dispositif* is an exercise in identifying pathologies of power and effects of domination without lapsing into binaries of a ‘global complicity’ vis-à-vis defenseless civilians. By keeping the polymorphous elements of the *dispositif* apart, it preserves the complexity of a contested and constantly changing field. In the context of this dissertation, reconstructing the strategic logic between the emergent regimes of legal, military, political and technological practice and discourse and the sites of negotiation within the armed forces is key to the repoliticizing endeavor.

The *dispositif* posited in *Discipline and Punish* is one of disciplinary power which in turn is juxtaposed with a *dispositif* of sovereign power. Sovereign power is embodied, personal, equipped with symbolism and fanfare, and appears like a bolt of lightning to restore equilibrium; disciplinary power is anonymous and uninterrupted. In a 1973 lecture, Foucault explained the relation between the family, which he saw as modelled on a sovereign *dispositif*, and the disciplinary systems (Foucault, 2006b). Families, argues Foucault, are heterotopic in that they consist of a multitude of contractual bonds, bonds of property, and collective commitments, recalling the organization of society in the *ancien régime*; disciplinary power, on the other hand, is monotonous and isotopic, working instead by classifications and standardized procedures and general schemas. This is not to say that the two types of *dispositif* are inimical: the family, as Foucault argues, serves as the interlocking point for the injection of individuals into disciplinary systems (Foucault, 2006b). In his *History of Sexuality*, Foucault argued that a *dispositif* of sexuality was superimposed upon, and gradually reduced the importance of an apparatus of alliance of noble and royal kinship; in a series of lectures given later in the 1970s, Foucault (2007) identified *dispositifs* of *security* intervening in the same space that those

of sovereignty or discipline might, viz. as a regulatory power against the penal or theatrical power of the other.

In keeping with Foucault's distaste for metahistory, the *dispositif* is not a world-historical force or spirit driving progress. Instead, the logic of the connections between the elements of the *dispositif* is strategic. Foucault often accentuated, especially in the *History of Sexuality*, that a model of law was inadequate to understand the workings of power. Discourses by themselves cannot answer, he argued,

what strategy they derive from, or what moral divisions they accompany, or what ideology - dominant or dominated - they represent; rather we must question them on the two levels of their tactical productivity (what reciprocal effects of power and knowledge they ensure) and their strategical integration (what conjunction and what force relationship make their utilization necessary in a given episode of the various confrontations that occur). (Foucault, 1978, p. 102)

Law, in other words, may come into play in various strategies at different times. This, at a glance, seems also to be the case for civilian casualties and collateral damage: law does not merely fill a punitive or prohibitional role, but is also very present in public discourse legitimizing American and Western approaches to warfighting. Ontologically, Foucault conceived of discourse as not an unbroken flow but as a series of discontinuous segments. In this way, the *dispositif* – the strategic network binding discourse to the other elements – is actualized differently according to the strategy in play and the forces at work. For that reason, I am not positing a *dispositif* of collateral damage which came into being all at once and then remained the same, but rather one that emerged gradually and in a contest between rivaling discourses and practices, particularly that of *bonus damage*. It is important here to be clear, as Bartelson (1995) frequently emphasizes, between claims or notions that can be raised *within* history and those that are extra-historical or transcendental. That is why a genealogy of collateral damage, which in the present is tangible in its self-evidence, is precisely also a *history of the present*; not in the sense that the *dispositif* of collateral damage has now reached its fullest manifestation, but that it is certainly identifiable as such and for that reason its descent traceable.

To clarify the movement from *bonus damage* to collateral damage, the conceptualization used in this thesis inhabits a middle position. According to Bussolini (2010), Foucault makes a distinction between *appareil* and *dispositif*, the former referring more narrowly to instruments of state power and the latter encompassing a wider range

of non-state discourses and objects. The topology of the dispositif must be so as to move beyond the state yet also be one that is not unified. Without this conceptual caveat, the possibility would exist that a dispositif were the result of the agency of some higher agent, contrary to what Foucault intended in his works. In other cases, authors have posited the existence of another layer of analysis above: Ian Shaw (2013), for instance, has argued for the existence of ‘multiple military, policing, and surveillance apparatuses that coordinate an increasingly dronified war on terror’ under the panoply of *Predator Empire*. Aradau and van Munster (2007) have outlined a dispositif of risk that has developed from insurance to precaution in response to the difficulties of governing the risks of terrorism, connecting a wide range of state and nonstate actors. In sum, the manner in which I use dispositif below it inhabits an intermediate position above the implements and instruments of the state or other actors with which they might intersect, but to which they do not simply correspond.

3.2 CONCLUSION

The genealogical method outlined above is a direct response to the limitations of current accounts of collateral damage, and the particular reading of Foucault above constitutes a targeted approach that will permit new conclusions to be drawn. It does so along four lines. First, by interrogating and denying metahistories of collateral damage, the notion that collateral damage is simply a function of emergent technology becomes subject to scrutiny. Second, by acknowledging the polymorphic quality of the subject matter, i.e. its distribution across institutions, technologies, and types of knowledge, it reasserts the complexity of a field which is often subsumed under an overarching ‘regime’ or ‘way of war’ in existing accounts. Third, by zooming in on the practices and local discourses that make up the ‘regime’ of collateral damage and their historical lineage, it reconstructs the contingency of the present and unseats procedures and ideas about civilian casualties that are firmly in place. This is done by reconstructing the intelligibility of historical events in terms of the mutations in discourse and changes or continuities in practice that made them possible and caused them to appear natural. Finally, bringing these pieces together, by introducing the notion of the dispositif, the web or relation between these discourses and practices that produces its own pathologies and hides its depoliticizing effects. Rather than a force of history, the dispositif as an analytical tool brings out the concatenation of

power and knowledge that appears to ensure clean, discriminate, and legitimate warfare, but which masks accidents and ingrained biases behind the guise of a better way of war.

4 INVENTING COLLATERALITY: POSTWAR CONTINGENCIES

4.1 INTRODUCTION

In November 1960, towards the end of his presidency, Eisenhower sent George Kistiakowsky, his science advisor, to Offutt AFB, Omaha, to learn of the state of the military's plans for nuclear war and the extent of 'overkill' of Russian cities. At this time, the first unified nuclear war plan was in the making, due to be in effect by July 1, 1961. Kistiakowsky found that according to this Single Integrated Operational Plan (SIOP), a city of comparable size and importance to Hiroshima was to be hit with four bombs totaling seven megatons, and his report "frightened the devil" out of Eisenhower (Arkin & Pringle, 1983; Kistiakowsky, 1977). On February 3, 1961, newly-appointed Secretary of Defense Robert S McNamara traveled to Offutt for the same briefing. He was accompanied by Marvin Stern, who noted that as a minimum, it called for "the launching of the U.S. strategic nuclear alert force in its entirety as quickly as possible. This included 2,164 megatons and was calculated to kill 175 million Russians and Chinese" (Spinardi, 1994, p. 220 supra note 63). This was merely the alert force, however; the full assault, to be launched as a pre-emptive strike, would involve 7,847 megatons and cause an estimated 285 million Russian and Chinese fatalities, not counting fallout victims in Eastern Europe or outside the Sino-Soviet bloc (F. Kaplan, 1983). McNamara was horrified at the prospect of an all-out, cataclysmic nuclear spasm, and set out to introduce options and flexibility into future war planning. It was against this backdrop – of total and limited war, nuclear annihilation and nuclear options – that a concept of *collateral damage* emerged which at once reflected familiar problems from the past world war and novel analytical approaches to strategic issues.

Seven years later, as the Vietnam War was reaching the height of its intensity, JCS chief Gen Earle Wheeler testified before the Senate Committee on Armed Services, noting that "we are taking moral considerations into account in a very major way in waging this war, something we did not do, by the way, in World War II, where we had no compunctions at all about attacking targets in heavily populated areas." (Air War Against North Vietnam, 1967, p. 149) And in the early 1970s, as the war was nearing its end, military spokesmen in Pentagon and in theater repeatedly assured the American

public that collateral damage and civilian casualties were being kept to a minimum, especially as accusations flew that dikes were deliberately targeted ("Air Force Outlines Rules for Bombing," 1972; Lippman, 1972; Treaster, 1972a; G. C. Wilson, 1972). During Operations LINEBACKER I & II, Nixon's bombing campaigns against North Vietnam, when laser-guided bombs had become more common, an officer in Saigon confidently stated that "with 'smart bombs' you assure yourself that there will be no collateral damage. In other words, they hit the target and not civilians." (Treaster, 1972b, p. 10) Partaking in these bombing campaigns were B-52 bombers on loan from the Strategic Air Command, the same command that was standing by to execute the SIOP, but the Emergency War Order never came. Restraint and precision, it appeared, had replaced the vicissitudes of total war, enabling a more humane and discriminate application of firepower. Expressions to this effect on the advanced technology and sensitive morality of warfare are common in the contemporary debate, but the emergence during the period of the term – collateral damage – warrants a closer investigation of the specifics of this apparent shift.

Is it possible that the philosophy underpinning an enormous analytical and practical apparatus directed towards the wholesale annihilation of enemy civilians in the hundreds of millions was rejected in the space of a decade? Existing histories of airpower offer different accounts of this that would understand the chain of events as either historically continuous or discontinuous. On the one hand are histories that emphasize the continuity of a particular American or Western 'style' of warfare that aims to annihilate or attrit (Grenier, 2005; Perice, 2007; Rockel, 2009; Selden, 2009; Weigley, 1977), in which the SIOP is rather the norm than the exception; or more specifically a continuation of the bombing philosophies, if not practices, of the Combined Bomber Offensive of World War II (K. P. Mueller, 1997). Some identify practical constraints to discursive constancy: for instance, an enduring commitment to precision-strike aerial bombardment that first developed out of the 1930s Army Air Corps Tactical School has been posited (e.g. Worden, 1998), while others have argued that the break with such doctrine was driven by an absence of reliable intelligence (Farquhar, 2004). On the other hand are explanations that emphasize discontinuity: Mann (1995) sees a longitudinal change in which later strategic airpower campaigns abandoned the idea of destroying nations in favor of strategic 'paralysis' (see also E. Kaplan, 2015), while Pape (1996) posits the existence of different 'models' of thought each of which include different, historically contingent

assumptions about the function of civilian casualties. Finally, some scholars assert a period of increasing divergence between civilian control over nuclear policy and actual plans (Ball, 1982; Nye, 2011) as the result of a period lacking specific policy guidance, opening a vacuum for strong personalities like LeMay's to fill (Rosenberg, 1983). All of these approaches offer important insights into the discourses and techniques of power in play at the level of the distribution of statements; they suggest that nuclear policies do not operate in a realm separate from 'normal' airpower doctrine (i.e. conventional), but are instead institutionally and intellectually contiguous, if not overlapping, despite the gradual emergence of a nuclear 'taboo' (Tannenwald, 2009). They also, however, point to problematic historical contingencies, especially in regards to the role of precision. The new political significance of civilian fatalities cannot be assumed to spring from the introduction of novel weapon systems when several conflicting discourses existed simultaneously in different institutional settings. It is therefore necessary to reconstruct the historically contemporaneous context, not to lay the issue of civilian casualties to rest once and for all, but to recover the contingency of its historical trajectory.

Uncovering this contingency in terms of the objective of the thesis requires a foregrounding of notions of civilian deaths where other histories have traditionally focused on formal Air Force doctrine, precision, etc. To achieve this, I juxtapose the familiar concept of collateral damage to an alternative and historically preceding idea about the function of civilian deaths, *bonus damage*. By doing so, I interrogate the two notions that 'moral' bombing is a distinctly postwar phenomenon and that technology enables it, respectively. A closer inspection of this apparent transition will bring out contingencies in the history of the application of force at specific moments of negotiation. I render these major events intelligible by casting light on the extensive web of practices and discourses that made them possible and desirable rather than deducing their 'logic' from an overarching history. This chapter is structured into two major parts corresponding to the aforementioned juxtaposition: bonus damage opposed to collateral damage. Under each heading I first outline the discourse, then proceed to show the technical practices and domains of knowledge about war by which everyday techniques of targeting and planning in particular become effective and meaningful, but also the significant ambiguity that reinforces the fallacy of viewing the history of collateral damage in terms of precision.

4.2 BONUS DAMAGE

‘Bonus damage’ was the notion that additional damage to the enemy, whether intentional or otherwise, is advantageous. The early and influential deterrence theorist Bernard Brodie wrote in *Strategy in the Missile Age* in 1959,

We must recognize that there is, unfortunately, a common tendency among strategic bombing analysts to regard every additional increment of injury inflicted upon the opponent, certainly including injury to population, a military advantage. (Brodie, 1959, p. 214)

Forty years later, Colin Gray (1999) wrote that the contemporary ‘post-heroic’ United States no longer had any visible notion of bonus damage attached to its nuclear arsenal, being instead preoccupied with precision and reduction of collateral damage. The divergence between conventional and nuclear weapons, however, was not always reflected in doctrine and airpower theory; instead, in the postwar period the implications of nuclear weapons were novel and their implications contested. At the time the SIOP, with its millions of estimated casualties, testified to the institutionalization of bonus damage.

The immediate interpretations of the atomic bomb fell into at least three camps. Bernard Brodie was of the conviction that atomic weapons were set to revolutionize strategic affairs. As one of the first to systematically spell out the implications in his 1946 *The Absolute Weapon*, he argued that the atomic bomb’s “enormous destructive potency is bound vastly to reduce the time necessary to achieve the results which accrue from strategic bombing – and there can no longer be any dispute about the decisiveness of strategic bombing.” (p. 57) Although this line of reasoning might have sat well with the proponents of strategic bombing amongst air power theorists, Brodie derived a logic of deterrence rather than one of warfighting because of the difficulty of defending against such attacks. Here, Brodie was opposed to the opinion of Robert Oppenheimer, amongst others, who thought the atomic bomb a purely offensive weapon that might ultimately lead to humanity’s end (Rhodes, 1995). Finally, there was a third category of those who believed nuclear warfighting – and ultimately, victory – was possible, as exemplified early on by William Borden¹⁵, a wartime bomber pilot who would later direct Congress’

¹⁵ Borden, however, was not in favor of targeting cities though he implicitly acknowledged the function of bonus damage. He held that “a full-scale atomic war will not be won by pulverizing cities and industry,

Joint Committee on Atomic Energy (Herken, 1987; F. Kaplan, 1983; Rhodes, 1995). National security policy in the immediate postwar period reflected a mix of these perspectives with military planning skewed towards the latter. This is highly significant. Deterrence was an emergent discourse, not an inherent property of nuclear weapons. For that reason, the effect of a nuclear strike on diplomacy and the outcome of the war was something that had to be determined at the intersection of existing discourses on warfighting, which derived from the use of conventional weapons, and a growing body of experimental thinking and doing in the realm of nuclear weapons.

In the armed services, a flurry of activity followed to come to terms with the martial and budgetary potential of the new weapon. In the newly formed Air Force (USAF), the predecessor of which had dropped the bombs on Japan, proponents of strategic bombing seized the initiative at the outset. In an official history of the USAF participation in the atomic energy program, it is argued that

several of the implications of the atomic bomb for future warfare were immediately apparent to the most casual observer. Fitted into the Army Air Forces strategic bombing system, it seemed to give a final practical expression to the theories of Douhet, which had so strongly influenced the build-up of that system. (Little, n.d.-b, p. 240)

Giulio Douhet, an Italian military theorist and one of the foremost proponents of strategic airpower, wrote during the interwar period. Douhet (1998) had argued that an independent air force would be able to win the war by first assuming command of the air (viz. air superiority), then bombing the commercial and industrial centers as well the population itself; in other words, cities, since these were the weakest links of the ‘moral resistance’ of the enemy and would lead the enemy nation to crumble. The prophecy of Douhet’s vision, while it might not have been borne out by the reality of World War II¹⁶, seemed “ready-made” for the atomic age (Brodie, 1952; Herken, 1985). In the context of air power, this was thus the beginning of the ‘air-atomic age’, the era of the manned bomber and the possible fulfillment of prewar promises of strategic bombing. “Once the atomic

though this may be done as an incidental measure, but by destroying the enemy’s military power of retaliation. The tactical issues transcend the strategical.” (Borden, 1946, p. 87)

¹⁶ In fact, the United States Strategic Bombing Survey (USSBS) had found that aerial bombardment, while discouraging, did not have this effect. “Although examination of official records and those of individual plants shows that absenteeism increased and productivity diminished somewhat in the late stages of the war, by and large workers continued to work. However, [*sic*] dissatisfied they were with the war, the German people lacked either the will or the means to make their dissatisfaction evident.” (D’Olier, 1987, p. 12)

air siege is layed [*sic*] on, there is little more to do from a military standpoint”, wrote Col Dale Smith (1948, p. 14). An atomic bomb carried by a sonic plane “will give the airplane the qualities of invincibility and invulnerability with which Douhet believed it to be endowed”, wrote LtCol Dickman (1948, p. 6), surmising that fighter escorts might no longer be necessary in the future. “Fear of power whose destructive potential was so great as to be incalculable” gripped the hearts of those who witnessed the destruction of Hiroshima and Nagasaki (Peters, 1949, pp. 11-12). In an article reprinted in the Winter 1947 edition of *Air University Quarterly Review*, British LtGen Martel summed up an influential notion: “With the latest weapons, however, such as atomic bombs, it will be perfectly possible for one nation to destroy another nation completely in a few hours” (1947, p. 86; see also Futrell, 1989). The ‘compression’ of time and space was important, but dangerous. The mission, remarked MGen Fairchild in the same issue, was the campaign (1947). In an essay that would become widespread in military syllabi, Edward Warner subsumed these debates under the “fundamental doctrine” of air power, namely that the airplane offered such unprecedented advantages as to justify its dominance of the armed forces, a viewpoint that gained increased currency with the decisive power of the atomic bomb (Warner, 1952). This feeling, along with the 1947 National Security Act that gave the Air Force its independence, set the stage for a fierce battle for control of the new weapons and the right to define their use¹⁷. With Tactical Air Command sidelined¹⁸, the strategic air campaign became the primary mission of the Air Force and nuclear bombs the primary weapon (Futrell, 1989b; MacIsaac, 1986; Worden, 1998).

In order to understand how *bonus damage* became (re)politicized and problematic and how *collateral damage* eventually came to encapsulate another perception of civilian deaths, this section attempts to reconstruct the historical context of the apparent shift. To do so, I explore the postwar targeting practices and discourses that enabled the institutionalization and depoliticization of bonus damage. First, I delve into the targeting

¹⁷ “Although Air Force thinkers never underestimated the destructive capabilities of atomic weapons”, wrote Robert Futrell, a historian of Air Force thinking, “they apparently required time in which to grasp the potential gamut of effects that these weapons held” (Futrell, 1989b, p. 237). Nevertheless, as J. T. Greenwood (1979) has argued, the intellectual underpinnings of deterrence had developed and coalesced in the Air Force as early as 1945-46.

¹⁸ Budget allocations mirrored this trend: between 1949 and 1956 the Air Force share of the annual defense budget rose from 12.1% to a staggering 47.7%, where it stayed the remainder of the decade; out of the Air Force allocation, SAC received approximately one third, or up to 17% of the entire defense budget (Meilinger, 2012, p. 299).

concepts used for the development of the SIOP and the knowledge about the effects of atomic warfare that made the excesses of the plan seem plausible and desirable to its authors, particularly the Air Force. Second, I examine a key targeting practice, the *Bombing Encyclopedia*, one of the first systematic global target lists ever to be produced and from which SIOP targets were selected. Third, I interrogate local practices of accuracy, particularly the annual SAC bombing competitions, to lay out the significance of precision in the context of general war, i.e. in preparation for execution of the SIOP. In this way, I reconstruct the historical basis for the notion of bonus damage and the foundation for an appraisal of the environment in which collateral damage emerged, and to qualify the character of the change that it implied.

4.2.1 SIOP

A war plan is a deeply knowledge-laden practice: it is based on and formulates ideas about (violent) means and political ends and about the effects of technical implements, both of which require extensive analytical and organizational capacities, and both of which were negotiated in successive war plans after the war; later, as the strategic ‘community’ expanded, they became the subject of vigorous debate by civilian strategists and political leaders (Bracken, 1983). Most of these plans were never transferred as guidance to the subordinate services¹⁹. Nevertheless, their practices and the discourses surrounding them offer a glimpse of the arena in which bonus damage was negotiated and institutionalized. One of the most closely-guarded secrets in the United States defense establishment, the SIOP²⁰ is shrouded in mystery and its briefing to the president has the status of an initiation ceremony (Freedman, 2003). This first SIOP, named SIOP-62 for its implementation in fiscal year 1962, was the result of a number of years of postwar military planning and widespread reorganization that saw the ascendancy of the newly-independent Air Force, especially SAC, as *the* delivery agent for atomic and later thermonuclear bombardment. The importance of a single document as secret as the SIOP should not be overstated. Instead, the SIOP was the object and result of contestation between the branches of the armed services and the other actors of the defense establishment, particularly when it came to the suffering of civilians.

¹⁹ This reflected, in the analysis of McFarland (1996), the contradiction between an increasing reliance on nuclear weapons on the one hand, and the inadequacy of current nuclear stockpiles as well as means of delivery on the other.

²⁰ The SIOP was renamed OPLAN 8010 in 2003 and is now managed by STRATCOM (Kristensen, 2013).

The negotiation of the SIOP is a display of the contested fields of knowledge about an emergent technology vis-à-vis a strategic concept of civilian death. Immediately after the war, JCS struggled to create coherent war plans and to incorporate the atomic bomb into a workable strategy amid interservice squabbling and the budgetary constraints of demobilization (Borowski, 1981; Ross, 1996). At the same time, a number of atomic test series were conducted to assess the effects of the bomb as well as to trial new designs. Meanwhile, the Joint War Plans Committee had since 1946 produced a number of limited strategic studies in the so-called PINCHER series. In the following years, the Committee (renamed the Joint Strategic Plans Group, JSPG) was directed to produce a number of short and long-range war plans, expanding their strategic purview. These early atomic plans emphasized the same types of targets that were considered important during World War II, namely enemy industrial facilities and military forces (Ball, 1983). In plans BROILER, CHARIOTEER, BUSHWHACKER, and FROLIC, amongst others, attempts were made to develop coherent strategies for the use of atomic weapons. BUSHWHACKER, for instance, called for an initial aerial atomic offensive with munitions requirements being those necessary to “destroy the will and/or means of the population of those areas to support the Soviet war effort”, especially its capacity to produce weapons of mass destruction (JSPG 500/2 Annex B to Appendix B, p. 163, in Ross & Rosenberg, 1989a). Under this basic paradigm in which societies as such were pitted against each other, any measure of destruction conferred upon the enemy was potentially a step towards the Douhetian (and Clausewitzian) goal of breaking the enemy’s will.

4.2.1.1 ‘Primordial fears’: shock as bonus

The application of force required reflection on its ability to produce the desired ends, and operationalizing the atomic bomb was a main task in the preparation of an adequate war plan. In addition to physically preventing workers from producing war supplies, early war planners took a keen interest in the supposed psychological effects of the atomic bomb.

The Air Force was particularly interested in the bomb’s ‘shock’ effects which mixed with traditional targeting priorities in justifying *de facto* urban targeting. After the atomic tests at the Bikini Atoll in 1946 (Operation CROSSROADS), the JCS Evaluation Board produced a rather controversial report on their implications for atomic warfare. Besides underscoring that the bomb was mainly suited “against human life and activities in large urban and industrial areas”, it lamented the absence of systematic data on the

psychological effects of an atomic burst, “which must constitute an element of paramount importance in the selection of atomic bomb targets.” Such considerations had also guided the selection of targets in Japan a few years earlier, even if they considered industrial areas with adjacent houses to be purely military targets (Richard, 2016). Notwithstanding these limitations, the report fully subscribed to the notion of breaking wills and killing nations, couched in the evocative and flamboyant language of the early atomic era rather than the dry, mechanistic style of the SAC (see Weart, 1988). It argued that

of primary military concern will be the bomb's potentiality to break the will of nations and of peoples by the stimulation of man's primordial fears, those of the unknown, the invisible, the mysterious. We may deduce from a wide variety of established facts that the effective exploitation of the bomb's psychological implications will take precedence over the application of its destructive and lethal effects in deciding the issue of war. (JCS 1691/10, 29 December 1947 (p. 136), in Ross & Rosenberg, 1989c)

The report concluded that highly interdependent and industrialized societies, particularly the American, would be much more susceptible to these effects than isolated communities. In this way, the psychological effect was congruent with industrial targeting, the report argued, and as such constituted a novel effect consistent with traditional aiming points. Although these terms eventually disappeared from war plans, the logic behind them helped establish the perceived military necessity of targeting population directly or indirectly and reinforced the notion of bonus damage.

Gradually, as more sustained planning efforts were conducted, the extent of these vague but sweeping psychological effects were called into question. Planning efforts in the late 1940s eventually culminated in the first Joint Outline Emergency War Plan HALFMOON in 1948, later to be reworked into FLEETWOOD and finally TROJAN (Condit, 1996). The assessment of psychological effects on the civilian population continued to occupy planners throughout the decade. A passage from TROJAN reads “The purpose is to hit hard and to attack a large number of Soviet urban areas in the shortest possible time. It is hoped thus to exploit the effects of surprise and shock, to provoke the spread and compounding of disaster rumours, and by widespread damage to interdependent industries to complicate and retard processes of recuperation” (cited in Ball, 1983, p. 5). Operation SANDSTONE, a series of nuclear tests conducted in 1948, had brought good tidings about the ability to mass-produce atomic weapons, and with them the JCS ordered a number of reports on the use of nuclear weapons in force planning. One of these led to

the so-called Harmon report in 1949, which was tasked to evaluate the efficacy of the strategic offensive envisioned in TROJAN. Despite doubts on the effectiveness of nuclear weapons, including its ability to bring about a popular revolution against Soviet leadership, it recommended that as many as possible be applied to “appropriate target systems” (in Rosenberg, 1979, p. 73), citing rather more modestly a ‘shock’ effect if used early (Arkin & Pringle, 1983). The response was critical, in particular from USAF, and the report was forwarded to the Secretary of Defense expressing certain reservations including the still-unresolved psychological effects that would prevail (Little, n.d.-a).

While attempts to contest SAC’s conception of the shock effect were present during the early years of war planning, no rejection of bonus damage was translated into alternative planning efforts²¹. In this way, knowledge of the perceived effects unique to nuclear weapons intersected with planning practices to give further credence to the logic of collocation and the notion of bonus damage.

4.2.1.2 Designated ground zero

During a January 23, 1951 target board meeting, Gen Curtis LeMay expressed his opposition to targeting ‘system 245’, electric power grids:

General LeMay strongly emphasized and his point was agreed upon by the board the need for very careful selection of the target system [(redacted)] in order to conserve our stockpile of atomic weapons and he felt any target system picked that failed to reap the benefits derived from urban area bombing when a larger circular error is encountered than planned was wasteful and for that reason the basic target system of electric power was felt to be wrong. He agreed with priority on petroleum and atomic weapons, but felt that rather than attack the electric power resources we should concentrate on industry itself which is located in urban areas and when the circular error required is not made that a bonus will be derived from use of the bomb.

²¹ One atomic strike plan in particular during the period shows attempts to contest the USAF’s understanding of its own role and its style of all-out warfighting. Out of the Harmon report grew the comprehensive JCS Operation DROPSHOT, a plan submitted in 1949 for general war in 1957. It reasoned that “If it becomes necessary to attack satellite industry, it is considered that initially only conventional bombs should be used in order to spare friendly masses of population and to minimize our tasks of occupation and postwar recovery.” (in Brown, 1978, p. 292) In addition, it called for selecting targets the destruction of which “would not involve large masses of population.” (p. 201) Regardless, the study also noted that while the “psychological effects” of the employment of atomic weapons had not been studied in detail, destruction of the enemy’s will rather than the means to resist might be feasible through selective or mass attacks on people (p. 23). It might also, as Ball (1983) has argued, indicate an ‘incipient notion’ of the need to avoid bonus damage, in a manner similar to TROJAN’s withholding of Moscow’s total atomization until D-Day + 9. Farrell and Lambert (2001) go as far as to categorize DROPSHOT as a counterforce plan, placing great emphasis on the fact that the plan was never approved by the JCS.

As an example of what he tried to stress, he cited attacks on aircraft plant [*sic*] in Tokyo in the late war. (LeMay, 1951)

The targeting practice of the SIOP did not assume parity between the target and the point of impact, nor between a strike and the destruction of a target. Instead, a concept of ‘precision’ was negotiated between practical constraints, the balance between assurance and overkill, and the possibility of bonus damage. Defining DGZs – aimpoints for nuclear weapons – was thus an additional layer of targeting praxis. The other report ordered by the JCS after SANDSTONE, produced by the Weapon Systems Evaluation Group, made this clear. It noted that with respect to targeting, since single industrial installations required the greatest accuracy and built-up areas (i.e. cities) the least, “the tendency has been to select aiming points so as to obtain “bonus” damage to other industries in the complex, and, in the system proposed for OFFTACKLE [a 1950 war plan], the majority of the bombs are aimed to destroy several installations simultaneously.” (JCS 1952/11, p. 186, in Ross & Rosenberg, 1989b)

SAC’s discourse of bonus damage was underpinned by a notion of collocation, i.e. a functional and geographical contiguity that made occasional imprecision productive. As the 1940s drew to a close, the reliance on an aerial atomic striking force had been well established, and with it many assumptions originating from the Air Staff. “I think,” recalled Col Grover Brown of the Directorate of Intelligence in a 1951 lecture, “it was a sort of a shock to a lot of people when a few began to talk about bonus effects and industrial capital and particularly when some began to ask what was a city besides a collection of industry?” (quoted in Futrell, 1989b, p. 238) In 1948, Gen Curtis LeMay had assumed command of SAC. “LeMay’s conception of SAC”, Peter Roman writes, “rested firmly on an unflinching commitment to the decisiveness of strategic air power as evidenced by World War II.” (1993, p. 48) LeMay, who had been in command of strategic air operations against the Japanese home islands during the war, now applied his experience of the all-out strike to the organization of the atomic bomber force: his first SAC Emergency War Plan, delivered in 1949, called for the destruction of 70 Soviet cities, causing an estimated 2.7 million civilian deaths and 4 million casualties (Rhodes, 1995); successive plans magnified these numbers²². In both a moral and a doctrinal sense, LeMay

²² HARROW, which was developed by SAC for use in HALFMOON, noted that “aiming points would be selected with the primary objective of the annihilation of population, with industrial targets incidental” (Little, n.d.-b, p. 265).

thus saw nuclear weapons as merely a new type of weapon, not one that changed the fundamental assumptions of air power philosophy (May, 1999). Under these assumptions, the city was the *de facto* aimpoint for nuclear weapons, just as it had been for conventional weapons during the war²³. Paul Johnstone, a target analyst at the Air Targets Division, recalled that not only was bonus damage achieved by selecting appropriate DGZs, but was even “considered a plus in evaluating the desirability of a target” (Johnstone, 2017, p. 83). In this way, even if the population was not targeted per se, targeting philosophies and practices meant that it would make little difference in reality²⁴.

SAC’s tendency to expand war plans underscores bureaucratization, routinization, and self-referentiality of practices associated with the planning effort itself. Successive nuclear war plans during the 1950s had continued the trend of nominating yet more targets as more weapons and increased intelligence became available (Richelson, 1985)²⁵, whereas the Korean War provided the impetus for SAC to increase its atomic stockpile and fleet (Roman, 1993). As of yet, no SIOP has been declassified in its entirety; instead, researchers have pieced together its assumptions and targeting philosophies on the basis of reports and comments made by persons or institutions not directly affiliated with the SAC or the supporting agencies, including the Joint Strategic Target Planning Staff (JSTPS). By the time the first SIOP was in force, the nuclear scarcity of the previous decade had been remedied to the extent that the first nuclear plan was in fact “a capabilities plan, based on what the U.S. could launch against the enemy rather than on what it should launch to best achieve its political objectives” (G. A. Reed, 1986, p. 142). Intersecting and interlocking with SAC’s war planning practices were other routine targeting measures ensuring *inter alia* the strategic offensive.

²³ As a counterexample of the wasteful use of bombs, in the Pacific theater “[i]naccurate force direction resulted in failure with no accompanying “bonus damage” that often resulted when land bombers missed their original targets.” (Millett, Murray, & Watman, 1986, p. 34)

²⁴ Army Gen Kenneth Nichols, who was involved in developing doctrine for thermonuclear weapons, indeed noted that studies during the period showed that casualties resulting from either type of strike would result in largely the same number of civilian deaths (Nichols, 1987, p. 278), while Hubler (1958, p. 10) cites a ‘high SAC general’ for a figure of 50 million civilian deaths in the first wave, attacking only military targets with the best accuracy possible. Thus, as John Curatola notes, when USAF COS Nathan Twining in 1953 said that “it would be a moral blunder and a military blunder to concentrate our hopes for victory on the piling up of casualties” (2015, p. 188), the existence of an entrenched bonus damage methodology defied him.

²⁵ One such document is a memorandum written by a Navy captain who attended a SAC briefing in 1954. In his words, the SAC plan would leave the Soviet Union “a smoking, radiating ruin at the end of two hours” (Rosenberg & Moore, 1981). In this case, the survival of the bomber force was understood to require that as many targets were hit with the fewest, largest bombs available in a “bomb as you go”-style raid.

4.2.1.3 'Optimum mix'

In the JCS briefing on SIOP-62 to the president, it was argued that the best targeting strategy - one that would allow the United States to prevail in general war - was neither that of pure military nor pure 'urban-industrial' targeting, but an 'optimum-mix' strategy that had been recommended by the so-called Study No. 2009 of the Net Evaluation Subcommittee. Despite this distinction, the briefing noted that

[t]he very great majority of targets now covered by the SIOP are military in nature. For example, of about 1000 DGZs covered by the plan, some 800 are military targets. Further, atomic weapons are relatively non-discriminating, particularly with respect to fallout. Consequently, because of the relatively high number of military targets, the proximity of many of those targets to urban-industrial centers, and the characteristics of atomic weapons, there is considerable question that the Soviets would be able to distinguish between a total attack and an attack of military targets only even if US authorities indicated that the US attack had been limited to attack of military targets. (US Department of Defense, Joint Chiefs of Staff, 1961, p. 17; emphasis in original)

A 1959 RAND study by Andrew Marshall and Herbert Goldhamer had come to the same conclusion: a mixed strategy outranked the pure military ('counterforce') or population ('countercity' or 'countervalue') strategies. "The greater effectiveness of this strategy as compared with others included in the study," it noted, "rests largely on the assumption that heavy civilian casualties can be imposed as a "bonus" with only a small or moderate sacrifice of the effectiveness of the attack against military targets." (Goldhamer, Marshall, & Leites, 1959, p. vii) In early 1960, the Joint Staff noted that "targets will continue to be the enemy's missiles carefully selected for whatever bonus effects are possible, i.e. factories, etc., not just people" (US Department of State Policy Planning Staff, 1960). The destruction of populations was not incidental or unintended; bonus damage was understood to be central to the war-winning strategy. The distinction between military and nonmilitary targets, while maintained in practices of planning, exercise, and target nomination, was erased at the point of execution.

4.2.2 The Bombing Encyclopedia

The *Bombing Encyclopedia* (BE), later renamed the *Basic Encyclopedia*, was a practice of collecting, collating, and assembling data on potential targets that could then be extracted and used for other lists, such as those that are used in concrete war plans, and assigning a number to it containing a World Aeronautical Chart identifier and a unique

identifier. The BE was first dreamt up in the wake of World War II, when a systematic register of world targets was required as part of the strategic intelligence effort. Born in 1946 in the Air Intelligence Division, the BE was part of a drive to remedy the dire lack of information on targets in the Soviet Union, especially the Urals, just as war planning was commencing in earnest (Aronsen, 2001; Moody, 1995). The other two steps were the analysis of the industrial potential of each target and the creation of target folders, respectively (Farquhar, 2004). These Air Objective Folders, in turn, included information on the materials and vulnerability of each entity (to nuclear devastation) and were used to train SAC personnel, while the CIA flew reconnaissance missions to photograph cities and installations (Brugioni, 2011). Nomination for inclusion required the submission of a ‘Significant Summary Statement’ of 50 words produced by analysts in offices focus on particular types of targets, including political and economic targets, petroleum depots, airfields, industrial centers (Nash, 1980). In this way, the information collected “did not only relate to the immediate military relevance of a particular facility, but also to the complex web of economic interconnections into which it was embedded: the number of employees, the volume of its total production, the raw material inputs it used, and the finished products it produced.” (Collier & Lakoff, n.d.) Target information was punched into computers and could be retrieved using “runs” that would generate the necessary list for a desired target system (Schmidt, 1993).

Although the immediate operational need was thus the confrontation with the Warsaw Pact, the BE became an operational routine and was thus not limited to a particular geographical area, neither in intention nor in practical scope. The work continued on gathering all manner of hypothetical strategic targets throughout the world, focusing initially on the Soviet Union and its satellites, and in 1952 a CIA paper was able to report that “current target system studies” were reasonably adequate for joint and operational planning as far as the USSR was concerned, but less adequate for Western Europe and the Far East (CIA, 1952). Meanwhile, the BE had grown: from around 2,000 targets in 1946 to 60,000 in 1960 for the production of the SIOP (US Department of Defense, Joint Chiefs of Staff, 1961)²⁶. Yet the BE has not only been used for nuclear

²⁶ Clinard (1959) notes that the Target Data Inventory (TDI), another database, was designated as the source of the so-called atomic annexes to major war plans by 1957 by the JCS, and that the BE and TDI contained a ‘common fund’ of information. In the 1980s the TDI, now managed by the DIA, contained upwards of 500,000 targets (Ball, 1983).

war plans. Revealing of the sheer scale of the undertaking is a testimony from a 1967 hearing mentioning a staggering 9,000 targets in North Vietnam ranging “all the way from fine alloy and steel and iron works to a pagoda”, with approximately 5,200 of these being military targets (Air War Against North Vietnam, 1967, p. 146)²⁷. A 1965 Intelligence Board report noted that the BE had originated a numbering system now used beyond it which “has been extended to apply to all cities, place names, and other installations – industrial, military, governmental – which can be geographically located at fixed positions.” (US Intelligence Board, 1965, p. 5) BE numbers remain in use for such fixed installations, i.e. ‘facilities’, today (US Department of Defense, Chairman of the Joint Chiefs of Staff, 2016; US Department of the Air Force, Curtis E. LeMay Center for Doctrine and Development, 2019).

The BE is not unique in the sense that many similar and derivative databases exist in the USAF, in other air forces, in the intelligence community, etc. Rather, it is both a practical technique of power and the expression of a desire to subdue a geographical totality to the programmatic logic of the target. Lists such as this are not merely an expression of the goals and interests of the institutions behind them; listing, as it has been argued recently, “is a *performative* technology that helps constitute the objects and categories it targets or compiles.” (De Goede, Leander, & Sullivan, 2016, p. 6; italics in original) Likewise statistics, as Ian Hacking (1990) has shown, appeared to spring from data gathered about populations. In the same way, the BE is not a static result as much as it is a social artefact generated by and generative of discourses and practices: it produces actionable knowledge about the enemy, especially in terms of the appropriateness of targets. Lynn Eden (2004), contrasting the BE with a British wartime effort, the so-called *Bomber’s Baedeker*, found that

[i]n the *Bomber’s Baedeker*, targets were urban areas; the precise location of specific installations was not germane. Urban areas were treated as a whole. The *Bombing Encyclopedia* listed individual installations, chosen as part of larger target systems. The function and exact location of individual installations was paramount; that the destruction of any one installation would inevitably mean vast damage to a large areas surrounding it was not important. (Eden, 2004, p. 109)

²⁷ Robert McNamara thought many of these approximately 5,000 targets ‘worthless’, he said during a later meeting later that same year. At that point, 1,700 had already been hit, and JCS considered another 412 “important fixed targets”, 24 of which were deemed off limits for being too close to Hanoi and Haiphong (T. Johnson, 1967).

On the one hand, it is not possible to deduce that the BE simply *expresses* a strategy of bonus damage; on the other, nor is it a neutral tool removed from politics, since it is imbued with the political purpose of preparing for war and the institutional routines of an Air Force fresh out of World War II. Instead, as a technique of power, the BE assembles the elements of an industrial society the destruction of which will ensure its demise. The various fields of expertise suggest that there is in fact a stratified but finite list of fixed installations to that effect. The BE is not operational except in the very general terms of industrialized societies: its logic is rather one of security as a matter of encyclopedic, all-encompassing knowledge. The BE interlocks with the discourse of bonus damage as well as practices like the SIOP, since it thus achieves in practice the reduction of the enemy to a finite totality that is then approached as such. The nexus of totality, instantaneity, and simultaneity, which emerges at the intersection of these discourses and practices, produced the particular thinking about targets that made bonus damage desirable. By excluding them from its field of knowledge, the practice of the BE ensured that considerations of civilian casualties be dealt with in other phases of the targeting process, such as the selection of aimpoints, weaponeering, and separate modeling efforts (Clinard, 1959).

4.2.3 The Bomb Comp: accuracy before precision

An entry in the official history of SAC for the year 1948 reads,

Confronted with serious manning, supply, and administrative problems throughout its first two years of existence, the Strategic Air Command was unable to devote much time to bombing practice. Bombing accuracy fell far below desired standards. Hoping to stimulate interest in improving bombing accuracy, General Kenney decided to hold a bombing tournament, which came to be called the SAC Bombing Competition. (Hopkins & Goldberg, 1986, p. 15)

These ‘bomb comps’ became an annual affair²⁸; after assuming command of SAC, General LeMay expanded bomb scoring exercises and introduced strict discipline and a rating procedure for almost all activities, with crews specializing intensely for their particular component of the strategic bombing mission (Borowski, 1980). Early operational analysis studies had indicated that the best way to improve accuracy was to improve ‘personnel and techniques’ rather than modifying the radar equipment used for

²⁸ The SAC Bomb Comp was neither the first nor the only flying competition of its kind, and SAC crews participated in other competitions as well (Callaway, 2009).

targeting (Historical Branch, 1950). Training missions included the whole gamut of activities that would be required in case of an Emergency War Order (Hirsch, 1964). A contemporary *Air Force Magazine* article laid out a typical training mission profile: “flying a precision point-to-point course back and forth over the Southeastern states navigating by the stars; a rendezvous with a tanker plane for in-flight refueling; actual visual bomb drops of 500-pound conventional bombs to make sure the release mechanism works; and—the climax—the radar bomb run on the main target.” (Norris, 1956) These simulations (in which onboard radar equipment was activated and a ground-based radar would estimate the trajectory and accuracy of the imagined drop), along with the bombing competitions themselves, usually ‘bombed’ American cities²⁹. To avoid crews’ familiarization with the bombing objectives that might drive scores down artificially, the railroad-based Radar Bomb Scoring (RBS) Express was set up. Purchased from US Army stocks and fitted with radar equipment, fuel, and supplies the 10-car, 65-man RBS Express relocated to a new site every 45 days³⁰. The number of radar bomb runs increased precipitously, from 888 in 1946 to 43,722 in 1950 (Meilinger, 2014). Accuracy was further improved by conducting mock bombing missions against pinpoint industrial targets which simulated as nearly as possible the Russian targets which the crews were studying (LeMay, 1954).

There is evidence to suggest not only that these training regimes worked, but that accuracy as a parameter of skill and professionalism was highly regarded inside SAC. Radar bombing accuracy improved from a CEP in excess of 2 miles in 1948 through 6,000 feet in 1949 and to 1500-1600 feet in 1953 (Borowski, 1980; LeMay, 1954). Visual accuracy improved from thousands of feet to 500-600 over the same period of time (cf. Finn & Berg, 2004). In addition, in 1949 LeMay introduced and in the early 1950s expanded spot promotions for exceptional performance; a spot promotion was expected following high placement in the bombing competition, but promotions might be revoked following failure to maintain the standard (Adams, 1999; Deaile, 2007)³¹. Radar bombing

²⁹ Naturally, only radar bombing was conducted on these occasions (e.g. "Bombing Area Told," 1962; "British, Yank Bombers In Bomb Drill," 1957; "Simulated Air Attack Set for Wednesday," 1957).

³⁰ In this way, many major American cities were ‘bombed’ (e.g. "3 Radar Trains to Rove Nation, Spot 'Bombings'," 1961; "Jet Bombers to Descend Near Alto For Series of Mock Air Attacks," 1961; "U.S. To Use Trains For Radar 'Targets'," 1961).

³¹ Spot promotions were increasingly viewed as unfair by the rest of the Air Staff, which did not have the same kind of opportunities to advance, but it was not until LeMay’s retirement in 1966 that the system was abolished (Mitchell, 1996).

was not merely a matter of training: during the Vietnam War, the *Sky Spot* project, essentially a reversal of the bomb scoring system (where radars were used for offset targeting rather than as aimpoints), bombers achieved greater accuracy than would have otherwise been possible (S. Alexander, 2006).

These early practices of accuracy call into question determinist explanations of collateral damage as a function of precision. It is *prima facie* difficult to imagine any necessity for precision without the reconstructed historical contingency, since the destructiveness of nuclear weapons would appear to contradict any demand for accuracy at all; yet such a position neglects not only the continuity of concepts of professionalism and expertise but also the logic of assured destruction, which required that the Soviet Union be disarmed in a single blow. Practices like the bombing competition not only demonstrate the possibility of practices of precision based in large measure on skill rather than technical devices: not independent of technology, but technological assemblages of discipline and repetition in and of themselves. They also suggest that precision and (low) collateral damage are not necessarily interlinked, but instead the result of a specific concatenation of strategy and discourses on the nature of war. Here, a logic of security through assurance prevailed. Rather than detached from the mundane, everyday tasks of accuracy and targeting, the extreme excesses of the SIOP were ensured by an assemblage of practices permitting total targeting and delivery within the standards of precision of the day.

4.2.4 The logic and practice of mass destruction

The assemblage of practices and discourses that would eventually enable the SIOP to be codified (and, if needed, executed) reproduced at almost every stage of the war planning process – target system identification, target selection, determination of aimpoints, mock bombing runs, etc. – the notion of bonus damage. It did so not as a ‘property’ of each practice or discourse, since each might have its own logic or multiple ends within an institutional specificity: bombing competitions, for instance, were a local practice of accuracy per se, but were also in professional and reputational ways required for the credibility of the war plan. Rather, the commitment to bonus damage was as an *emergent* feature of the assemblage, or *dispositif* as a whole. At the same time, bonus damage reproduced discursive elements of World War II experience and strategic airpower theory more generally, such as in the understanding of the role of the aerial offensive and the

appropriateness of its effects to the attainment of a political end. Over the course of this formative period, bonus damage in a sense became *necessary*. As Jeffrey Richelson (1985) has observed, the threat of bonus damage held so much sway in strategic thought that planners would likely have been ‘perturbed’ if a nuclear weapon capable of striking without any was introduced. In that way, nuclear weapons came to encapsulate the menace of total war as a function of the perceived inevitability of such damage. It is here that the analytic of power and knowledge helps to establish the conditions for the emergence of that ‘fact’. This inevitability came about not as a matter of course, but of interlinked practices and technological research which produced ever more comprehensive war plans, target lists, delivery vehicles, and larger bombs. These were intensely spatial: collocation of cities and military facilities provided the internal logic and outward justification for annihilating civilians *en masse*. These practices in turn were underpinned by knowledge of violent means and ends of nuclear war and guaranteed by the institutional ensemble of the SAC, the JCS, the JSTPS, in short, the relations of power which ensured the potential air-atomic strike.

At the same time, bonus damage did not eliminate all competition: there were local sites of resistance, including internally, in the services, with the Department of Defense, and later in public. Here, alternative concepts of civilian casualties were formulated and became part of discourses and practices that would eventually permit the emergence of a concept of collateral damage.

4.3 COLLATERAL DAMAGE

The statements on collateral damage and the protection of the civilian population emerging over the course of the Vietnam War suggest a disjuncture or the emergence of a new regime or dispositif of civilian casualties. Subjecting these statements to the same analytic, of uncovering the discourses and practices that enabled them, will permit an appraisal of the nature of this shift and a basis for a grounding of a new critical history of collateral damage. The following two subsections interrogate the emergence of collateral damage discourse in light of the contemporaneous critique of bonus damage, transitioning into bombing practices during the Vietnam War.

4.3.1 Damage limitation: institutional and discursive resistance to bonus damage

One prominent avenue through which a recasting of civilian casualties emerged was through scientific discourses on the symbolic and diplomatic uses of gestures of using and withholding uses of force. These were in turn enabled particularly by strengthened civilian control over the armed forces, and changes in practices that relegated entrenched bonus damage practices to an increasingly marginal and specialized role as general war receded from the realm of possibility. Instead, the symbolic value of civilian casualties enshrined in the notion of collateral damage emerged.

This section accomplishes two tasks. In this section, I interrogate the dynamics of resistance to the dispositif of bonus damage that was institutionalized within the Air Force. I do so through a reading of the contemporaneous discourses on damage limitation that enabled the postwar critique of what was seen as excessive uses of force, especially using nuclear weapons. First, I discuss the notion of overkill as it appeared in two key debates within the space of a decade. Second, I explore discourses of signaling along with the institutional and intellectual transformation within the defense community that would enable the development of a strategic vocabulary for the conduct of the air war in Vietnam. Third, I discuss the concept of counterforce, a targeting philosophy of discrimination that appears historically continuous but was ultimately rejected. Fourth and finally, I engage with the social construction of so-called tactical nuclear weapons as a discriminate technology and how it was eventually abandoned in Vietnam in favor of conventional precision weapons.

4.3.1.1 *Overkill*

The critique of the SIOP and the targeting philosophy of the USAF concentrated on the notion of *overkill*, that is, the excessive use of force that would impact civilians in particular. Two debates, about a decade apart, illustrate the influence of technological and institutional arrangements in the negotiation of national strategic targeting discourse and practice.

In the first, bonus damage became the spearhead of Navy critique of the Air Force. This so-called ‘Revolt of the Admirals’ took place during a series of hearings in the House Armed Services Committee in 1949 on whether to fund the development of a new bomber or a new supercarrier. Hardened by the findings of the 1949 Harmon report that had questioned the basis of SAC’s ‘Sunday punch’ philosophy, the Navy turned to publicly

contesting the morality of the atomic offensive (Rosenberg, 1983). In an oft-cited passage, RAdm Daniel Gallery noted that contrary to the idea of shock as political leverage, “leveling large cities has a tendency to alienate the affections of the inhabitants and does not create an atmosphere of international good will after the war.” (cited in Spinardi, 1994, p. 32) RAdm Ralph Ofstie contended that “strategic air warfare, as practiced in the past and as proposed for the future, is militarily unsound and of limited effect, is morally wrong, and is decidedly harmful to the stability of a postwar world” (cited in Conway-Lanz, 2014, p. 5), prompting W. Stuart Symington, Secretary of the Air Force, to explain that civilian deaths were an unavoidable feature of modern total warfare. Yet in a memo one year prior, the same Ofstie had taken no issue to “knock[ing] the hell out of Moscow” (Gentile, 2000). As a result, the debacle has been interpreted as an attempt by the Navy to deflect budget cuts rather than genuine concern for the survival of Soviet civilians in general war (Farrell & Lambert, 2001; Spinardi, 1994). This rare public display of service disaffection ended in the Navy's defeat (Conway-Lanz, 2006).

In the second, during the late 1950s, the same problem resurfaced when the Navy's new submarine-launched nuclear missile (UGM-27 *Polaris*) was emerging as a serious contender to SAC's manned bomber. The Air Force was acutely aware of the Navy challenge and, given SAC's predilection for targeting cities for bonus damage, struggled to carve out a position distinct from that of the *Polaris*. At this time, the Navy had switched to actively pursuing a strategy of targeting cities ('countercity'), justified with reference to the inaccuracy of the new *Polaris* missile. Dulles had eventually come to mistrust massive retaliation and in 1958 requested that steps be taken to develop an alternative and more flexible doctrine in response to the European NATO allies' need for assurance and the development of tactical and 'clean' nuclear weapons (US Department of State Policy Planning Staff, 1958). In the view of the State Department, the US would be better served by a smaller but invulnerable strategic force that might guarantee the destruction of a number of Soviet cities rather than their elusive missiles (Dulles, 1959). This finite-deterrent position held that the assured destruction of major cities would serve as an adequate deterrent and that the insistence on targeting military installations alone, especially as ICBMs were introduced, would lead to a mutual arms race. Launched from a submarine, the *Polaris* was thus capable of serving as a near-invulnerable but highly inaccurate deterrent. This novel technology as well as the prospects for eroding SAC's

funding basis were so attractive that they came to determine doctrine. “It was, in short, Polaris”, argues Mackenzie (1990), “that created the perception within the Navy of the need for an invulnerable, countercity “finite deterrent”, rather than vice versa” (p. 151). At the same time, USAF had to defend itself from accusations of overkill. Dulles’ director of plans, Gerard Smith, had warned him in 1958 that SAC’s plans would result in fallout on friendly territories, questioning the morality of SAC’s retaliatory offensive and thereby the doctrine as such (G. C. Smith, 1958). In a letter from Gen Thomas White, COS of USAF, to Gen Thomas Power, CINCSAC, White expressed his concern over the apparent over-simplification of target systems leading to what seemed to be a *de facto* countercity position in line with Army and Navy philosophy. White emphasized that “we do not necessarily plan to hit “cities” per se, under conditions of last resort; instead we will hit the most critical and lucrative complexes of the enemy’s military strength”, although he also acknowledged that most of those would be in cities (T. D. White, 1959). MGen Wheless, White’s subordinate in Plans, repeated these instructions to his counterpart in SAC, lamenting that “[u]nfortunately, we have to be much concerned with words if we are to defend successfully the concepts which we believe to be fundamental to national security.” (Wheless, 1959)

The debates on overkill speak to the enmeshment of precision, technology, and morality in the institutional and especially fiscal context of the day. This complex and continuous (re)construction of positions vis-à-vis the dominant discourse of bonus damage and its associated practices suggests that the eventual shift to a doctrine of collateral damage was multi-sited, with the alignment taking place at different speeds and according to different local dynamics of resistance.

4.3.1.2 The theory of signaling

Scientific discourses on limitations to the use of force, particularly the symbolic value of civilians, were developed in academic circles rather than inside the armed forces. These theories of ‘signaling’ originated in the domain of nuclear strategy and necessitate a closer look at the institutional conditions of possibility within the defense community more generally.

The emergence of new discourses on necessary limits on war can be read against the backdrop of the Korean War (Freedman, 2003; J. E. Mueller, 1996). In military circles, until the Korean War experience, the concept of limited war was not given serious thought

(Cannon, 1992; Jervis, 1980). The Korean War had provided an example of what Morton Halperin (1963) called the 'limiting process', a set of geographical, weapons, targets, participating nations, etc. beyond which the war did not expand, and consequently did not drag the United States into a nuclear confrontation with the Soviet Union. While the Korean War also suggested that conventional forces might still be necessary, the SIOP reveals that hegemonic discourses and practices of war planning, as well as the bulk of military spending, were directed at all-out general war. Given the conventional nature of the Korean War, the timing of Dulles' 1954 'massive retaliation' speech might have been surprising³², but it underscores the overwhelming focus on the general-war mission that SIOP practices countenance. However, with the first Soviet nuclear test in 1949 and the loss of atomic monopoly, not only was a gap in conventional terms dangerous, it also cast doubt on the credibility of the deterrent (Rathjens, 1958). It was above all, argued Brodie, the 'ideological unpreparedness' suffered by the United States that led to the humiliation in Korea. The 'unequivocal' change brought about by the invention of the hydrogen bomb forced the United States to think beyond orgiastic, spasmodic wars of annihilation and mutual suicide (Brodie, 1957b). With the centralization and aggrandizement of SAC, Brodie opined, strategy had hit a dead end, but it was still needed as the final arbiter of total war (Brodie, 1955; Kaufmann, 1964). In this way, the scene was set for a variegated set of force options rather than an overreliance on a single blunt instrument.

These ideas gained traction with the institutional changes that took place with the incoming Kennedy Administration of 1961. 'Action intellectuals' from the RAND Corporation and academia entered office trusting the intelligence and theoretical baggage of 'the best and the brightest' and assumptions about warfare which had been developed in the 1950s (Gray, 1971; Halberstam, 2001; Tomes, 1998; T. White, 1967). General Maxwell Taylor, former Army COS who had published the limited-war critique *The Uncertain Trumpet* in 1960, repeated the need for the United States to build up limited forces against the orthodoxy of massive retaliation (M. Taylor, 1961). Taylor's ideas, especially the notion of flexible response, found a receptive audience in Kennedy, and he was made CJCS in 1961 and in 1964 Ambassador to South Vietnam³³. The official JCS

³² Paul Nitze, who had served in the Truman administration, certainly thought so, calling it a return to pre-1950s doctrine (Nitze, 1956, 1957). Nitze had himself drafted NSC-68, a 1950 policy document that urged congruence between the use of force and the nature of the objectives, including limited ones.

³³ Taylor represented what Douglas Kinnard has called a 'managerial general' rather than a 'heroic' general of old: willing to adopt new management techniques and strategic concepts (Kinnard, 1991a).

history of the Vietnam War notes that with the replacement of LeMay with John P McConnell as COS of USAF, “the transition of the Joint Chiefs Staff from a body of warriors to one of officers attuned to the complexities of the nuclear age and willing to defer to civilian authority was complete.” (Cosmas, 2012, p. 219)³⁴ In the upper echelons of defense, a ‘liberal consensus’ had been achieved that combined a managerial spirit and a belief in bombing and counterinsurgency (Tomes, 1998). “What distinguished the Kennedy administration was not its policy assumptions or its worldview,” wrote Gibbons, a distinguished scholar of the period, “but its approach to problem solving.” (Gibbons, 1984, p. 7) Building on ideas developed in the intellectual milieu of RAND, particularly economist Thomas Schelling³⁵, Secretary of Defense Robert S. McNamara and his band of defense intellectuals would employ *signaling*, the quintessential feature of limited conflicts (Kuklick, 2006; T. G. Paterson, 1989)³⁶. It was this confluence of ideas and the development of the limited-war framework that enabled, both organizationally and intellectually, the propagation of collateral-damage thinking in the defense establishment and its gradual dissemination to the practitioners of the bombing campaigns.

Under the emergent paradigm that contained the new theories of collateral rather than bonus damage, nations must signal their intent to avoid an all-out confrontation. Controlling war, in other terms, was essential to maintaining stability without the risk of mutual suicide. One of the first appearances of ‘collateral damage’ in writing was in Herman Kahn’s 1960 book *On Thermonuclear War*, a tome in which Kahn drew up a typology of deterrence and patterns of escalation. “The Controlled War,” Kahn wrote in a characteristic passage, “tries to extend deterrence to the intrawar period by using the threat of Reprisal or escalation to induce the other side to avoid nonmilitary bonus or collateral damage” (2007, p. 175). More generally, Kahn argued, the notion of bonus damage was morally wrong and had only been justified based on military necessity during the world wars. Thomas Schelling likewise applied game and bargaining theory to issues of deterrence and nuclear wargaming. On the “strategy of conflict where conflict is mixed

³⁴ At the same time, the divergence between USAF and RAND, its erstwhile adviser, deepened as former RAND employees took office with McNamara (B. L. R. Smith, 1966).

³⁵ Schelling’s ideas on limited conflict and signaling are commonly understood to have reached McNamara by way of John McNaughton, a former Harvard professor who made Assistant Secretary of Defense by 1964 (e.g. Lebow, 1996).

³⁶ This is not to say that the administration had not previously employed intellectuals in a defense context, including during the Korean War (Dumbrell, 2014).

with mutual dependence”, he argued, “mutual dependence is part of the logical structure and demands some kind of collaboration or mutual accommodation ... even if only in the avoidance of mutual disaster.” (Schelling, 1958, p. 203) Schelling illustrated this logic in an article on the basing of the SAC bomber force. In it, Schelling argued that airfields ought to be based outside cities such that Soviets might be able to avoid excessive collateral damage should they so desire, thereby signaling their willingness to deescalate (Schelling, 1961). While there was some consensus in the literature that killing civilians was an escalatory act and thus had to be carefully considered, the moral quality of doing so was ambiguous³⁷. Rather, the rationality of political actors was assumed and dependable.

It was the coupling of institutional power within the Department of Defense with emergent scientific discourse on the limits of war which enabled collateral damage to shift from the domain of nuclear esoterica to a strategic position in which it could contest bonus damage and potentially be operationalized. It thus became part of a scientific rather than moral vocabulary of warfare.

4.3.1.3 Counterforce and the limits of discrimination

One emergent targeting discourse which shared a number of fundamental assumptions of limited-war theories was *counterforce*, advocating only the destruction of military targets in order to avoid collateral damage and escalate the conflict. While the targeting of purely military facilities would later become a matter of course in legal, military, and political discourse, at the time it achieved only a limited effect. An exploration of counterforce doctrine thus situates an early postwar attempt at discrimination and reveals the political contingencies of targeting.

This no-cities or counterforce³⁸ doctrine avoided cities but struck military targets so as to effectively take the cities ‘hostage’ in further negotiations. It subscribed to a style

³⁷ With the backdrop of WW2, limited war was sometimes seen as a ‘straitjacket of rationality’ (Kaufmann, 1956) or lacking the moral appeal of a grand confrontation altogether (see Buzzard, 1956; Osgood, 1957; Wolfers, 1956). As Freedman (2003) has observed, the moral theme of the economy of force was prevalent in formulations of limited war. However, early proponents of strategic airpower have also historically deployed moral arguments, especially on avoiding the carnage of trench warfare, but also later on shortening the war in e.g. Japan (Clodfelter, 2011).

³⁸ Here, I am following Freedman (2003) in using these two terms interchangeably. E. Kaplan (2015) argues that they are fundamentally different, since no-cities relies on tacit agreement whereas counterforce relies on threat; for the purposes of the argument made above, however, the point is that both positions can be made within the same intellectual domain, and the required discrimination is the same.

of nuclear discourse considerably more couched in mathematics and rational-choice science than that of doctrine and budgetary contestation. It was opposed to the *countervalue* or countercity doctrine – expressed forcefully in early nuclear war plans – and gained considerable if short-lived influence not only in government circles, but also occasionally and inconsistently in the military services. Counterforce was thus the specific targeting component of a search for ‘options’ and flexibility in military nuclear planning that characterized the late 1950s and early 1960s and the opposition to the strategic barrenness of general war and bonus damage. It provided the analytics by which the anxieties of nuclear parity, especially the threat to American society, could be managed, because discrimination by American nuclear forces was assumed to be reciprocated by the Soviets (Trachtenberg, 1991). Under this assumption, bonus damage was an oxymoron and collateral damage a more neutral and technical concept of a managed targeting process.

While publicly espoused, counterforce discourse did not occasion significant changes in practice. McNamara went to a ministerial meeting in Athens in 1962 to reassure his European counterparts that counterforce targeting was viable (NAC, 1962) and later that same year held the so-called ‘no-cities speech’ at Ann Arbor, Michigan. In the latter, he stated that general war should be approached in the same way that conventional warfare has been in the past, and that the general aim should be to destroy his military forces and not his population, thereby effectively ensuring that war termination was possible short of total annihilation. Cities would be spared in the hopes that the enemy might do the same (Atomic Archive, n.d.)³⁹. McNamara’s ideas were operationalized as the introduction of variegated target systems and flexible options into war planning and found partial expression in SIOP-63. The Chiefs disagreed on the “extent of destruction necessary to enable the United States to survive and prevail in general war” (Lemnitzer, 1961); in other words, on finite deterrence or counterforce, which in turn would likely determine the meaning and extent of military necessity. CINCSAC Gen Thomas Power initially resisted these changes (Headquarters Strategic Air Command, n.d.; Poole, 2011), but SIOP-63 eventually split the “optimum-mix”

³⁹ The speech has the hallmarks of counterforce thinking à la RAND. William Kaufmann was one proponent of counterforce; entering RAND in 1956, he rapidly became an acolyte of counterforce thinking and in early 1961 managed to gain access to and deliver a presentation to McNamara (WGBH, n.d.), who at this time was sympathetic to the idea.

targeting system into the three tasks of nuclear forces, other military forces, and the urban-industrial base, itself as such an update of the BRAVO, ROMEO and DELTA targets of the 1950s. In addition, withholds and options were programmed, especially for cities (Rosenberg, 1983; Sagan, 1987). It also, however, retained provisions for the all-out strike and thereby remained an incremental change from massive retaliation rather than a radical departure (Ball & Toth, 1990; Gavin, 2001). In this way, practices of nuclear war planning substantially continued to follow the same trajectory rather than what official pronouncements on counterforce might have suggested.

Crucially, despite emphasizing discrimination counterforce did not translate into a practicable concern for civilian casualties in the military establishment, which was able to hold on to *de facto* bonus damage targeting. In effect, since military facilities were often located close to cities, counterforce provided a justification for the mass killing of civilians. Counterforce provided doctrinally an almost unlimited level of military necessity and an endless buildup to ensure certainty of destruction. Neither Kennedy nor his advisers, argues Trachtenberg (1999), truly believed in a controlled and discriminate general war. Moreover, the reaction to McNamara's speeches had been unfavorable both at home and abroad: the Europeans did not feel assured, and the dangers of the missile age seemed to necessitate a first strike if counterforce was to be followed (Ball, 1980). Soon after, in 1963, McNamara backtracked on counterforce to the dismay of LeMay, who by then had become COS of USAF. The irony of this situation, in the analysis of William Kaufmann, was that by holding on to an essentially apocalyptic scheme of destruction, the strategic forces substantially increased their chance of never being used, thus diverting funds from the units that were more likely to see combat, such as TAC⁴⁰ (Kaufmann, 1964). Instead, McNamara settled for a policy of "assured destruction", the ability to absorb a Soviet first strike and still inflict unacceptable damage (Poole, 2011). Under this doctrine, military planners had little incentive to develop a workable concept of collateral damage as distinct from bonus damage. "The advantage of mutual assured destruction", argues Quester (1982), "was that it still typically pretended to be 'collateral damage', or 'bonus damage', as part of a necessarily blunderbuss attack on the enemy's

⁴⁰ At the time of the Second Taiwan Straits and Lebanon crises of 1958, for instance, TAC received only 6 % of the total USAF budget, and its capacity to fight a protracted war was questionable (Braestrup, 1959). In addition, coordination of limited-war efforts between services was absent, and the limited-war mission generally lacked support in the highest levels of government under the Eisenhower Administration (Huntington, 1961).

war-fighting ability.” (p. 234) In this way, subsequent SIOPs paid lip service to the idea of ‘flexibility’ by introducing yet more options and flexibility into nuclear war planning while preserving a “floor” of strategic forces (Ball, 1983; Rosenberg, 1983).

The brief experiment with counterforce doctrine shows that despite early Air Force resistance to the concept of military-only targeting, local practices of bonus damage combined with the politics of nuclear weapons in effect made discriminate targeting unachievable – not simply because of the sheer destructiveness of nuclear weapons, but because of the practices surrounding them, as well as the disparate discourses on assurance enshrined in the notion of overkill.

4.3.1.4 Inverting the conventional: tactical nuclear weapons

Where the introduction of nuclear weapons had sparked a race to define and circumscribe their use, discourses on damage limitation occasioned a reinterpretation of new technologies as well as existing ones in terms of political and strategic status. Secretary of Defense Charles Wilson remarked in 1957 that American defense policy “is based on the use of atomic weapons in a major war and is based on the use of such atomic weapons as would be militarily feasible and usable in a smaller war, if such a war should be forced upon us. In other words, the smaller atomic weapons, the tactical weapons, in a sense have now become the conventional weapons.” (quoted in Kaufmann, 1964, p. 25) Tactical nuclear weapons thus constituted a discursive field in which knowledge about the spectrum of conflict and the limitations of warfare, including prominently collateral damage, was applied in order to redefine their possibility of use.

The conventional superiority of Soviet forces still assumed, and with nuclear weapons undergoing rapid development and miniaturization strategists turned to tactical, or battlefield weapons. This implied recasting weapons in the order of the Hiroshima and Nagasaki bombs as ‘tactical’. The collateral effects of such weapons, however, posed a dilemma for those thinkers who would program them for limited-war objectives. “Militarily it is almost always true that where a small nuclear bomb is good a bigger one is better,” wrote Brodie, yet the issue of limited war “underlines the problem of finding out how we can use them without thereby signaling the abandonment of restraints. (...) [One] does not protect a people by using H-bombs freely about their homes.” (Brodie, 1957a, p. 60) Some authors, prominently Kissinger (1956, 1957), advocated the use of tactical nuclear weapons, i.e. for the battlefield, but was criticized for grossly

underestimating their fallout (Kaufmann, 1958). Kissinger argued, like Nitze, that the Air Force ignored the lessons of the Korean War and continued to advocate destruction much in pre-Korean terms. The defining feature of the limited war was that it was defined in *political* terms and fought for *political* objectives rather than military, and that the employment of force should thereby tend to establish a relationship between means and ends. The purpose of limited war, Kissinger argued, “is to inflict losses or to pose risks for the enemy out of proportion to the objectives under dispute.” (Kissinger 1957: 145) Since both parties could guarantee the immediate destruction of the other’s ‘industrial potential’, i.e. cities, and due to the compression of time implied by the nuclear revolution, such targets were no longer first priority, and Kissinger envisioned ‘open cities’ that would be spared in event of a conflict.

Fears of widespread collateral damage quickly caused tactical nuclear weapons, which initially had seemed like a promising solution to the dilemma of credibility and conventional weakness, to become politically unattractive. Dulles, growing increasingly suspicious of his own doctrine, in 1957 conjectured that the production of less destructive warheads might open the possibility of local deterrence with nuclear artillery in Europe (Dulles, 1957). Thus, the threat of massive retaliation still loomed and conventional warfare in Europe assumed the role of a tripwire. There were a number of issues with the arguments for tactical nuclear weapons: first, the ‘limits’ of nuclear yield were likely to be unpalatable to the European allies⁴¹. This was shown forcefully by the 1955 war game Operation CARTE BLANCHE, which revealed that a ‘limited’ nuclear exchange on German soil would lead to civilian casualties in the order of five million (Healey, 1958; Wolfers, 1956). Second, because of the difficulty of actually controlling a local nuclear exchange, it might be hazardous for the United States to engage in even a limited one lest it spiral out of control, further eradicating the distinction between ‘tactical’ and ‘strategic’ weapons (Brodie, 1957a, 1957b; King, 1957). Schelling (1957) noted that the use of atomic weapons in the Korean War had been precluded by a tacit distinction, especially in the public, between these and other weapons; in this way, Schelling argued, it was *because* the wide spectrum of nuclear weapons provided no obvious break amongst them that no other natural limit had emerged (Schelling, 1959). By the end of the 1950s, the

⁴¹ The public interpretation of nuclear weapons was more systematically dealt with by Osgood (1957), who argued that the distinction was difficult to maintain politically.

debate on limited nuclear war was coming to an end, and by 1960 Kissinger had revised his view, advocating a conventional buildup (Halperin, 1961, 1966; Kissinger, 1960). From the beginning, collateral damage became a way of conceptualizing the limitations needed to fight wars lest they evolve into general war. It also brought the question of targeting back to the fore, which under JSTPS auspices had become an ever-growing list; now, the debate turned to the possibility of separating strategic targets from tactical in a meaningful way.

Despite the technological breakthroughs in miniaturization of nuclear weapons - the strategic domain out of which theories of coercion, escalation and collateral damage had evolved - discourses had evolved to effectively circumscribe such weapons by the time of the Vietnam War. While SAC kept a portion of its bombers out of the conflict in case of general war, the use of nuclear weapons against North Vietnam was contemplated at multiple times during the war by both military and civilian officials, but was eventually dropped altogether. It was occasionally suggested by the Chiefs, usually in conjunction with discussions about the possibility of Chinese intervention, reflecting both a general fear of Communist involvement and the memory of the Korean War (see e.g. Gelb, 1971a, p. 41; 1971b, p. 168; Gelb, 1971d; 1971f, p. 32). McNamara professed in his memoirs to be shocked about the 'cavalier' manner in which the Chiefs on multiple occasions during the war would suggest the use of nuclear weapons (R. McNamara, with Brian VanDeMark, 1996). Another report out of IDA proved influential in proscribing nuclear weapons, particularly for McNamara himself. The report, which was published in March of 1967, excluded "arbitrarily" the strategic use of nuclear weapons to "avoid involvement with political and moral issues." (Dyson, Gomer, Weinberg, & Wright, 1967, p. 2) It found that a nuclear ROLLING THUNDER would require a staggering 3000 tactical nuclear weapons (TNWs) *per year* to be efficacious, that US forces were susceptible to annihilation by a mere 100 TNWs, and that the political consequences of use would be unacceptable anyway. Likewise, a 1966 memorandum by the Office of National Estimates at the CIA advised that "almost independent" of the circumstances of their use "would be a widespread and fundamental revulsion that the US had broken the 20-year taboo on the use of nuclear weapons." (A. Smith, 1966, p. 1) As collateral damage, which had originally been conceived in the context of a strategic nuclear exchange, migrated from this realm to that of the historically more prevalent limited conflicts, any use of

nuclear weapons became less likely. In fact, although the nuclear arsenal had been expanded so as to include an ever-increasing range of nuclear options, the Vietnam War illustrated not only the solidification of discourse, but also the practical difficulties in programming them for use.

The doctrine and practices of tactical nuclear weapons, along with their strategic counterparts, would retreat into the esoteric domain of nuclear strategy as the likelihood of their use diminished (Paul, 2009; Tannenwald, 2009). Nevertheless, the formation of discourses on tactical nuclear weapons remains significant since it allowed for the migration of ideas about collateral damage from the nuclear to the conventional. The discursive ranking of conventional, atomic and thermonuclear weapons in terms of the signal value derived from their destructiveness became a focal point for a transformation that is lost if the presentist notion that nuclear weapons are qualitatively different is assumed.

4.3.2 The keys to the city: spatial regimes of collateral damage in Vietnam

The official departmental history of McNamara's tenure as Secretary of Defense notes that McNamara decided to use Vietnam "as a U.S. experimental laboratory" for the ideas that had changed the strategic community in the preceding years (L. S. Kaplan, Landa, & Drea, 2006, p. 39). The Vietnam War marks the first occasion in which the terminology of collateral damage came to see use, albeit limited, in public pronouncements from military officials. Although not the only cause of civilian casualties, 'collateral damage' was first and foremost associated with the use of airpower, likely because it was borrowed from the language of air-delivered nuclear devastation. Collateral damage, which emerged out of a specific intellectual milieu, was brought to bear for the first time as a strategic political instrument in an operational context. The very prevalence of the term suggests the emergence of enabling historical developments that were not in place prior to the Vietnam War. Thus, if the Korean War underscored the necessity of thinking about limited wars in general, the Vietnam War provided the opportunity to rein in airpower, whose conceptual development had halted, and use it as a political and managerial instrument.

This subsection interrogates important practices of targeting and bombardment during the Vietnam War to identify the contingencies and continuities between the dispositifs of bonus damage and collateral damage, respectively, as far as their

technologies, institutions, and spatialities are concerned. It consists of three subsections: one for the heavily politicized practices of ROLLING THUNDER, one for the area bombardment of ARC LIGHT, and one for the far less restrained campaigns in Hanoi and Haiphong, LINEBACKER.

4.3.2.1 Practices of restriction: ROLLING THUNDER

ROLLING THUNDER was the name assigned to a lengthy bombing campaign in North Vietnam from 1965 to 1968, including military and industrial targets designed to deter the regime from supporting the insurgency, halt infiltration, and bolster South Vietnamese morale. Emphasis changed throughout the campaign, moving from interdiction of LOCs and military equipment through POL, industry, and electric power targets, with neither showing much effectiveness (Clodfelter, 1989; Nordeen, 2002). Nevertheless, during ROLLING THUNDER collateral damage emerged for the first time in a military-operational context as a concept of accuracy borrowed from the language of nuclear deterrence theory. Consequently, it appears occasionally in congressional hearings, newspapers, operating instructions, tactical reports, intelligence and damage assessments, and upper-level political-military discourse in the period. The limits placed on the campaign and the concern for civilian casualties sparked a lively debate about the nature and political utility of bombing and airpower as such, much of which was centered on the restrictions placed on ROLLING THUNDER, partly on excessive civilian meddling in military affairs. The role of the infamous luncheons, in which President Johnson and his advisers - for the most part civilians - would agree on targets and when to strike them, has also often been highlighted as an example (Clodfelter, 1989; but see also Prados, 2009).

In keeping with its nuclear heritage, the idea of collateral damage was primarily operationalized as a geographical and spatial concept centering on cities and, for the sake of avoiding escalation, borders. A number of high-level practices were implemented to avoid widening the war. McNamara argued in 1965 that the success of the program depended on the “credible threat of future destruction which can be avoided by agreeing to negotiate or agreeing to some settlement in negotiations.” (Gelb, 1971e, p. 139; emphasis in original), citing the risk of escalation if strikes moved toward the Chinese border and Hanoi. First, to avoid dragging Communist China into the war, flight paths and strikes were prohibited at a certain distance to the Chinese border. Second, restricted (to authorized types of strikes) and prohibited (except by presidential authorization) zones,

respectively, were established around Hanoi and Haiphong. It was agreed early on in the administration that it was thus important not to “kill the hostage”. (Gelb, 1971e, p. vii) These restriction ‘donuts’ would be modified and gradually reduced during the campaign (Melyan & Bonetti, 1967; Overton, 1969; L. E. Paterson, 1966; Southeast Asia Team, 1966; Vining, 1967), and, according to the *Pentagon Papers*, most significant targets nominated by the JCS would eventually be struck anyway (Gelb, 1971c; see also J. C. Thompson, 1980). One case of collateral damage caught the public attention in particular was a raid in December 1966 on a rail yard and a vehicle depot in Hanoi. Both the Soviet media and Hanoi alleged civilian casualties and the incident caused an international outcry (Associated Press, 1966; Estabrook, 1966; Lambert, 1966; C. M. Roberts & Wilson, 1966), and President Johnson established the 10-nm prohibited zone outside Hanoi in addition to the 30-nm restricted zone, much to the dismay of his military commanders⁴².

Collateral damage was not a uniform strategy but a set of unevenly applied practices: sometimes expressed in numerical terms before the fact, occasionally used to legitimize strikes, but with an increasing appreciation of the political opprobrium of civilian casualties. From ROLLING THUNDER target data and execute messages sent from JCS to CINCPAC Sharp, for instance, collateral damage was estimated for each target (typically ranging from ‘none’ to ‘moderate’) *along* with military and civilian casualties (e.g. US Department of Defense, 1965a, 1965b; US Department of Defense, Joint Chiefs of Staff, 1965a, 1965b). Other examples of its use are attested in Project CHECO (Contemporary Historical Examination of Current Operations), a series of classified reports issued by HQ PACAF during the war. The reports predominantly discuss or report collateral damage as an inevitable circumstance or as a targeting restriction, much akin to the language used in the first SIOP revision (see Headquarters Strategic Air Command, n.d.). A Basic Operating Order “imposed by higher authority” and issued by Adm Sharp summed up the military side of the restrictions in the following manner: “Attacks would avoid populated areas. Utmost caution would be exercised in the attacks to keep collateral damage to the minimum consistent with the desired objective.” (J. R. Johnson, 1967, p.

⁴² In a December 24 cable to CJCS Wheeler, Sharp argued that “[i]f some civilians get killed in the course of these stepped up air attacks, we should recognize it as part of the increased pressure. This war is a dirty business, like all wars. We need to get hard-headed about it. That is the only kind of action that these tough Communists will respect.” (cited in Gibbons, 1995, p. 499)

603; Melyan & Bonetti, 1967, p. 45). Public justifications of urban strikes adopted a similar style. For example, after a 1967 raid on Haiphong, a navy commander boasted to a Washington Post reporter that “we were given the job of surgically removing the power plant with as little collateral damage as possible ... that’s just what we did.” (1967, p. 12) Collateral damage was thus occasionally distinct from civilian casualties and still very much understood in a spatial sense, as with the CEPs of atomic weapons. That is why another CHECO report was able to report that collateral damage was *achieved* against North Vietnamese lines of communication by attacking roads and canals simultaneously (Vining, 1967; the episode is repeated in Bonetti, 1968). What appears to be a remnant of past bonus-damage thinking about collateral destruction is applied here in spite of a management strategy preoccupied with careful signaling.

It gradually became clear that Hanoi’s did not interpret American intent as envisioned, especially its efforts to avoid collateral damage. CIA, which reported on bomb damage and civilian casualties, expressed reserved optimism about the signal value of these restrictions after the first months of ROLLING THUNDER. In an evaluation of the air attacks in November 1965, it found that the “relatively low number of casualties suffered as the result of the bombings could also be viewed in Hanoi as evidence that the targets are currently selected carefully with a view to minimizing collateral damage.” (CIA, 1965, p. 6) As the air campaign grew in 1966, the composition changed from a preponderance of preselected, fixed targets, to mostly armed reconnaissance missions engaging primarily targets of opportunity. This led to a great increase in the number of civilian casualties that ran into the tens of thousands by the end of the year. Most of these were assumed to be ‘collaborators’. In statistics passed to Senator Symington in early 1967 it was thus estimated that “the range of truly innocent bystanders is from 15% - 30% of total casualties.” (Proctor, 1967) In this way, it was logically possible that collateral damage, understood as the destruction of non-military facilities, be a greater concern than civilian casualties. A memorandum from June 1968 discussing alternatives to ROLLING THUNDER noted that lifting restrictions on aerial bombardment would inadvertently add fuel to Hanoi’s psychological operations. “Although casualties have been played down,” it read, “collateral damage has figured prominently in Hanoi’s propaganda.” (CIA, 1968, p. 15) An intelligence memorandum from August 1967 reported that bomb damage had not “not significantly limited Hanoi’s ability to infiltrate troops into South Vietnam and

will not cripple the economy”, and that “morale is not likely to pose a major problem in the near future.” (CIA, 1967, p. 2). Essentially, this meant that collateral damage, understood both in the sense of beneficial bonus damage and in the sense of unintended destruction, was either militarily ineffectual or politically costly. A four-volume report from the Institute for Defense Analyses on the bombing campaign delivered to the administration in December that year sealed McNamara’s disillusionment with bombing as a policy tool (Gelb, 1971c, p. 149). While its conclusions were similar to CIA’s, they were stated more forcefully, citing “no measurable effect on Hanoi’s ability to mount and support military operations in the South” and the finding that the campaign “has not discernably weakened the determination” of the North Vietnamese leaders to continue the insurgency (Fritz, Ponturo, MacDonald, Blair, & Schweitzer, 1967). In short, not one of the goals of the ROLLING THUNDER campaign had been achieved; in fact, signaling had failed to the extent that the enemy had not only denied the collaterality of bomb damage, but had been able to use it as a policy instrument to their own advantage.

Inconsistency in practices of avoiding collateral damage generated controversies at a higher level over the effectiveness of bombing as ROLLING THUNDER proved indecisive. While collateral damage was essential to signaling in theories of limited war, evaluating targets for collateral damage was relegated to lower-level evaluation in the military chain of command. In a 1967 series of hearings known as the Stennis Committee, CINCPAC Sharp had explained to the board that the DoD did calculate the civilian casualties likely to occur for each target and ‘considered’ that in deciding what targets could be struck. When asked about a specific cut-off point, Sharp replied “I have never heard that, but I wouldn’t necessarily hear it either.” (Air War Against North Vietnam, 1967, p. 84) Ironically, what was perceived as harsh stringency emanating from top-level civilian decision-makers was not subject to strict monitoring at the corresponding level in the military chain of command, but remained the concern of lower-level officers. J. C. Thompson (1980) has argued that this can be viewed as an organizationally conditioned inability to translate policy objectives into military achievements, but it is less surprising that practices to estimate and manage collateral damage were not formalized when dominant discourses and existing practices in the military establishment were in direct opposition to McNamara’s restraints policy. During the war, collateral damage as an operational concept was much more widely distributed than in the case of the highly

insular and centralized formulation of the SIOPs. Nevertheless, in the 1967 hearings the military stood fast on the soundness of an extended bombing campaign while McNamara doubted the political efficacy of strategic bombing entirely. Signaling restraint had not produced the desired political results, and it was perceived to have hampered the military effort.

4.3.2.2 Practices of oversaturation: ARC LIGHT

Aside from strategic airpower operations, the United States carried out a number of tactical airstrike operations in Laos, Cambodia and South Vietnam. One of these, Operation ARC LIGHT, was commanded by SAC and showed the limits of the USAF's preoccupation with nuclear strategy. In fact, the signal value of using strategic bombers caused the State Department to oppose their use in ROLLING THUNDER (against North Vietnam), and consequently they were initially assigned to the South (Cosmas, 2012, p. 297). The campaign ran from 1965 through 1973 and was comprised of area bombing in response to Army requests, primarily in South Vietnam. Over the course of 1965, COMUSMACV William Westmoreland had been convinced of the existence of Vietcong troops and headquarters spread over large areas under jungle cover and asked for authorization to carry out carpet bombing, since "even if accurate coordinates fixed on maps (with inherent map inaccuracies) or photos, solid jungle canopy provides few reasonable aiming points for delivery aircraft" (quoted in Gelb, 1971e, p. 133), citing the SAC's abilities in 'pattern bombing techniques' – i.e. the radar bombing techniques honed at the bombing competitions - and the B-52 itself as ideally suited to the task. McNamara concurred (Kritt, 1984); as did the Chiefs, offering similar interpretations of the applicability of area attacks rather than questioning target identification procedures. A MACV study had found that "a positive method of pinpointing VC concentrations in base areas had not been evolved in Vietnam", but nevertheless held that mass air attacks disrupted Vietcong operations (Melyan, 1967, p. 4). To ease coordination, Westmoreland in August 1965 proposed establishing 'free bomb zones' in areas free of friendly units; five were initially created in sizes ranging from 7 km x 12 km up to 40 km x 50 km. In these areas, the JCS had final strike authority. The remarkable disparity between the careful spatial management of North Vietnamese airstrikes and the relative freedom of ARC LIGHT testifies to different regimes of civilian casualties and the different levels of politicization.

While evaluations at the time were generally favorable towards its achievements (e.g. CICV, 1968; Ritchie, Basinger, Swanson, & Grinter, 1969), the effectiveness of the program has been disputed, including by commanders (see Hanyok, 2002; Kinnard, 1991b; Mrozek, 1985; Schlight, 1996). The high-altitude carpet-bombing strategy “often meant over-saturation of the target and sometimes resulted in the destruction or death of unintended targets.” (Frankum, 2006, p. 204) It is more telling for the *knowledge* of the effectiveness of the bombing campaign that no exact casualty figures exist⁴³, but that efforts were rather directed towards quantifying the economic impact of the destruction (Gibson, 1986). Bomb damage assessment was often inadequate and used mainly to determine bomber performance, i.e. CEP (Cable, 1991; Trest, 1969), while the jungle canopy cover hampered proper target selection. Lack of proper ground follow-ups had the effect of increasing reliance on first-hand reports from captured Vietcong soldiers, whose accounts in turn led reports to emphasize the ‘psychological effect’ of the B-52s in language reminiscent of early nuclear war planning, as Westmoreland enthusiastically pressed for the expensive program’s continuation (Futrell, 1989a; Ritchie et al., 1969; Schlight, 1999).

Whereas ROLLING THUNDER had upset airmen for its gradualism, ARC LIGHT became controversial for being a tool of the Army as MACV successfully reined in targeting while operational control was left with SAC (Cosmas, 2006). Head (2002) has argued that collateral damage thus caused in the South cost the allies popular support out of a misunderstanding of COIN operations. “[I]t remained unclear,” wrote H. R. McMaster, “how the tactic of using massive air strikes against an enemy who was intertwined with the noncombatant population would help to establish strategic conditions conducive to ending the war.” (McMaster, 1997, p. 272). Westmoreland had in fact instituted rules to protect the civilian population, arguing that civilian deaths would alienate the population and be a long-term disadvantage (e.g. Headquarters United States Military Assistance Command Vietnam, 1966), but at the same time admitted that anyone ignoring leaflets or avoiding evacuations must be considered combatants in free-bomb zones (Westmoreland, 1976, pp. 285-286).

⁴³ The official position was that the only systematic evidence on civilian casualties was that gathered by MACV from hospital admissions in South Vietnam; shelling and bombing accounted for roughly 1/3 of the causes of injury in the period studied, namely 1967-1970. Building on these statistics, Lewy (1978, pp. 442-453) estimates total Vietnamese civilian casualties in excess of 100,000 per year during 1965-1974.

The stark contrast between considerations of collateral damage in the North and the South shows most clearly the attachment of the bombing campaigns to different intellectual edifices and practices anchored in institutions. Derek Gregory (2011c) has called ARC LIGHT a “deadly form of applied geometry” as civilians took second place to patterns, areas, and circles. If the emergent discourse on the symbolic significance of collateral damage had not been borne out by the practices of ROLLING THUNDER, no comparable discourse had intersected with and informed the practices of ARC LIGHT.

4.3.2.3 Practices of coercion: LINEBACKER

LINEBACKER would reopen the North Vietnamese cities that had been off limits during ROLLING THUNDER and subsequently become a historiographical turning point. It was the codename for a series of operations that replaced ROLLING THUNDER, but target systems remained LOCs, POL, and ‘war supporting systems’ (Clever, 1973, pp. 160-161). It would be during these operations that the use of guided missiles, which was later to become a core feature of modern aerial warfare, became associated with a more technologically and operationally viable notion of collateral damage. Yet the target boxes of ARC LIGHT fame were also employed in close proximity to cities. The first LINEBACKER operation was initiated in May 1972 by President Nixon and lasted until October that year. An interdiction campaign designed to give America the upper hand in peace negotiations with Hanoi, the strikes made much greater use of newly-developed precision weapons than had ROLLING THUNDER. Authority to direct strikes was usually delegated to the level of the field commander, and over the course of the operation, raids were permitted near Hanoi and Haiphong (Clodfelter, 1989; Elder & Melly, 1973). LINEBACKER II, the ‘Christmas bombings’, included rather more severe and intense interdiction missions from December 18 through 29, 1972, in and around Hanoi and Haiphong, with B-52s participating in area attacks in the vicinity of the cities and close to the Chinese border. As such, they reopened the city with destruction of power plants and lines of communication (railroad bridges, yards, shops, and highway bridges) and the mining of waterways (Burditt, 1977).

Yet despite the assurance of precision, monitoring practices remained inchoate and subject to resistance at various levels of the chain of command. At this advanced stage of the war, collateral damage caused by American bombings had become ‘a matter

of considerable interest' to Congress as well as the public⁴⁴. Reports of North Vietnamese civilian casualties from reporters had become frequent. One procedure for handling collateral damage that emerged late in the war was that of unit-level 'critiques', which became clear to the public after a series of congressional hearings in 1972 chaired by Senator Edward Kennedy. A Deputy Assistant Secretary of Defense assured Kennedy that "[t]he high level of interest and concern over civilian casualties is stressed to the maximum extent possible at these critiques." (Problems of War Victims in Indochina. Part IV: Vietnam, 1972, p. 23) These critiques, essentially mass debriefings, covered a range of tactical issues, including communications, maneuvering, escort tactics, etc. - particularly in response to high B-52 losses on the first few days of the bombing owing to a lack of experience in a high-risk environment (C. R. Johnson, 1978; Teixeira, 1990). During the hearings, MGen Pauly explained that potential targets nominated in the field were first examined by senior commanders for collateral damage, amongst other things, before they were validated by CINCPAC. Nevertheless, Pauly admitted, no specific collateral-damage reports were received at the higher level and such efforts were monitored 'in a more general sense'. In other words, as Senator Kennedy later remarked, "there is no regular procedure for observing and monitoring the damage being done to civilian populations." (Szulc, 1972, p. 14) Practices to avoid collateral damage thus remained those of restrictions in targeting and vetting, whereas monitoring and reporting after the fact was not strategically systematic.

More significant was the development of the important discourse of precision-strike as a blueprint for legitimate airpower. The LINEBACKER operations would obtain something of a mythical status among proponents of airpower, commonly juxtaposed with the perceived inefficiency and civilian meddling of ROLLING THUNDER (esp. Momyer, 1978; Sharp, 1998). At issue for the airmen were not just considerations of command and control, but also the ability of airpower to strike discriminately and accurately and thus achieve strategic objectives. The reversal of roles during ROLLING THUNDER and ARC LIGHT clearly upset airmen, and the opportunity for SAC to engage in strategic warfare was seized as an opportunity to demonstrate its effectiveness. In early 1973, when a ceasefire agreement was finally signed in Paris, proponents of air power,

⁴⁴ As Prados (2009) has argued, the Vietnam War in partly coincided with and partly drove a transformation of the American public sphere and the role of the media in wartime reporting, particularly in the wake of Ellsberg's leak of the Pentagon Papers.

including civilian leaders, took this as proof of its coercive effect (BDM Corporation, 1980; Clodfelter, 1989; Haun & Jackson, 2015; W. Thompson, 2000). A CHECO report lays out this viewpoint in characteristic fashion:

The Linebacker II campaign in December 1972 was a classic example of the relationship between U.S. national policy -- the constraints of which were reflected in the rules of engagement -- and military operations supporting that policy. When the enemy refused to negotiate and reneged on many of the protocols which had been accepted, the United States unleashed its powerful forces. The removal of many of the bombing restrictions during Linebacker II paved the way for the nearly unrestricted use of air power. The Linebacker II campaign lasted only twelve days, but the awesome destruction wreaked by U.S. power persuaded a chastened Hanoi to return to the negotiating table. (Burditt, 1977, pp. 91-92)

This interpretation would in turn become critical to the planning and execution of future conflicts involving airpower; not only DESERT STORM, but also later campaigns. Proponents of airpower have typically critiqued restrictions imposed on aerial bombardment, including considerations of collateral damage, and more generally the notion of ‘gradualism’ on which ROLLING THUNDER was built; in sum, the intellectual edifice of damage limitation out of which the notion had emerged (Clodfelter, 1991; Davidson, 1988; Lambeth, 2000; Prados, 2009; Werrell, 1992). H.R. McMaster in his influential *Dereliction of Duty* not only charged the JCS with inadequate opposition to the Johnson administration, but also roundly criticized McNamara for his deception and animosity towards traditional military thinking after the Cuban Missile Crisis. While McNamara supposedly treated the war as ‘another business management problem’, the Chiefs provided little by way of alternative strategic objectives, focusing instead on increasing the ‘Viet Cong kill rate’ through the use of airstrikes. The Chiefs’ target selection suffered from World War II-era assumptions about the susceptibility of North Vietnamese industry to destruction (Clodfelter, 1989), essentially repeating the fallacy that the enemy society and economy was a mirror image of the US and one that could be predictably coerced.

4.3.3 Defining the boundaries of limitation

As the discourses and practices on targeting in the postwar period have revealed, the city in an important sense remained the spatial and symbolic threshold of the manageable war. The notion that a number of target systems, including leadership, communications, and POL storage facilities, would naturally cohabitate with the population had significantly

determined targeting practices. In the framework of damage limitation and national survival, it had become an important geographical boundary the importance of which would be reproduced through the practices of bombing and restraint. Because populations were a bargaining chip and a token of total war, their conception as a first-order strategic target belonged to the massive-retaliation philosophy and its predecessors. To the adherents of limited war, it had to remain in the realm of threats rather than action in order to sustain the interactive process of signaling and bargaining.

Collateral damage might thus be seen as a conceptual outgrowth of a debate on limited war and damage limitation that began in the mid-1950s and which spawned new discourses and practices in the making of SIOPs as well as actual warfare. Collateral damage is fundamentally different from bonus damage in a number of ways: in the most basic sense, the concomitant destruction of civilians and civilian property becomes an issue of the conduct of warfare when war is no longer assumed to be a total, all-out endeavor. When total war might very well mean apocalyptic suicide, limiting and terminating conflict assumes great importance, with collateral damage one of the key means of communicating, and ultimately controlling escalation between the two warring parties. This concern for civilians thus grew out of the insecurities of the Korean War and the Cold War rather than a newfound morality. This knowledge production is also, as the debates on overkill and counterforce show, contingent with the prevailing fiscal or academic power dynamics and institutional resistance to the ingrained logic of bonus damage.

In terms of practices and discourses, the Vietnam War marks a transitional point between an apparatus in which killing civilians was assumed vital to stymying the enemy war effort, and one in which any civilian death carries some political value. The practices of bonus damage still occasionally appeared in Vietnam when aimpoints were selected for destruction of several targets at the same time, but no longer obtained the systematic quality of the SIOP. Restrictive practices were put into place that limited the scope for bonus damage and were built on the intellectual foundation of damage limitation. Notwithstanding their supposed results, public sensitivity to the high-profile bombing campaigns had increased, with LINEBACKER I and II triggering outcries in domestic politics as well as abroad. In later historiographies of airpower, it would be ROLLING THUNDER and LINEBACKER rather than ARC LIGHT that would form the nexus of historical

evidence on the political and spatial inefficiencies of restricted airpower. The changing institutional and intellectual configuration of decision-making about warfare that had incorporated academics and other civilians into security analytics, brought with it a series of discourses that were not specific to the types of weapons in question but instead necessitated a reinterpretation of weapons not merely according to the economy of their destructiveness, but also to the political consequences of their use.

4.4 CONCLUSION

It is possible in the late Vietnam War to see the outlines of the same types of statements and public discourses on the use of guided weapons and low collateral damage that would be widespread decades later, while the plans for nuclear devastation that defined the normal praxis of the Air Force have been committed to nuclear esoterica. Yet this essential discontinuity betrays the productive development and interchange of practices and discourses revealed above. These would come to define the conditions of possibility of the conceptualizations and operationalizations of force that found use during the Vietnam War. In this way, the association between the contemporary critique of the SIOP and the conduct of ROLLING THUNDER becomes apparent. Yet the gradual rejection of the now-defunct apparatus of bonus damage must be interrogated at the level of discourse and of practice to avoid reproducing linear metahistories. Instead, with the institutional and historical contingency of concepts of civilian casualties laid bare, patterns of discontinuity and gradual change along paths of varying resistance become visible.

The rejection of the bonus damage apparatus thus encountered the least resistance at the level of discourse. The conceptualization of civilian damage as *collateral* rather than *bonus* may nominally have been subtle, but it marks the emergence of a regime of limited security rather than total destruction. Under this regime, collateral damage can be understood as a technique of governance which attempts to guarantee security between two analytically identical entities by assigning mutuality to civilian casualties, assuming a kind of self-regulating rationality. Under conditions of atomic monopoly or a high degree of certainty about the effectiveness of the strategic offensive, the issue of war termination short of total annihilation was largely irrelevant: SAC was expected to destroy any possibility of counterattack by *inter alia* eliminating the bulk of the Soviet population. In the same way, resistance to changes that might have been prompted by the

experience in Korea can be partly explained with reference to the epistemic grounding and solidified practices of dominant organizations: the SAC-dominated USAF was committed to a targeting philosophy that did not presume or permit a retaliatory attack, or only a very limited one. For this reason, and owing to the conceptual remnants of WWII-era bombing, they could meaningfully support *de jure* counterforce and simultaneously aim to cause tremendous bonus damage. Counterforce appeared to offer a solution to multiple problems at multiple levels, with collateral damage cutting across as the common conceptual language, but ultimately did not guarantee discrimination. As the debates on overkill showed, the commitment to discriminate practice was contingent upon the current institutional and fiscal configuration.

At the level of practice, the conduct of the bombing campaigns in Vietnam brings out the divergence of regimes of civilian deaths. While direct population targeting was thus not formally part of US bombing campaigns in Vietnam, the disagreement over the role of collateral damage, rooted in divergent understandings of strategy, is vividly illustrated by the emergent disparity in implementation. The fact that collateral damage was understood as an excessive restriction on what was otherwise perceived to be a superior military strategy demonstrates that collateral damage had not yet become established as a strategic *military* concern. Therefore, efforts to avoid collateral damage would be subject to the interpretation of vague instructions further down the chain of command, where they would compete with a number of other tactical concerns for attention and action. Whether due care was taken at the tactical level to spare civilians remains a matter of dispute, with some (e.g. Clodfelter, 1989; W. H. Parks, 1983) taking the view that airmen went far to minimize collateral damage, and others (e.g. Schaffer, 1985) arguing that military necessity usually trumped moral concerns. Regardless, the above analysis that despite public pronouncements to the contrary, it is premature to speak of a coherent strategy, let alone a disposition of collateral damage, in the conduct of the Vietnam War.

Rather, Foucault's point that practices and discourses do not 'derive' from a strategy contextualizes the postwar invention of collaterality and its migration from the domain of nuclear war to the strategic mainstream. The conduct of the Vietnam War and the negotiation of a regime of collateral damage was the product of an ongoing and complex contestation at multiple sites – inter-governmental, public, strategic, and tactical.

The notion of polymorphism explains the emergent web of discourse and practice on damage limitation, from the reinscription of nuclear and conventional weapons to the symbolism of targeting the city and the political signals of bombing. The discourses on limited war in an important sense repoliticized civilian deaths by incorporating them into analyses of the political implications of war. However, the inability to manage them consistently and the lack of results from ROLLING THUNDER set the stage for its mutation into a far more vague and unspecific concept than was countenanced by the limited-war critique. Finally, the concept of collateral damage did not come about as a result of increased accuracy or precision. As the SAC Bomb Comps and debates on overkill show, practices of accuracy existed and were not wholly irrelevant to the nuclear mission, instead circumscribing the types of targets it was possible to engage and even contributing to bonus damage by means of precise DGZs. The emergent association with particular types of conventional munitions was the result of a very specific historical contingency towards the end of the Vietnam War in which all nuclear weapons had been sidelined and civilian casualties had become the object of public and political scrutiny.

5 AL-FIRDOS: THE TACTICS OF LAWFUL MISDESIGNATION

5.1 INTRODUCTION

In the early morning of 13 February, 1991, a bunker in southeastern Baghdad was struck by two F-117 stealth bombers using laser-guided GBU-27s. While both weapons were aimed to penetrate the bunker, the first weapon hit the roof a few yards from its aim point. The second clipped the corner of one of the burster slabs on its top and probably failed to penetrate the bunker (Davis, 2002). The bunker, which had been identified by planners as a C3 facility, was destroyed by the blast, probably bursting water tanks that flooded the bottom floor, but failing to set off fuel or oxygen tanks that would have likely incinerated any remaining survivors. The bunker was developed as a so-called ‘leadership target’, part of the effort to shut down the upper echelons of Saddam Hussein’s military and their control over fielded forces as well as their continued ability to command Iraqi society. Based on satellite photos indicating fresh camouflage paint applied in January, increased activity of military vehicles, and SIGINT cuts from the vicinity of the bunker, the CIA had surmised that the Mukhabarat, or General Intelligence Department, had commandeered the bunker, using it as a base of operations. This circumstantial evidence was later corroborated by a senior Iraqi official working as a spy for the American government (Atkinson, 1993). After the smoke cleared and the TV crews had arrived on scene to broadcast the carnage, it quickly became apparent that the bunker was in fact used as a civilian shelter during the night, and the strike had killed hundreds of civilians rather than intelligence officers.

The reaction in the media was predictably severe, and airstrikes against Baghdad were curtailed for the remainder of the war. Military commanders as well as political leaders predicted considerable fallout in levels of public support for the war, but such effects failed to materialize in wartime (Larson & Savych, 2006; J. E. Mueller, 1994; P. M. Taylor, 1992). The official *Gulf War Air Power Survey* (GWAPS), however, noted that the “strategic consequences of this attack were considerable. To all intents and purposes the civilian losses ended the strategic air campaign against targets in Baghdad.” (Cohen & Watts, 1993b, p. 206) DESERT STORM planners were convinced that Schwarzkopf had then centralized target approval with CJCS Colin Powell; in fact, other

strikes, such as daylight Tomahawk attacks, had also been curtailed over the course of the war. The effect of al-Firdos was rather restrictions on the leadership and C3 targets of the strategic air plan, possibly partly originating from the White House as well as Powell (Davis, 2002). Olsen (2003) goes so far as to argue that operational concerns were subordinated to public-relations concerns following the incident, and airmen at the time did indeed interpret the political fallout to have accomplished greater restrictions on airstrikes than what the inadequate Iraqi air defenses could (Gordon & Trainor, 1995). In this way, *enemy* civilian losses rather than American military losses constituted the major public-relations controversy of the war. Despite the fear of losing the public relations battle, the US government stood by the legitimacy of the target. “I suppose the suggestion that [Saddam Hussein] may have indeed encouraged civilians to occupy what he knew to be a military facility is possible”, remarked Vice President Dick Cheney (Feinsilber, 1991). A White House spokesman insisted that no changes were made to targeting procedures, and repeated that Saddam Hussein did not share the US’ values of the sanctity of human life (“War in the Gulf: The White House. Fitzwater's Statement on Bombing of Building in Iraq,” 1991); but he also added that “this war has one very great and tragic similarity to all other wars, and that is that people are dying and going to die, and there are going to be civilian casualties, there is going to be collateral damage.” (Lambrecht, 1991) At the DoD, military spokesmen were adamant that the bunker was a military target and that the presence of civilians was likely intentional on the part of Saddam Hussein, thus violating the Geneva Accords on the use of human shields (Federal News Service, 1991; Squitieri & Walte, 1991). The administration was thus adamant that the target had been legal, since collateral damage is not unlawful, yet the armed forces were nonetheless terrified of the public-relations spectacle, a paradox and a sea change from Vietnam.

Reconstructing the historical contingency of the al-Firdos event unveils new legal discourse and highly technical and specialized practices to manage collateral damage. A host of new techniques and technologies appeared whereby force against civilians might be delimited and understood; these were not occasioned merely by the development of new weapons or the increasing obsolescence of nuclear weapons, nor were they dictated by the ‘nature’ of the conflicts of that period. Rather, these new techniques of power exhibited both continuity and discontinuity: they were contingent upon earlier discourse on military strategy in particular, which was not specific to certain weapons, and

discontinuous in their productivity of novel practices. Far from obscure jargon, the notion of collateral damage became so widespread during the Persian Gulf War that it entered into the everyday political vocabulary. Against the backdrop of post-Vietnam anxieties over public support, the event of al-Firdos attests to the emergence of two interlocking sets of discourses and practices through which collateral damage would be articulated. First, an explosion of practices associated with international humanitarian law occurred that made collateral damage an object of knowledge in order to circumscribe it from the prohibitive and punitive functions of law. Second, collateral damage became an explicit end of certain very technical practices that substituted skill for planning and weaponizing and thus a logic of technological progress. This chapter consists of two sections explaining and situating these two developments within the scope of the genealogy of collateral damage.

5.2 THE EMERGENCE OF OPERATIONS LAW

The immediate legal interpretation of the bombing, enshrined in Dick Cheney's comment, quickly became commonplace. The DoD argued in its report to Congress that the responsibility for al-Firdos was in fact Iraq's, since they had commingled civilians and military personnel (US Department of Defense, 1992). The United States, it was argued, committed no violations of the laws of war since they acted in good faith on the basis of the information available at the time⁴⁵. To military observers the outcry signified an emergent propagandization of collateral damage first encountered during the later years of the Vietnam War (especially LINEBACKER I & II), culminating with concept of *lawfare* postulated by Col Charles Dunlap (2001a) of USAF following Operation ALLIED FORCE, the 1999 conflict in Kosovo. According to this idea, collateral damage might be used to weaponize the laws of war in a bid to gain international sympathy and political leverage over an opponent. As Larson and Savych (2006) have shown, the official Iraqi handling of collateral damage incurred did change after al-Firdos: rather than downplay the costs of the war, officials pursued an agenda of inflating and exposing coalition war crimes in international media. At around the same time, Saddam Hussein sent his foreign minister to Moscow to negotiate a withdrawal, probably realizing the war could not be won conventionally. Collateral damage ostensibly became more relevant as a strategy for

⁴⁵ The example remains preserved in the latest edition of the JAG handbook (2017).

regimes with limited means; whereas North Vietnam had managed to inflict unacceptable losses on American troops, the conventional yet asymmetric nature of the conflict and the resulting lopsided engagements between coalition and Iraqi forces meant that collateral damage gained increased significance (Byman & Waxman, 2000; Freedman & Karsh, 1991). Dunlap (2001a) even argued that fear of losing coalition constituencies in this way paved the way for restrictions on warfare that allowed Saddam Hussein to stay in power. Richard Betts (2001) bewailed the state of affairs that in the 1999 war in Serbia lawyers had become *de facto* tactical commanders. New international law, it was argued, seemed to suggest that zero collateral damage was the norm as opposed to the ‘attrition-oriented’ American warfighting doctrine (Rivkin & Casey, 2000).

These explanations correctly emphasize the increased role law would play in the articulation of collateral damage, and indeed in contemporary warfare. However, they neglect the institutions, professions, and practices, in short, the emergent power dynamics of military lawyering that have enabled the continuous exoneration of the United States of the bombing of al-Firdos, along with many other instances of collateral damage. In the following, I shall argue that the legal implications of it were constructed at the intersection of emergent legal discourse and novel professional and institutional practices that allowed for the continuous assertion of *ex ante* legality that simultaneously inscribe collateral damage within the legal sphere and signify its extralegal status. As a locus of power and knowledge, law does not simply take the form of a prohibitive and restrictive power emanating from the State, as Foucault (1978) demonstrated; for this reason, the notion that the armed forces merely reacted to exogenous normative changes is unsatisfactory. Rather, explicitly treating collateral damage as an object of law generates a space of knowledge in which it becomes subject to the tactics and strategies of legal arguments, but also deployable with the force of legitimacy that the law carries. Unlike the strategist, who operates within a paradigm of rationalism and by extension analyzes the conduct of war according to the rationality of actions and perceptions, the military lawyer produces lawfulness in the dual act of interpreting law and evaluating historical and future acts of violence. Yet the ‘opening’ of a new space of contestation does not exclusively enable new forms of domination, but also generates sites of resistance in positions of legal responsibility and victimhood. For this reason, the inverse claim that international humanitarian law flatly serves the interests of the United States must also be subjected to

further scrutiny (e.g. af Jocknick & Normand, 1994). The development of the laws of war by the United States, as Witt (2012) has shown, has been gradual and gone hand in hand with the articulation of an American style of warfare. Thus, the involvement of military commanders in the negotiation of IHL is historically established (Kennedy, 2004), but not neutral (A. Alexander, 2015). The AP negotiations must thus be interrogated as indicative of a particular historical moment, the institutional configuration of which produces peculiarities in what has since become ‘customary’ IHL.

In the following, three important formations of discourse and practice have been singled out in which new elements, relations, and domains of reference under the heading of lawfare emerged: the principle of necessary suffering, the operations lawyer, and the quasi-legal no-strike list⁴⁶.

5.2.1 Necessary suffering: collateral damage as a legal principle

In its report to Congress, the DoD wrote that despite a campaign that was highly discriminate both in terms of weapons and target selection, collateral damage did occur:

The principle of proportionality acknowledges the unfortunate inevitability of collateral civilian casualties and collateral damage to civilian objects when noncombatants and civilian objects are mingled with combatants and targets, even with reasonable efforts by the parties to a conflict to minimize collateral injury and damage. (US Department of Defense, 1992, p. O-10)

Exonerating the American air campaign, the authors of the report held that the principles of international law on which the legality of the civilian deaths was based were the customary practice of nations, binding upon all: in particular, discrimination and proportionality. As I shall argue in this subsection, their reading of these principles is rather the result of an entangled history of politics and military truths mediated by the concept of collateral damage. Al-Firdos showed, as has been affirmed in all conflicts since, that collateral damage is legal; in a certain sense it is outside law because it is an event that ‘belongs’ to warfare. It cannot be outlawed completely because it is *necessary* to the functioning of war: too much hand-wringing, it was argued in the wake of the Vietnam failure, would hinder military efficiency and ultimately victory.

⁴⁶ There are other important practices which involve the inscription of the legal into existing elements and techniques, including legal handbooks and the use of ROE for legal or quasi-legal purposes. These practical managerial technologies did not emerge at the same time as operations law (Solis, 2010) but reflect a hybridization of both.

Richard Baxter, a prominent American jurist and member of the delegation to the negotiation of the Additional Protocols to the Geneva Convention in the 1970s, wrote that "[t]he distinction between a weapon causing “necessary suffering” and one causing “unnecessary suffering” is a fundamentally sound one. It is a wasteful use of force to add to human suffering without any corresponding military advantage." (Baxter, 1978, p. 180) In the following subsection, I untangle the historical knot of this discourse of necessary suffering, showing how it constitutes a further development of the concept of collateral damage.

The pragmatism in between law and military expediency was rather the outcome of negotiations and American practices than a given. It may at first glance be surprising that the Additional Protocols (AP) to the Geneva Conventions of 1949 were never ratified by the United States yet are cited as customary law and have become part of the basis for military law manuals and training delivered by the armed forces, the USAF being no exception (Davies, 2014). The United States did, however, make an imprint on both the letter and spirit of these laws, and the discourses surrounding negotiations at the diplomatic conference and after reveal contingencies in the construction of collateral damage as a legal term. In the previous chapter, I argued that the concern for collateral damage with the (nuclear) strategists arose from a managerial desire, namely the control of warfare for reasons of security, and that their pronouncements were spoken from the perspective of certain principles of reciprocity, immutable ‘features’ of state interactions, and behavioral constants. Here, the speaking subject, the legal expert, claims to be merely laying out existing (customary) law in a manner that obfuscates the strategic contingencies of their interpretation. The legal appropriation of collateral damage in order to make it legal is thus not merely a transferal: when entering into this other field of knowledge, it becomes subject to the local tactics, power plays, and linguistic idiosyncrasies that govern fields of expertise.

That imprint, as well as the contingency of the American interpretation of IHL at the time of al-Firdos, was shown during the negotiation of the AP. In his executive summary of the first year of negotiations (1974) to the Secretary of State, George H Aldrich, the head of the US delegation, wrote

There is widespread ignorance among the participants in the Conference of both war and humanitarianism as an "art of the possible." Delegations would not infrequently call for sweeping prohibitions of activity, such as propaganda or

anything that in fact causes terror in the civilian population, on the ground that it is "inhumane." They were insensitive to the compromises that the law must make and to the complexities of a body of international humanitarian law which is the product of more than a century of growth. Many of the less developed countries seemed unable to cope with the distinction between "unavoidable suffering" and "unnecessary suffering" in warfare. (Aldrich, 1974, p. 4)

Collateral damage, by implication, should rather be construed at the intersection of this distinction: suffering that is unavoidable yet necessary to the functioning of war as an activity. Against the possible charge that the NATO states subjected law to *realpolitik*, the 'longstanding' concept of proportionality was deployed. One of the provisions drafted by the International Committee of the Red Cross (ICRC) caused disagreement, namely the portion of the draft article 46 reading

[It is forbidden] to launch attacks which may be expected *to entail incidental losses among the civilian population* and cause the destruction of civilian objects to an extent disproportionate to the direct and substantial military advantage anticipated. (Art 46, 3(b), in ICRC, 1973, p. 57; italics added)

Although the intent of the drafters does not appear to have been a complete outlawing of collateral damage (ICRC, 1973, p. 59), the phrasing proved unacceptable. During negotiations, the US instead backed an amendment that would subject both civilian deaths *and* the destruction of civilian objects to the test of proportionality, i.e. military advantage. The US delegation explained its position thus

The rule of proportionality set out in the amendment in document CDDH/III/27 was based on existing international law, and it was important to record and interpret that rule in article 46 [51]. Collateral damage to civilians and civilian objects often was unavoidable and it was unrealistic to attempt to make all such damage unlawful: the rule of proportionality was as far as the law could reasonably go. If the element of intent was omitted, the provision might be used to justify trials for accidents or for unavoidable damage. (in Swiss Federal Council, 1978d, p. 67)

Proportionality rather than discrimination became the legal battleground for the negotiation of collateral damage. Statements such as these, which were put forth in relation to a number of other articles in the AP to which the US and other allies invoked notions of unavoidable collateral damage or proportionality⁴⁷, are only rendered intelligible in the context of a reconstructed historical context.

⁴⁷ The US delegation found it necessary, for instance, to accentuate its understanding that draft article 47, which stipulated *inter alia* that civilian objects cannot be made the object of attack unless they are mainly

The Vietnam War, which had been concluded shortly before, caused negotiations to be politically charged from the outset (Aldrich, 1984). The language, operational experience, and perceived limits of the Vietnam War solidified as discursive fixtures, effectively presaging the negotiation of the AP: it provided an extralegal domain of reference which proscribed a self-incriminating interpretation of customary law. General Counsel of the Department of Defense Fred Buzhardt wrote in a reply to Senator Edward Kennedy on Vietnam bombings in 1972 that while attacks directed against civilians were prohibited as such, attacks on military targets which might involve a risk of civilian destruction (i.e. collateral damage) were not under customary international law (in Rovine, 1973); in addition, highly destructive weapons whose effects cannot be limited to the immediate military objective may likewise be justified under the principle of proportionality⁴⁸. Aldrich admitted in 1977 that the North Vietnamese “were strongly opposed to codifying the customary law rule of proportionality, saying that it had been used to justify the American air attacks against them”, and that countries fighting a guerrilla war necessarily had different ideas about military necessity than nations relying primarily on firepower (Aldrich, 1977)⁴⁹. Another article that caused substantial disagreement was article 49, which sought to prohibit attacks on facilities that would unleash dangerous forces, including dams, dikes, and nuclear power stations. The committee noted that only once the text had been limited to these particular facilities was an acceptable text produced (Swiss Federal Council, 1978c, p. 282); yet as the Legal Adviser of the Department of State Abraham Sofaer would explain after the rejection of the AP, an absolute prohibition without a test of proportionality would be unacceptable and contrary to customary law (quoted in Dupuis, Heywood, & Sarko, 1987). It is, as Howard Levie notes (1993), difficult not to understand this objection in reference to the dams in North Vietnam which were off limits and subsequently became safe havens for supplies and weapons, an experience that would repeat itself in America’s wars to come.

used for military purposes, “does not deal with the question of collateral damage caused by attacks directed against military objectives.” (in Swiss Federal Council, 1978b, p. 204)

⁴⁸ Here, Buzhardt was interpreting the provisions of the December 19, 1968 United States General Assembly Resolution 2444 (XXIII), 1(b).

⁴⁹ Aldrich would later argue that it was thanks to his good working relationship after several summit meetings with the Soviet Union, especially during the conclusion of the Vietnam War, that the North Vietnamese were eventually convinced to accept the provisions of proportionality, amongst others (Aldrich, 1984).

It was the deployment of historical continuity in legal theory and military wisdom that made the notion of necessary suffering viable. While the backdrop of the Vietnam War speaks to the immediate necessity of avoiding self-incrimination by the American delegation, there is a broader discursive strand in the negotiation of proportionality which ensures continuity and hybridity between military maxims and law, thus critically enabling an overlap between legality and the conduct of warfare. Jocknick and Normand (1994) have posited that the notion of proportionality has been interpreted as simply the Clausewitzian principle of economy of force, viz. using only the amount of force necessary. This same argument can be expanded to include the USAF in light of limited-war theory. Indeed, in the first USAF law of war manual of 1976, it was stated quite squarely that the principle of proportionality is a “restatement” of the maxim, whereas avoidance of collateral damage is listed as a ‘traditional military doctrine’ (US Department of the Air Force, 1976). This assertion was variously repeated by senior military lawyers, with the quality of likeness ranging from ‘similar’ to ‘reinforcing’⁵⁰. It is here that the intellectual baggage of limited war theory becomes visible, with Robert Osgood one of the first to reformulate the principle⁵¹. McDougal and Feliciano (1958) explained that “the coincidence of “economy of force” as an underlying principle of the rational application of coercion with “military necessity” as a basic principle of the law of war will be apparent.” (p. 798) Adherence to the principle requires “rationality of the participants” as well as “dedication to humanitarian values” (Mallison, 1967, p. 315).

Thus, in Parks’ (1990) formulation, with Additional Protocol I the principle of proportionality was *injected* into international humanitarian law, especially Article 51. With this complex interweaving of historical threads, the legalistic notion of collateral damage acquires a strange circularity. Collateral damage was the necessary political critique of the excessive military logic of bonus damage and overkill in the age of total

⁵⁰ E.g. George Prugh, Army JAG, “closely related” (1973, pp. 1-2); Walter Reed, Assistant JAG, USAF, “close parallel” between military doctrines and laws of war (1974, p. 74); McLucas, Secretary of the Air Force, “counterparts in traditional military doctrine” (1976, p. 79); Matt Bristol, Chief of the International Law Division, USAFE, “supportive role of compatible military doctrines” (1979, p. 409); but see also Robblee (1976), who argues that “The rule of proportionality compels this result for humanitarian reasons, while the principle of economy of force does so for logistical reasons.” (p. 113)

⁵¹ “An important corollary of the principle of political primacy may be called the economy of force. It prescribes that in the use of armed force as an instrument of national policy no greater force should be employed than is necessary to achieve the objectives toward which it is directed; or, stated another way, the dimensions of military force should be proportionate to the value of the objectives at stake.” (Osgood, 1957, p. 18)

war. As it became an object of legal critique, it was recast as the limits of law against freedom of military action. Targeting or inadvertently killing civilians cannot be an economical use of force, hence the principle is in synchrony with the laws of war⁵². Consequently, the use of nuclear weapons in earlier periods must be either barbaric or subject to the calculus of deterrence. This complementarity between traditional military doctrine and law, such as they intersect in collateral damage, is thus revealed to be constructed rather than incidental or necessary.

In sum, the notion that the principle of proportionality is well-established in customary law, outside the context of national inclinations and desires, is problematic: instead, the principle was partly mediated by the notion of collateral damage as it crystallized towards the end of the Vietnam War. Here, the possibility of a strategic logic of collateral damage comes into view, interwoven across domains of law, strategy, and technology; it opens a discursive space in which limiting war is not a matter of pacifism (J. T. Johnson, 2011), but of particular modes, techniques, and technologies of fighting. “The increased accuracy of bombs and missiles made possible by the development of technology”, wrote Richard Baxter, “made the whole idea of legal regulation more plausible than it had been in the past.” (Baxter, 1978, p. 178) In this conception, law only enters the picture when accuracy, subject to its own developmental process, has progressed far enough so that it may ameliorate the irreducible and unchanging vicissitudes of warfare, namely military necessity. In a 1991 article, a Colonel Bridge of USAF-JAG more forcefully opined that “if the law follows technology, I guess that's all right. But you very seldom want law to precede technology. That's when you've got a problem.” (in Keeva, 1991, p. 59) In the same article, William Hays Parks remarked that “modern weaponry and warfare become increasingly complex, new legal problems will continue to emerge and, if recent events are an indication, commanding officers throughout the U.S. military increasingly will seek their lawyers' advice.” (pp. 58-59).

Yet this reading of history puts the forces at work on their head; instead, the emerging legal profession constructed collateral damage as a problem for the legal profession whereby specific practices of violence could be evaluated in reference to a

⁵² The debate in the wake of the Persian Gulf War continued on much the same terms, with some confusion as to the relationship between the different principles of war and law, respectively, and some critique of the dominant position. See e.g. DeSaussure (1994); Heintzelman and Bloom (1994); Schmitt (1994, 1997); Shotwell (1993).

particular set of martial implements. Excluded from these implements were nuclear weapons, which the US delegation held were not part of the conference (in Swiss Federal Council, 1978a, p. 295). Sofaer, apparently unconvinced, would later reject the provisions of Article 51, para. 6 outlawing attacks against civilians by way of reprisals on the grounds that it “removes a significant deterrent that presently protects civilians and other war victims on all sides of a conflict.” (in Dupuis et al., 1987, p. 469) This aporetic notion - refusing to ban reprisals out of a concern for civilians - can only be understood under the same domain of reference as that of collateral damage in its conception within strategic theory. By circumscribing nuclear weapons from legal discourse on collateral damage, however, lawyers participated in a gradual recasting of collateral damage as a phenomenon predominantly associated with conventional weapons and thus subject to the progress of technology.

The principle of discrimination, meanwhile, was unopposed by the American delegation. The American dependence on technology aligned with the legal attitude towards discrimination, an indication of the larger shift that took place between World War II and Vietnam and the emerging nexus of discrimination-proportionality that has come to form the core of legalistic American collateral damage discourse. During negotiations, the United States voiced no objections to the principle of discrimination or distinction now also enshrined in Article 51, amongst others, namely that civilians could not be made the target of direct attack.

With the concept of necessary suffering, collateral damage took the form of a compromise of history in the limits of military strategy and the reach of the law: never consciously part of military strategy, but simultaneously impossible to outlaw, the unavoidable but nevertheless anticipated tragedy of armed conflict. A genealogical reading shows that this particular construction of the legal space of collateral damage was in fact highly dependent upon preexisting American understandings of military strategy and the morality of particular forms of warfare rather than widely-accepted international legal norms.

It also shows that certain consequences of violence are removed from legal evaluation. Feldman (2019) has called collateral damage the accidentalized accident, i.e. one which requires continuous political restaging to mask its systematicity. There is no doubt that a substantially lower number of civilians are killed directly as a result of aerial

bombardment in contemporary conflicts relative to the wholesale destruction of World War II or indeed the Vietnam War. The discourse of bonus damage was eclipsed by collateral damage; no longer was the intentional targeting of civilians acceptable or indeed even logical; but as displayed in events of the Gulf War, the discourse of collateral damage remained silent on certain forms of destruction. Second-order effects, that is, unexploded ordnance, permanent damage to electrical grids and other infrastructure, and devastation of clean water supply are some of the possible consequences that are not objects of knowledge and excluded from legal considerations, but nevertheless claimed upwards of an additional 100,000 casualties in the war (Cronin, 2018). Compliance with the laws of war, as Paul P. W. Kahn (1993) argued two years on, did not adequately minimize human suffering in war.

5.2.2 The operations lawyer

The success of operations lawyers in defining the al-Firdos incident heralded a new set of professions, hierarchies, and power relations that emerged in the period after the Vietnam War but were first truly in operation in the Persian Gulf War. During DESERT STORM in particular, most targets, and certainly those which eventually caused collateral damage, had been meticulously planned and programmed ahead⁵³.

It was the coupling of the institutional power of the operational lawyer with the emergent discourse of necessary suffering that fused together the power and knowledge of lawfare. Dunlap (2001b) posited a revolution in military legal affairs – RMLA – deriving from the same technological imperative as the RMA. It was the practices internal to the armed forces that produced the platform from which legal discourse could be articulated. After Vietnam, spurred especially by the My Lai massacre and the findings of the Peers inquiry, the US armed forces took steps to centralize and streamline the implementation of the LOAC across the services (D. E. Graham, 2002). In 1974, the Secretary of the Army drafted a directive that would become DOD Directive 5100.77 later that same year (International Law Division, 1975). The directive established a

⁵³ ‘Time-sensitive targets’ and ‘dynamic’ targets (sometimes targets of opportunity) are enemy forces that have not been planned for strikes ahead, but arise from situations in which friendly forces are engaged by enemies, or (more commonly during contemporary drone operations), where intelligence emerges that enables friendly forces to locate a target previously scheduled for engagement. Often planners do not have the advantage of time in the manner of DESERT STORM, and lawyers must be immediately available at all times (Solis, 2010).

common, DoD-wide implementation of the laws of war, including systematic training efforts, something that had hitherto been left to the services individually. The most significant provision of this directive was that requirement that military lawyers be involved in the development and review of operational plans to ensure LOAC compliance (Lietzau & Rutigliano, 2015). Where the Army and Navy had incorporated legal considerations into their manuals for some time, the Air Force lagged behind, releasing its first LOAC publication (AFP 110-31) in 1976. Instead, the role of judge advocates in the Vietnam War had been mostly prosecutorial⁵⁴, geared towards securing American discipline, and focused on the rights of American soldiers when captured (W. H. Parks, 2002). JAGs were thus often met with skepticism and had to prove their usefulness to their ‘clients’ initially (Keeva, 1991; W. H. Parks, 1992). Airmen were resistant to change when educational programs were launched in the 1970s, but the field of operations law eventually expanded (Bridge, 1994). The new provisions had been in place for over a decade when the US engaged in the contingency operations URGENT FURY (Grenada, 1983), and JUST CAUSE (Panama, 1989), respectively.

The decisive change, as Lietzau and Rutigliano (2015) have noted, is that military lawyers were now present at the strategic, operational, and tactical levels before and during campaigns, rather than “left back in the nation’s capital to draft rules and derive *ex post facto* esoteric legal justifications” (p. 31). Indeed, in the Persian Gulf War, legal advisory functions were present both at central (DoD) level as well as every level of command, with particular attention given to the review of target lists (US Department of Defense, 1992, pp. O-4). In this way, legal advisors had the most influence on operations prior to the commencement of operations, after which tactical matters, such as evaluating the legality of a target of opportunity, were mostly conducted on the basis of the ROE (Myrow, 1996). Since lawyers have become part of various phases of the planning and execution of military operations, operations law as a practice legitimizes a particular form of bureaucratized warfare the specificities of which were already firmly in place.

The assertion that legal advisers have achieved the status of a ‘force multiplier’ (e.g. Pitzul, 2001) must be seen in light of the same generativity that spurred lengthy debates and now-arcaic studies on collateral damage as a signaling device: as an emergent area

⁵⁴ A notable exception is cases where collateral damage was inflicted on South Vietnamese civilians or rice paddies; here, solatium payments were occasionally offered (Morehouse, 1990).

of expertise. The emergence of the professional field of military lawyers enabled a revisionist history of Vietnam War that largely mirrors the strategic debate (most notably Sharp, 1998) and which establishes the LOAC as a baseline below which necessary suffering takes place. A prominent discourse in the postwar interpretation of Vietnam held that the air campaigns, especially ROLLING THUNDER, largely failed to achieve their goals due to political interference. This line of thinking extended to the legal evaluation of the air campaigns, with Air Force law experts arguing that the US in fact adhered to historical as well as contemporary standards, especially the LINEBACKER campaigns (Best, 1994)⁵⁵. An oft-cited article by William Hays Parks in a 1982 issue of *Air University Review* captures a common interpretation. One of the most egregious errors of the Johnson administration in handling ROLLING THUNDER, he claimed, was that rather than defer to the judgment of military commanders in selecting targets to minimize collateral damage consistent with the safety of their forces, it “selected the hortatory admonishment to minimize collateral damage as the campaign standard, rather than the law of war prohibition of *excessive collateral* civilian casualties.” (W. H. Parks, 1982, p. 17, italics in original; see also W. H. Parks, 1990)⁵⁶ In line with the interpretation of IHL, collateral damage had to be constructed as something distinct from the massacre; not in terms of the actual number of deaths, since the principle of proportionality is to be tested on the basis of the *expected* loss of civilian life rather than the *actual* loss of life (Huffman, 2012; McCormack & Durham, 2009; Solis, 2013), but on the proper intent and proper estimation of outcome, that is, with reference to the new set of practices within the chain of command that ensure legality.

The construction of the field of operations law enabled institutionally and practically the performance of lawfulness in direct response to the perceived constraints of the external environment. As an emerging field of knowledge, it institutionally

⁵⁵ Reflecting on the negotiations of said protocols, George Aldrich recalled that “[this] strange combination of severe political restrictions on the use of force and a pervading sense of defensiveness, if not guilt, about the suffering caused by the war, and by aerial warfare in particular, resulted, I believe, in an increased American willingness to participate in the review and improvement of that part of international law that deals with the conduct of hostilities. ... These same military lawyers [who worked with Aldrich during negotiations] also wanted, I believe, to have it demonstrated that the restrictions under which the military chafed in Vietnam were *not* required by law.” (Aldrich, 1984, p. 132; italics in original)

⁵⁶ In the *Air Force Law Review*, too, articles have since appeared claiming that the application of the LOAC was “largely driven by public opinion and perceptions”, that the US was “overly sensitive” to collateral damage (DeSaussure, 1994, p. 58), and in a peculiarly anachronistic manner, that the US “conducted operations in accordance with rules of engagement that were largely consistent with Protocols I and II Additional to the 1949 Geneva Conventions” (Reynolds, 2005, p. 20).

reproduced and legitimated the notion of necessary suffering. In this way, the assertion that lawfare was a new technique of technologically backward adversaries ignores the fact that the United States already engaged in *ex ante* declarations of the lawfulness of actions, that is, the declaration of legality of specific bombardments before they took place; such declarations were rooted in the hybrid expertise and function of military lawyers. The combination of new practices that integrated them within the scope of military operations deemphasized the potential prosecutorial role in favor of a preemptive approach.

5.2.3 The no-strike list

The *no-strike list*, formerly denoted the *joint no-fire target list*, is a set of targets that cannot be engaged and thus a regulatory practice of avoiding collateral damage. In DESERT STORM, the list, which was drawn up by target intelligence analysts at CENTCOM and received contributions from the State Department as well as the intelligence agencies, “included archeological sites, sites of special significance to the Islamic religion, foreign embassies in Baghdad, and camps thought to be holding Kuwaiti prisoners of war” (Keaney & Cohen, 1993, p. 46). Analysts then were required to identify any schools, mosques, or hospitals in a six-mile area around the target that would require further care in planning; this process was repeated for the entirety of Baghdad using imagery, tourist maps, and human intelligence. If the calculated risk of collateral damage was too high, the target was not attacked (US Department of Defense, 1992, pp. 132-133). While target restrictions had been applied in the wars in Korea and Vietnam, they had mostly taken the form of geographical delimitations (not crossing the Yalu River or refraining from bombing Hanoi or SAM sites) using rules of engagement⁵⁷; the same rules of engagement would be subject to intense critique after the Vietnam War. Discussing a notorious case of two Iraqi MiG-21 fighter aircraft parked in the vicinity of the Ziggurat of Ur, Chief of Operations Law Branch John Humphries asserted that the

⁵⁷ So-called ‘no-fire zones’ were used in Vietnam, but mainly to prevent friendly fire during rescue operations in particular (Nalty, 2000), whereas no-fire areas and restricted fire areas were used to coordinate fires during DESERT STORM for equal purposes. A similar coordinating function was carried out with the use of the so-called ‘kill boxes’, grids in which aircraft could be directed to attack targets. “The need for kill boxes,” the authors of the GWAPS wrote, “reflected the fact that there were few, if any, visual points of reference in the desert.” (Cohen & Watts, 1993b, p. 266) Target priority in sorties inside the kill boxes was given to artillery, tanks, APCs, then other vehicles – in other words, the objective was to destroy the Iraqi army in preparation for the ground assault, as well as the elusive Scud launchers (R. B. H. Lewis, 1994).

target was legitimate under the laws of war but that the United States sought to protect the ziggurat out of “respect for the cultural value of these objects” (1992, p. 38); the no-strike list rather represented the whole gamut of “political and policy” restrictions⁵⁸. In similar fashion to the no-strike list, the restricted target list includes items that may be engaged in certain ways or subject to certain technical restrictions, such as weaponeering, angle and time of attack, proximity to no-strike facilities, etc. These lists, then, signify an important step towards the bureaucratization of collateral damage. As practices, they share partly the same genealogy as many other (target) lists, including the Master Target List, operation-specific target lists, and the *Basic Encyclopedia* discussed in the previous chapter. Indeed, a designated no-strike target might include a BE number. Yet whereas the Basic Encyclopedia signified an effort to master the entire geography of the earth to subject it to the logic of targets for destruction, the no-strike list redefines targets, scheduling them (for the time being) for non-destruction. Rather than enumerate the entirety of targetable installations across the globe, this is a finite list of items that cannot be targeted, effectively a subset of all potential targets in the world rather than a conceptual reversal. Appearing on the no-strike list does not exclude targets from any consideration but compartmentalizes spaces in which destructive effects will have to be subject to specialized calculations, such as when a nearby target is struck under certain conditions. Nor were these lists static; they were updated continuously throughout the war.

Despite the innovation, the no-strike target shares the pathologies of the regular target while giving rise to its own pathologies. Technological invention, Paul Virilio (2007) reminds us, is also the invention of accidents: the invention of the ‘unsinkable’ ocean liner was simultaneously the invention of the artificial accident of the demise of the *Titanic*. No-strike and restricted target lists belong in the realm of techniques, technological practices, whose function is to produce managerial certainty about the legitimacy of all other targets. When collateral damage does occur, technology provides a domain of reference for the facts of the case: knowledge of the matter may be generated by locating the event relative to the technological and procedural fixtures that were

⁵⁸ A now-declassified 1996 article from the CIA journal *Studies in Intelligence* (CIA, 1996) suggests that the production of the no-strike list was often disorganized and subject to interpretational idiosyncrasies, especially on the nature of facilities to be protected, across the intelligence agencies, and with little doctrinal guidance; such centralized control & guidance has since appeared.

supposed to circumscribe it. When the Chinese embassy in Belgrade was destroyed in 1999 even though embassies are nominated by default, erroneous coordinates effectively led to the circumvention of the no-strike list. “The target and “no-hit” databases,” explained an official, “were not independently constructed” (Pickering, 1999), the implication being that the NSL was based on older information also used for targeting. Amongst other measures, the National Imagery and Mapping Agency (now the NGA) and the DIA were directed to establish new procedures to rapidly update no-strike lists (Garamone, 1999). When the MSF hospital in Kunduz, Afghanistan, was erroneously targeted and mostly destroyed in 2015, it emerged that the no-strike list had not been uploaded to the AC-130 aircraft that carried out the attack, and thus the facility could not be correctly identified as such by the crew, given that it visually matched the rough description they had been given (Garamone, 2015). In response, steps were taken to ensure that a centrally maintained NSL would be correctly distributed to aircraft prior to takeoff rather than relying on communications during flight. The practices, discourses, and technologies designed to circumscribe collateral damage double to circumscribe the accident as a deviation rather than an inherent pathology.

5.2.4 Fields and frontiers of legalism

Baudrillard (1995) famously argued that the Gulf War did not take place; it had already been “[anticipated] in all its details and exhausted by all its scenarios” (Baudrillard, 1995, p. 35). The above reconstruction of the genealogy of operations law contextualizes the claim that the United States reacted to a hostile moral and ethical climate by ramping up its capacity to respond to allegations of illegal conduct. It historicizes the apparent obviousness that the armed forces rely on military lawyers to ensure compliance with the laws of war, arguing instead that American professionals injected a particular understanding of the limits of law that in turn relies on older military understandings of the legal function, that is, as an ‘art of the possible’. Collateral damage played the role of transmitting this limit between discourses of military strategy and discourses of law.

What the legal judgment of al-Firdos and the expansion of operations law more broadly signifies is that ‘collateral damage’, hitherto a term belonging in the arcana of deterrence theory, had migrated into and been appropriated by other fields of knowledge. Already established in military parlance, it was picked up by lawyers and reinterpreted

through the lens of IHL; henceforth, it must be understood in terms of law as well⁵⁹. It would be more correct to describe its contemporary use, however, as legalistic, as I shall show below, because it enters into various discursive formations *including* the legal. In genealogical terms, the emergence of these discourses and practices is symptomatic of a hybridization of the domains of knowledge in which collateral damage is deployed and it produces further techniques of power by which violence can be characterized, systematized, and (de)legitimized. It is not the advent of law in warfare, since the laws in question have substantial historical pedigree (Best, 1994; Carvin & Williams, 2014; Solis, 2010); rather, it is the first time that law becomes explicitly involved in the strategic logic of collateral damage. The practices and discourses of law now co-constitute the emergent dispositif of collateral damage and reinforce the operation of a military planning apparatus that is able to operationalize collateral damage in such a way as to perpetually preempt it. With the gradual integration of military lawyers into the targeting process, the *ex ante* judgment of the violent event became the central task for the operations lawyer. Al-Firdos must be seen as an event that was thus doubly anticipated: it was legal, since American armed forces had acted in good faith using discriminate weapons, and it was inevitable, since mistakes happen in war.

It is doubtful, as Ward Thomas (2001) has argued, that the bombing of the al-Firdos bunker did violate IHL⁶⁰. In effect, however, the legality of the al-Firdos bombing had already been anticipated using the novel techniques of legal exculpation before the fact. Genealogically, the discontinuity of these new techniques is tempered by the continuity of established concepts of military rationality dressed up in legal raiment. Crucially, collateral damage is a necessary component of the ‘legal war’ but must be made perpetually to fall outside of its jurisdiction. The principle of necessary suffering, established on the basis of American military wisdom and recent experiences in Vietnam, encapsulates this. Operations law provides a set of expertise, knowledge, and subjectivities to ensure this interpretation and to enact it *ex ante* as part of a broader military planning process before and during the Persian Gulf War, and indeed beyond. The no-strike list shows the enmeshment of the concrete techniques of power – listing

⁵⁹ Prior to its use in a military sense, as Crawford (2013) has also found, ‘collateral damage’ was in fact a legal term.

⁶⁰ This was nonetheless disputed in its day, most prominently by Human Rights Watch (1991).

and targeting – between the military and the legal spheres that enables an overlap between military efficiency and legal proceduralism.

5.3 THE CONSTRUCTION AND DESTRUCTION OF POINTS

Rather than a revolution in military affairs, I argue that the al-Firdos event shows the culmination of a number of practical and discursive lines of descent in the wake of the Vietnam War. It was made possible by three developments: a gradual but necessary discursive recasting of the function of physical and virtual *points*, as opposed to areas; a logic of discrimination and military efficacy obtaining simultaneously; and practices of virtualized targeting that permitted a managerial microphysics of destruction and collateral damage. Historicizing both the ability and expectation of discriminate warfare will situate the closure of area bombardment as discourse and practice and the emergence of a dispositif of collateral damage. The notion that precision and collateral damage are inversely proportional to one another is the artifact of a specific historical formation in which severe institutionalized anxieties about the use of force and the relation between the armed forces and society became strategically interlinked. To be sure, precision might have been militarily efficacious in a range of scenarios of warfare previously, including deterrence; but it was with the Persian Gulf War that the linkage became effectual in the reconceptualization of a consistently strategic expediency. Precision was, in other words, an alteration of relations; the result of a gradual mutation of the accuracy-efficiency nexus from a military-economical rationality towards a discretionary-discriminatory logic.

This discourse, which emerged in the period leading up to DESERT STORM, was one of self-regulation in the face of certain external ‘constraints’. These constraints were often juxtaposed against the discretion given to the military; political interference constituted improper constraints, while relations with the American people were immutable. “If I had had the same sort of freedom that General Schwarzkopf has, the Vietnam War would have been over in about 1966,” retired Adm Sharp had commented in late February (cited in Shales, 1991). After Operation DELIBERATE FORCE, the 1995 campaign in Bosnia, COS USAF Gen Ronald Fogleman spoke of an impending new ‘American way of war’. Deploing the restriction of USAF to “limited area attacks” in support of the ground role prior to DELIBERATE FORCE, he recognized the successful strategy during attacks on Bosnian Serb targets, giving airpower “the freedom of maneuver to attack the full range

of targets” and launching “extraordinarily precise air strikes that deprived the Serbs of vital warfighting resources while minimizing collateral damage.” (quoted in Correll, 1996, p. 22) Precision gives *freedom* to pursue targets previously off limits and incorporates collateral damage, which hitherto belonged to the toolbox of the political war manager, and makes it a depoliticized and technical issue for the armed forces. This paradoxical self-conception of constrained freedom spelled the rise of collateral damage as a management problem *within* the armed forces.

5.3.1 Discretion-discrimination

The Gulf War, ostensibly, ushered in a new era of conflict that required the armed forces to be much more careful and sensitive towards collateral damage. “The American people will continue to expect us to win in any engagement, but they will also expect us to be more efficient in protecting lives and resources while accomplishing the mission successfully,” read the 1996 JCS strategy document *Joint Vision 2010* (US Department of Defense, Chairman of the Joint Chiefs of Staff, 1996, p. 8). This line of thought emphasized the perceived or real aversion to casualties that had supposedly developed in the public during and after the Vietnam War, a sentiment was widely discussed in military circles. Observers noted that the Gulf War was “the first war in which casualty minimization became from the start an independent operational objective” (Record, 2002, p. 4); that America had “grown ever more sensitive about casualties--our own military casualties, opponent and neutral civilian casualties, and even enemy military casualties” (Sapolsky & Shapiro, 1996, p. 119), and that it was being led “irresistibly to place ever higher premiums on the avoidance of any deaths in combat” (Eikenberry, 1996, p. 109). Edward Luttwak (1995) opined that in an America intolerant of casualties, military commanders had become impatient with airpower, thus diverting from the strategic mission to the tactical, ensuring that as few American soldiers as possible be at risk before the ground invasion⁶¹. As an institution, the US military, especially the Army, had suffered not only formidable losses in Vietnam but also a crisis of confidence; consequently, operations during DESERT STORM would proceed with some caution and

⁶¹ Later writers would question the actual public sensitivity to casualties, holding instead that it was an established myth on the part of senior policy-makers (e.g. Hyde, 2000; Kull & Destler, 1999; Lacquement, 2004). These arguments in turn were picked up by existing and emerging fields of security literature that would characterize modern conflict as virtual, risk-transfer warfare, etc., emphasizing its bloodless presentation and emphatic use of high technology (R. Mandel, 2004; McInnes, 2002).

with assurance of decisive victory, formalized in the so-called Powell-Weinberger doctrine (Campbell, 1998; Erdmann, 1999). Where other U.S. officials became ‘intoxicated’ by such deceptively simple operations as that of Panama in 1989 (Operation JUST CAUSE), Powell resisted the temptation and initially opposed the Gulf campaign (O’Sullivan, 2009; Woodward, 2002). In this atmosphere of anxiety, collateral damage would require careful management, understood as discriminate military engagements.

At the same time, the success of new technologies fielded in the Gulf War gave rise to a triumphalist attitude of technical revolution. “The Gulf War needs to be seen as something like Cambrai”, Director of the Office of Net Assessment (ONA) Andrew Marshall wrote in a 1993 memorandum (Marshall, 1993, p. 3), referring to the first major tank battle of World War I. Against the need for discriminate application of firepower, precision engagement emerged as the technical compromise between freedom and constraint; it “emphasizes responsiveness and accuracy to achieve operational objectives. This new concept will result in less risk, less collateral damage, higher probability of success, and overall economy of force across the full range of military operations.” (US Department of Defense, Chairman of the Joint Chiefs of Staff, 1997, p. 52)⁶² Characterizing the impending ‘military-technical revolution’ (MTR), Marshall identified long-range precision strike as one key element, and information warfare as the other; the latter especially would morph into the revolution in military affairs (RMA), a notion espoused a few years later (esp. Cohen, 1996; FitzSimonds & van Tol, 1994; Krepinevich, 1994), which held that advances in information technology would enable ‘full-spectrum dominance’, an unprecedented degree of control over the battlespace. A the central assumptions was that presidents might respond at anytime and anywhere to a crisis with limited or no loss of life, such as in the air operation in Libya in 1986 (EL DORADO

⁶² A parallel development was the tightening of centralized control of military assets contained in the vision of jointness played out in the struggle over the 1986 Goldwater-Nichols Act (Locher, 2002). In the Gulf War, to counter the command dispersion and often incoherence of the airpower efforts in Vietnam, a complete daily Air Tasking Order (ATO) was conceived that integrated the assets available to the military leadership across services (Clodfelter, 1991). A single commander, the Joint Force Air Component Commander (JFACC) LtGen Horner, would be in charge of all air operations, publishing the voluminous ATO after briefing the CINC, Gen Schwarzkopf (Gordon & Trainor, 1995; R. B. H. Lewis, 1994). The different services would contribute airborne assets, particularly fixed-wing, to the JFACC, but since Horner was from the Air Force, the expectation was that the Air Force would use the position to pursue classic airpower objectives rather than prepare the battlefield for the ground assault (S. J. McNamara, 1994). While these developments were thus indicative of an original configuration of operations management, they were still largely bound by the institutional walls of the respective services rather than truly joint (Swanson & Dunlap, 1995; M. L. Warren, 1996).

CANYON) and the Gulf War (Meernik & Waterman, 1996). A prominent Air Force historian wrote a couple of years after DESERT STORM that despite the current ‘moral climate’, contemporary precision weapons offered decision-makers unprecedented ‘freedom’ and ‘confidence’ to use force (Hallion, 1997, pp. 114-115). Eliot Cohen (1994), who would go on to direct the GWAPS, wrote of the enduring ‘mystique’ of US airpower as a necessary component of foreign policy. These assumptions had a certain affinity with traditional airpower doctrine, which assumed boundless mobility, discriminate targeting, and the possibility of winning the war entirely from the air (Clodfelter, 2008).

Ever-more widespread since the Gulf War, precision strikes seemed to emerge at the intersection of a casualty-averse public and revolutionary technical capabilities. This narrative, however, requires qualification. As I showed in the previous chapter, historically accuracy has attracted institutional support and attention for its ability to perform a range of practical and discursive functions, including for the nuclear mission (see also Mackenzie, 1990). Out of these, the avoidance of civilian casualties had to be established. The doctrine and planning of DESERT STORM reveal the emergent recasting of precision as a mode of warfare that obtained military efficacy and low collateral damage at the same time; it expanded the parameters that made precision desirable, further marginalizing nuclear weapons in the process.

The emergent regime of precision strikes had in fact been underway for decades for different purposes, namely the desire to strike decisively with a single munition. William Perry, the Under Secretary of Defense for R&E, said of precision weapons during a 1978 hearing on a new R&D program, *Assault Breaker*:

First of all, we will be able to see targets on the battlefield any time of day and in any kind of weather. Secondly, we will be able to make a direct hit on any target we can see. Third, we will be able to destroy any target we can hit. (Department of Defense Authorization for Appropriations for Fiscal Year 1979, 1978, p. 5510)⁶³

Returning to Europe after Vietnam to prepare for the onslaught of the numerically superior Warsaw Pact, US armed forces, including the USAF, saw doctrinal and technological developments that would determine not only the outcome, but also the

⁶³ Similarly, General William DePuy, first commander of the Army Training and Doctrine Command, said during a presentation in the early 1980s that “What can be seen, can be hit; what can be hit, can be killed” (in Swain, 1994, p. 85).

manner of fighting in DESERT STORM. On the eve of the Cold War's end, a panel consisting of Albert Wohlstetter, Fred Iklé, and Kissinger, among others, delivered its report on American long-term strategy, in which they argued that "precision ... will enable us to use conventional weapons for many of the missions once assigned to nuclear weapons." (Iklé & Wohlstetter, 1988, p. 8) At the tactical and operational levels, too, high accuracy was desirable in order for allied aircraft to carry out deep interdiction missions against hard, fixed targets that might otherwise require a large expenditure of unguided bombs and, with sophisticated Pact air defenses, of aircraft (US Congress, 1987). The *Assault Breaker* program sought to develop a variety of new systems of reconnaissance and smart (sub)munitions that would take the brunt of the expected armored Pact offensive, some of which were used in DESERT STORM (Van Atta et al., 2003). The Army's *AirLand Battle* doctrine, which envisioned the USAF in the role of deep interdiction, noted that precision-guided munitions would offer both sides the opportunity to concentrate much more firepower at points of decision (US Department of the Army, 1982, p. 1-2). The post-Vietnam period, in short, saw great strides in expanding the role of precision technology for the battlefield, and only gradually did collateral damage (to civilians, as opposed to friendly forces) become primarily an issue of conventional weapons⁶⁴.

The promises of precision were not lost on proponents of airpower, but they rather came to the conclusion that airpower might achieve independent strategic results with less need for ground involvement⁶⁵. Andrew Krepinevich, working under Marshall at ONA, had written in an influential 1991 assessment of the MTR that future conflicts "could witness military forces striking directly at the enemy's "jugular," or "central nervous system," at the outset of a conflict without first having to defeat the bulk of his military forces." (Krepinevich, 2002, p. 12) In the Air Force, ideas about strategic bombing and the attainment of strategic objectives through airpower had not dissipated even though USAF leadership had largely been replaced, and they would be replicated in the air plan

⁶⁴ One of the prominent debates about civilians and collateral damage of the 1980s was a pastoral letter sent from the National Conference of Catholic Bishops warning against the indiscriminacy and inhumanity of nuclear weapons (see Johnston, 1985); another was the great controversy over the deployment and possible use of enhanced-radiation weapons ('neutron bombs') (W. Biddle, 1981).

⁶⁵ *AirLand Battle* was controversial among airmen from the outset, particularly over the issues of control over air assets and the coordination of assets beyond the front line, and it was widely debated after DESERT STORM whether it had in fact found use at all (Futrell, 1989a; McCaffrey, 2004; Winton, 1996).

(Kagan, 2006; Vallance, 1996; Worden, 1998). In 1988, a USAF colonel by the name of John Warden had sketched out a targeting philosophy that would be partly employed in DESERT STORM (Warden, 1988); it was these sorties in downtown Baghdad that would cause the most publicized cases of collateral damage, including al-Firdos. Warden named the air plan *Instant Thunder* with an obvious and highly symbolic allusion to ROLLING THUNDER, basing it on a philosophy that he would later formalize as ‘Five Rings’. Nevertheless, it is in fact familiar in its reliance on *strategic* airpower to swiftly and decisively incapacitate the enemy’s will to resist, or to induce ‘strategic paralysis’⁶⁶.

Warden was convinced that collateral damage could be avoided with careful planning to avoid misdesignation of targets, which he considered its primary driver, along with the deployment of ‘suitable’ aircraft and weapon systems (Cohen & Watts, 1993a, p. 378). As with prior strategic air campaigns, POL, electricity, LOCs (telecommunications) and strategic weapons figured prominently in the proposed target list. Similar to the strategic airpower theorists of yore, Warden believed that the war could be won in a matter of days, and with no ground battle at all (Atkinson, 1993). The authors of the GWAPS in fact noted that there had been a “general absence of new operational concepts” in DESERT STORM (Keaney & Cohen, 1993, p. 247). Thus, it suffered from a lack of sustained engagement with the correspondence between bombing and the components of the societal ‘system’, leading critics to compare it to ‘SIOP thinking’ (Szafranski, 1995; Ware, 1995). Population, however, even if it belonged in the fourth ‘ring’, was not targetable to Warden on moral and military grounds, yet he affirmed that Douhet might have been right in his time (Warden, 1995). Reflecting on the war a year later, Warden remarked that with modern weapons and accuracy, “Air power then becomes quintessentially an American form of war; it uses our advantages of mobility and high technology to overwhelm the enemy without spilling too much blood, especially American blood.” (Warden, 1992, p. 61) The air plan developed for the war exhibited

⁶⁶ Despite the legacy of strategic airpower, it was by no means certain that US planning for DESERT STORM would coalesce around a strategic air campaign such as the one drawn up by Warden (Kuehl, 1996). Lambeth (2000) has argued that TAC, for instance, was still so caught up in ‘Vietnam-era thinking’ as to suggest a program of graduated attacks against high-value targets; and in the period after Vietnam, a growing number of critical interpretations of the LINEBACKER campaigns and the Army’s development of the AirLand Battle doctrine paved the way for a closer integration, if not yet actual conjoining, of forces (Leonard, 1994; Winton, 1997). Ultimately, the vast majority of ordnance expended on Iraq struck tactical rather than strategic objectives as airpower prepared the battlefield for the ground assault (Keaney & Cohen, 1993; Mets, 2007).

continuity and discontinuity at the same time: it consciously responded to the failures of Vietnam, incorporated airpower orthodoxy, and enabled a distinct concatenation of low collateral damage and classic coercive objectives which accorded high symbolic and political value to point targets.

The discursive possibility of *strategic* aerial attack using conventional (precision) weapons shifted the terms of the collateral damage debate decisively away from nuclear weapons. The ambiguity and discontinuity of strategic airpower at the time of DESERT STORM manifests itself here: the irony of the ‘becoming’ is that it requires a narrative in which World War II-style carpet bombing, SIOP thinking, and ROLLING THUNDER, are subsumed under a depoliticized teleology. Rather, it was the result of a confused and entangled history of discourses that ascribed military efficacy to discriminate, precision bombardment. Warden may have reversed Douhet’s priorities, but not without affirming his legacy. *Instant Thunder* was only possible to imagine at the intersection of existing airpower thinking and a reconceptualization of technology that was hidden beneath the veneer of progress towards a benevolent yet also militarily efficacious future in which collateral damage was a matter of proper planning and engineering.

5.3.2 The invention of the PGM

If the main shift in the conception of accuracy was towards one of discriminate discretion, the point precision of precision-guided munitions (PGMs) had to be established. *Joint Vision 2010* (US Department of Defense, Chairman of the Joint Chiefs of Staff, 1996) warned that accelerating technological developments offered both opportunities for those ready to seize them and pitfalls for those failing to understand and adapt. Technology appeared to run outside of the purview and control of the armed forces, an exogenous but progressive force. Instead, precision must be interrogated at the level of discourse. Various makes of inertial, radar, electro-optical, and even laser-guided munitions had been in use long before the Gulf War, but what marks the discontinuity of the Gulf War is the inscription of discriminate discretion, which caused certain technologies to appear necessary, obvious, and as manifestations of a coherent policy of collateral damage. In the following, I trace two prominent weapon systems, the laser-guided bomb and the GPS-guided bomb, to bring out the contingency of their invention and the political rationalization of their use. Precision weapons serve as the interlocking practice of a regime of points and are inscribed with a logic of appropriateness for certain targets

expressed in practices of planning, such as *Instant Thunder*, which assign strategic value to the destruction of certain physical facilities.

“For the first time in history, precision-guided bombs and missiles have played a decisive role in war, paving the way for the invasion of Kuwait and Iraq. With their help, the United States and its allies critically weakened the fourth-largest army in the world while suffering surprisingly light casualties during the month of the air war,” an excited *New York Times* reporter wrote approximately two weeks after al-Firdos, naming laser-guided munitions the invention that shaped the war (M. W. Browne, 1991). The connection between laser-guided munitions and collateral damage was in fact made towards the end of the Vietnam War, as airmen had destroyed targets in cities of North Vietnam and made claims to their ability to discriminate and minimize collateral damage, statements that would be repeated since. The technology, first developed by the Army for artillery purposes, was shelved but then revived in 1967 using petty funds from the so-called Limited War Equipment Tests under Project 1559, a project designed to bring new technologies to the front in shorter time. Deployed and tested in 1968, *Pave Way I* had been suggested as a means to achieving an accurate stand-off capability, that is, the capability to deliver ordnance without being shot down. “This need,” wrote a RAND contractor in his history of its development, “was reinforced by pressure from the operations side of the Air Staff; Secretary of Defense McNamara was reluctant to grant additional targets in Vietnam because, as he pointed out, the Air Force had not been able to destroy all the ones he had allocated.” (deLeon, 1974, p. 20) Simulations had shown that a 10’ by 100’ point target would require just 2 bomber passes against the 191 sorties with unguided bombs required for 50% assurance of destruction, at a fraction of the cost (M. F. Porter, 1970). From the same logic of cost-effectiveness, however, it also emerged that the LGB was only economical when used for ‘lucrative’ point targets, which due to political restrictions were in short supply until President Nixon launched the LINEBACKER campaigns that airpower enthusiasts lauded. Similarly, the authors of the GWAPS noted that LGBs were of less value against area targets, such as supply depots or deployed forces, despite an estimated accuracy of almost 80% in good weather (Cohen & Watts, 1993b, p. 14; Keaney & Cohen, 1993, p. 227). Precision, in other words, requires the (social) construction of an appropriate target system by which it is rendered effectual, such as Warden’s. It also requires a reevaluation of the profession: Watts (2007), for

instance, has argued that the USAF pilot community, which traditionally valued skill, only fully embraced LGBs during DESERT STORM. Nevertheless, precision-guided munitions would continue to constitute an ever-greater proportion of total munitions expended in the decades to come.

The genealogy of another celebrated guidance technology, GPS guidance, equally testifies to the ambiguity and social construction of precision. If the most celebrated feature of contemporary aerial warfare is the use of precision guidance to deliver munitions with pinpoint accuracy and minimal collateral damage, the Joint Direct Attack Munition (JDAM) has established itself as perhaps *the* weapon for precision aerial operations, with hundreds of thousands of kits having been ordered since the turn of the millennium (R. Hansen, 2006; Warwick, 2008). Developed in the 1990s, this first new guided bomb to be fielded since Vietnam found use in Operation ALLIED FORCE and received much subsequent praise in the community (e.g. Mets, 2001; Ralston, 1999; see also Gillespie, 2006) as well as in later conflicts (e.g. Easton, 2003; Grier, 2006; Hasik, 2008). After its debut in the 1999 campaign against Serbia, LtGen Short called the delivery of JDAMs with B-2s the “number 1 success story” of the engagement (cited in Tirpak, 2000, p. 28). Yet for all its praise, JDAM also met institutional resistance in its early days. A tail kit installed on old, ‘dumb’ iron bombs, the affordable JDAM was based on inertial and GPS guidance, enabled by advances in the miniaturization of GPS receivers and inertial guidance components (Van Atta et al., 2003). The requirement arose out of the fact that inclement weather during DESERT STORM had impeded the use of LGBs, leading to the formulation of an all-weather precision requirement directly from COS USAF (Jamieson, 2015; Mahnken, 2008). The technology, however, was not new. As with the resistance to GPS technology during the Cold War⁶⁷, the idea of inertially

⁶⁷ At the time of its inception, numerous navigation systems were in use in the services rather than one single alternative; globally, navigation civil and military was underpinned by a variety of especially British and American radio systems, typically with regional coverage, with the success of GPS speaking more to a desire for globalism and streamlining than to achieve absolute accuracy (Rankin, 2016). As far as the Air Force was concerned, the private Aerospace Corporation convinced it to fund a study delivered in 1966 under the so-called Project 621B which would set the parameters for further development (Parkinson, 1997). The scope, as the now-declassified report reveals, was tactical operations, with the “most critical tactical user [being] the high speed maneuvering aircraft delivering conventional weapons and stores” (Woodford & Nakamura, 1966, p. 5). SAC and the Air Force in general were unconvinced by the need to fund emergent satellite navigation and frequently attempted to shut down the program, arguing especially that inertial guidance, which is self-contained and thus cannot be jammed, was enough to ensure the integrity of the mission (McLucas, 2006; Werrell, 2003). Yet it did survive, but did so as one of the first joint programs between the Navy and the Air Force, led by Bradford Parkinson, a USAF colonel. In Parkinson’s own understanding, the program was only successful at DoD because it overcame service boundaries, that is,

guided bombs had languished and run out of research money and was then brought back to life as DESERT STORM wound down and the top-down requirement emerged⁶⁸; the chief engineer later recalled that despite a live demonstration in the late 1980s there “had not been a whole lot of interest in it” (Cahlink, 2003; Grier, 2006). Rather, often cited as integral to the success of the program were changes in acquisition management that allowed the parts for the JDAM to be purchased off-the-shelf with more fewer requirements and less documentation, driving down the cost of the kit. The JDAM program thus combined parts from the *commercial* market, such as tail fins produced by a lawnmower company, in order to break through institutional resistance in the *military* chain of command with an argument centering on cost efficiency. At around \$20,000 apiece, the JDAM was as much a success of industry and engineering, effectively paving the way for an era in which precision-strike munitions are the only feasible option, and where generic statements about the outstanding capacities of airpower to discriminate are underpinned by an industry that mass-produces precision.

Through discriminate use and a clear distribution of statements that marks unguided (‘dumb’) munitions from their ‘smart’ counterparts, precision-guided weapons became necessary practices of a discriminate but lethal armed force whose concern for civilians was expressed in their use of the weapon.

even *after* having demonstrated its capacity for blind-bombing, a feature of modern precision weapons now taken for granted (Parkinson & Powers, 2010). In the 1980s, too, the program faced severe funding cuts despite many satellites having already been sent into orbit. In other words, until its success in the Gulf War, by no means was it certain that GPS would attain its current status.

⁶⁸ Inertial guidance had been associated with missiles and rockets since their invention, but its interpretation and development had also been subject to the vagaries of institutional power during the Cold War. Charles Stark Draper, probably the most influential proponent of inertial guidance and himself an amateur pilot, was convinced that a purely self-contained system would be operationally preferable to one with outside interference, i.e. radionavigation, a conclusion that found a willing audience at USAF (Grewal, Weill, & Andrews, 2007; Lawrence, 1998; Wrigley, 1977). Indeed, requirements for the ballistic mission, whether launched from silos or from the sea, were similar in this regard, although Draper’s laboratory would soon after shift its emphasis to submarine-launched missiles (Draper, 1981). With the demand for higher accuracy spurred by the shift to counterforce in USAF and official policy, extremely precise and expensive gyroscopes and accelerometers were produced capable of delivering a ballistic missile with (relatively) little degradation over the flight path (Greenspan, 1995). Thus, while inertial guidance kits had achieved a very high level of sophistication, they were not in any way seen as suitable for tactical missiles; advances towards feasible tactical uses, which require much less accuracy on account of the shorter flying time, were only made on the back of great strides in other areas, including computers and lasers, the latter spawning the ring-laser gyroscope later to be used in the JDAM and the *Predator* drone (Barbour, 2010; Titterton & Weston, 2004). Nonetheless, the kit only found a receptive audience after the end of the Cold War, since anti-Soviet tactics had emphasized low flying, thus permitting laser targeting; it was with the casualty-averse high-altitude flying of DESERT STORM and beyond that these weapons became more desirable (Grier, 2006; Kopp, 2002).

5.3.3 Virtual targets: from circle to point

During Operations DESERT SHIELD and DESERT STORM, targeteers and planners engaged in novel practices designed to reduce collateral damage by modeling targets for engagement combined with a resurgent need for ever-more precise photogrammetry and geolocation. In other words, precision had to be produced before the fact, with sophisticated intelligence, imagery, and analysis. Michael Ignatieff (2000) lamented after the war in Kosovo that war had ceased to be fully real; it was now an entertainment product consumed by uninvolved citizens with nothing at risk. Yet the virtualization of war applies also to the internal workings of targeting and the possibilities of imagining and ultimately governing the practices of destruction *ex ante* – knowing and managing before the event itself. These everyday practices are geographical and political: not only do they serve as elements in the emergent dispositif of collateral damage as a technical problem, but their use reconstitutes collateral damage along lines of virtuality and technicality in a movement from the area to the point. Because GPS and GPS/inertial precision-guided munitions were first fielded in the 1990s, this period provides an opportunity to examine what might be called the spatial component of the strategic discourse on collateral damage.

The enduring legacy of ‘SIOP thinking’, which itself was contingent upon wartime experiences and prewar discourse, is the practice of a circle superimposed upon a map representing the blast area. By and large, however, the *city* represented the limits of collateral damage, beyond which targeting shifted from counterforce to countervalue or, as in Vietnam, beyond which coercion might become terror or at least something politically unpalatable. To be sure, collateral damage occurred outside Hanoi and Haiphong, but to these instances were not, as I have argued in the previous chapter, affixed the same political or strategic significance as cities, which were explicitly written into the ROE⁶⁹. This might be seen as merely a consequence of the intellectual baggage of ‘hostage cities’ in the balance of terror or the perceived escalatory potential of targeting cities in the geopolitical environment of Cold War. Yet with the new analytics of discriminate targeting, the city ceases to be the boundary marker of the ultimate escalatory act. While it is appreciated that urban operations are among the most likely to cause collateral damage, that fact has become an admonishment to apply ever more fine-grained

⁶⁹ These were reported to Congress by Senator Goldwater in 1975 (94 Cong. Rec. 17551, 1975).

and precise targeting, imaging, mensuration, weaponeering, and engagement. The emergent strategic logic of collateral damage, in other words, has unlocked the city for targeting.

Under the emergent regime of points and with the practices of precision weapons, a theoretical equality between desired and actual points of impact generates the impetus for simulation tools and the integration of existing modeling practices. The practice of bombing competitions, which had previously been a prominent means of ensuring and promoting accuracy, either became symbolic or obsolete; SAC's last bombing competition was held in 1992, shortly before the command's deactivation (Callaway, 2009). Instead, it was with the Persian Gulf War and onwards that the first advances were made towards formal modeling of the target and its environment for collateral damage estimation (Martin & Gordon, 2004). A cumbersome, labor-intensive process taking as much as several hours per target, this involved manually creating virtual models of facilities, based on imagery, to be targeted as well as their immediate environment; these could then be subjected to an already existing knowledge regime of weaponeering, such that the precise effects of detonating the munition at a certain point, with blast and shrapnel effects, etc., would be known and managed. To permit this type of analysis, details on munitions were required that specified their destructive capacity. This capacity had been delivered by the Joint Technical Coordinating Group for Munitions Effectiveness (JTCG/ME), a division under the Army created by JCS in 1964 to gather such data primarily on non-nuclear weapons from the respective services' testing facilities (Driels, 2013). JTCG/ME's main product is the so-called Joint Munitions Effectiveness Manual that contains "damage/kill probabilities for specific weapons and targets, physical and functional characteristics of munitions and weapon systems, target vulnerability, obscuration on weapon effectiveness, and analytical techniques and procedures for assessing munitions effectiveness." (US Department of the Army, n.d.) Computer models were also run prior to the war, yielding an estimate of 2,000 civilian casualties in Baghdad (Woodward, 2002). While analytical and computational aids had been in use since the Vietnam War, their full potential in terms of collateral damage – as opposed to assurance of destruction – was first seen when dedicated CD tools emerged and became integrated with organizational procedures.

In the same way, while practices of point mensuration existed before al-Firdos they became inscribed with the logic of collateral damage as the discretion-discrimination nexus became the defining discourse on precision and precision weapons the defining practice. Point mensuration is the practice of precisely measuring a target, e.g. a building, with absolute coordinates of latitude, longitude, and elevation, based on photogrammetry and uses geometric calculations to remove errors and improve the accuracy of e.g. GPS by combining several pictures of a target from different angles. In the early 1970s, the stereoscopic workstation APPS (Analytical Point Positioning System) was fielded (Light & Revell, 1976), to be used with the now-digitized Point Position Data Base, a set of stereo images of a given geographic locale with predetermined parameters for geolocation (Waxman & Unruh, 1986). Yet it was with widespread use of precision-guided weapons during this phase that the need for centralized, rapid mensuration and further training became obvious, and more generally with the increased use of precision weapons that point mensuration increased in importance (Hura & McLeod, 1993; Lambeth, 2001; US Department of the Air Force, Headquarters Air Force Doctrine Center, 2006). This included the sophisticated scene-matching technology that some cruise missiles relied on, which contains a virtual model of the target environment to which the missile is guided. The process of point mensuration is an intermediate and highly technical exercise that virtually *produces* desired points of impact, but which becomes subterranean and esoteric when the distinction between targeting and delivery collapses in the imaginaries of pilots or the public (Patch, 2007). These practices of mensuration and modeling create the microphysics of destruction that have enabled the later fine-grained instruments of power (see chapter 6), to be possible. At the time, however, a “lack of understanding of how the air war was in fact being fought” undermined the planners’ abilities to correct errors until after the fact; and thus, the main regulatory instrument for national policy-makers remained, as is shown by al-Firdos, restrictions on types of targets (Cohen & Watts, 1993a, pp. 378-379). Virtualization reinforced the trend towards predictive, *ex ante* estimation of collateral damage.

5.3.4 The shifting context of precision

The intelligibility of the al-Firdos bombing as an example of collateral damage rests on an emergent logic of points that since the Vietnam War was becoming the military mainstream. The above engagement with discourse and practice reveals that this

condition historically exhibits elements of continuity and discontinuity. Practices that produce precision virtually, while historically contingent, increased dramatically in importance. Point mensuration, kill probabilities, and effects radii here became essential knowledge products that connect the technological state of the art to the planning praxis of the bombing campaign. The anticipatory nature of the Gulf War must thus also be understood in light of this *ex ante* precision. Meanwhile, the confused and contradictory history of PGMs, now weapons of choice, testifies to the highly contingent nature of the emergent precision regime. The desirability of PGMs, which developed over decades, occurred at the intersection of not one but several discourses on military victory, the nature of the next battle, affordability, the appropriateness of the use of force, and on the discretion of the armed forces within American society. Warden's air campaign instantiated a number of enduring beliefs among airpower theorists – more akin to LINEBACKER than ROLLING THUNDER - and as such provided the intellectual framework by which a discrete and discriminate bombing campaign might achieve victory, thus making PGMs desirable.

Reconstructing this significant complexity brings into view the role of collateral damage, which remained one among many considerations and was yet to become incorporated into a strategic theory of the significance of civilian casualties. Yet careful inspection of this nexus of highly technical practices accentuates the polymorphic condition, namely that a regime of points is produced that would facilitate and render obvious the importance of collateral damage despite the fact that it remained undertheorized at the time.

5.4 CONCLUSION

The destruction of the al-Firdos bunker was perceived as a watershed event in its time. It established as a matter of course that precision-guided weapons would be associated with more 'just' and discriminate warfare, something that had only been dimly foreshadowed during the last days of the war in Vietnam. Interrogating this emergent concatenation of legality, discrimination, and precision at the level of discourse and practice has allowed for a rehistoricization of the al-Firdos event in terms of a history of collateral damage. Al-Firdos marks a historical disjuncture not as a development that happened all at once, but as a privileged opening into a site of historical significance and a prism through which

continuities are exposed, including the construction of a lineage of military necessity coinciding with concerns over civilians. Critically engaging with this disjuncture has enabled an evaluation of practices and statements that now appear as matters of course in contemporary warfare and an appraisal of the depoliticizing effects that they mask.

With the backdrop of the preceding chapter, it is possible to outline an emergent dispositif of collateral damage which at the time was a wide distribution of statements and practices in which the notion was expressed. This chapter has outlined two ways in which this took place. First, as the result of the emergence of a new field of knowledge, operations law, that permitted the armed forces to inject a particular notion of proportionality into their conception of customary law, imbuing it with legitimacy through practices of advice and counsel during operations as well as the quasi-legal no-strike list. The construction of expertise speaks to the power and knowledge now centered on the institution of the armed forces itself in which collateral damage, in many of its polymorphic manifestations, is managed as a virtual microphysics of lawful destruction. With al-Firdos, legality was established before the strike itself. Second, as the preference for *points* rather than *areas* that lent further legitimacy and necessity to practices and discourses of precision. This development might easily be subsumed under a teleology of scientific progress, but careful analysis shows that the elements whose connection it is possible to establish – a principle of discriminate discretion, practices of target planning, the creation of precision through virtualized targeting, and the development and reinterpretation of the weapons themselves – constituted a redefinition of military efficiency with multiple causalities and genealogical threads, where precision depends on the continuous reinscription of its efficacy before the act of the strike itself.

These two historical strands, taken together, have not only privileged the *ex ante* construction of the lawful and militarily efficacious strike. With them, the notion of bonus damage is decisively sidelined from the practical and discursive mainstream. When collateral damage occurs, the knowledge regime prescribes its own refinement to avoid it in the future. Yet the secondary effects of airstrikes, apparent only long after the war was over, fell outside any classification or estimation process and thus outside all governance, language, and accountability. Where the early critique of bonus damage repoliticized the mass destruction of the atomic offensive, the new pathologies of this managerial collateral-damage regime are found in between local regimes of classification. In this way,

the ‘normal accident’ of collateral damage represents a disjuncture from the predicted and politically manageable collateral damage of the limited and general-war discourse of the postwar period. It is now at once enveloped by practices to contain and predict it, and simultaneously tragic and unavoidable in the sense of being ‘normal’ in the business of war. The defense offered by the United States then has been replicated since: the unfortunate civilians were caught between the inherent risks of war and the limits of jurisdiction. In the face of perceived hostility from their domestic audience, the armed forces attempted to *manage* all facets of collateral damage, now a strategic issue, *before* they occurred. The temporal aspect – managing the collateral damage event prior to its taking place – is borne out by this same symbiosis of legal review and precision targeting, two distinct processes that became fused and have become increasingly comprehensive and computationally demanding. These new tactics and techniques of power permitted the US to exonerate itself, shift the blame to Saddam Hussein, and claim DESERT STORM to be proof of concept of PGMs, but at the time necessitated grave self-reflection and the tightening of target controls. While following disparate historical trajectories that cannot be reduced to a concern for collateral damage, in unison they produce the lawful misdesignation as the normal accident of collateral damage.

Finally, although the use of precision weapons in accordance with the law is a matter of course in present-day conflict, that outcome was demonstrably contingent. It was ensured by a renegotiation of technological priorities within the American strategic community, especially the discursive ‘reinvention’ of a precision that is not merely militarily efficacious, but also a discriminate political instrument, i.e. a means of preempting a public relations catastrophe rather than an armored Pact offensive. In addition, the blending of existing airpower theory with the perceived opportunities offered by such technology gave increased impetus to develop further, incrementally, the underlying practices of precision that had been in place at least since the Vietnam War. At the same time, other historical trajectories were closed off: practices of area bombardment were sidelined, while a more sweeping and radically limiting role of international law was proscribed in favor of a pragmatic law that could be operationalized and put to work.

6 HUMAN TERRAIN, MACHINE LOGIC: COLLATERAL DAMAGE AFTER 9/11

6.1 INTRODUCTION

The first-ever intercontinental drone strike was carried out by a CIA-operated MQ-1 *Predator* just weeks after 9/11, targeting then leader of the Taliban Mullah Omar. In the early hours of October 8, 2001, the *Predator* had been following a convoy outside Kandahar, Afghanistan, thought to contain Omar, but staff had been unable to generate a ‘kill box’ and produce the necessary firepower in time, while the *Predator*’s ability to strike moving targets was unreliable. When the convoy stopped at a compound, however, a *Hellfire* missile was dispatched that struck one of the vehicles, killing several, and the people inside the compound fled to another building about half a mile away. The *Predator*, hovering overhead, provided a live video feed of the events from above to Pentagon, CENTCOM in Tampa, Langley, and a Combined Air Operations Center near Riyadh. According to his memoirs General Tommy Franks, commander of CENTCOM, asked Rumsfeld permission to engage this “high collateral-damage target,” his request personally approved by President George W Bush within minutes. A CIA officer warned that the building might be a mosque and, in keeping an admonishment from Bush & Rumsfeld that the war “was not against the Afghan people,” engaging might give the wrong impression. Franks’ legal adviser, however, had approved the strike from the outset, and so the order was given. The building was bombed by Navy fighter jets, destroying it completely. Yet Omar escaped and the confusion over command and control between CENTCOM, USAF, the Navy, and the CIA had caused tempers to flare (Franks, 2004; Whittle, 2014; Woods, 2015). The Air Force as well as the other services would acquire their own fleets of armed and unarmed drones. The CIA, transformed into a veritable assassination agency (Mazzetti, 2013), would define the conduct of operations for most of the decade, with political opprobrium surrounding the thousands of civilian deaths resulting from its counterterrorist campaign (Cavallaro et al., 2012; The Bureau of Investigative Journalism, n.d.).

In late February of 2010, General Stanley McChrystal, commander of the war in Afghanistan, issued an official apology to President Hamid Karzai followed by an online video apology to the Afghan people dubbed in Dari and Pashto (HQ ISAF, Public Affairs

Office, 2010a). An airstrike launched by US Special Forces helicopters had ended up killing as many as 27 civilians who were apparently mistaken for insurgents (Nordland, 2010). Just the year before, McChrystal had tightened the rules over the use of airstrikes, arguing that “[a]ir power contains the seeds of our own destruction if we do not use it responsibly.” (quoted in Filkins, 2009) ISAF immediately ordered an investigation into the strike (HQ ISAF, Public Affairs Office, 2010b). The strike occurred, the investigation found, “because the ground commander lacked a clear understanding of who was in the vehicles, the location, direction of travel and the likely course of action of the vehicles. This lack of understanding resulted from poorly functioning command posts at [redacted] and CJSOTF-A [Combined Joint Special Operations Task Force – Afghanistan] which failed to provide the ground commander with the evidence and analysis that the vehicles were not a hostile threat and the inaccurate and unprofessional reporting of the Predator crew operating out of Creech, AFB Nevada [sic]” (McHale, 2010, p. 1). In this way, despite the commander having displayed ‘tactical patience’ in letting the situation develop, that time was ultimately wasted due to inaccurate reporting by the UAV team, who claimed that only armed ‘military aged males’ were present. After the strike, despite reports from the attacking OH-58D *Kiowa* helicopters and full motion video (FMV) from the USAF-operated *Predator* loitering overhead, both of which showed women and children at the site of the engagement, no civilian casualty report was submitted. In addition to directing further instruction of counterinsurgency strategy, McChrystal requested USAF to investigate its Predator crew separately (McChrystal, 2010).

The juxtaposition of these two events reveals three conditions that advance this genealogy of collateral damage. First, despite technological advances that have been key to the practice and doctrine of low-collateral damage military operations in recent years, unintended civilian deaths continue to occur. Airstrikes on weddings in particular have become fairly commonplace, with at least eight between 2001 and 2013 (Engelhardt, 2013). These have occurred not only using manned aircraft, but also with unmanned aerial vehicles, or drones, operated thousands of miles away from the target. Second, the use of new techniques, new procedures, and new weapons generate new pathologies of current modes of warfare. The opportunities offered by drone surveillance, for example, were betrayed by faulty identification and a lack of proper analysis in the latter case. In the former case, concerns over collateral damage may be stronger than IHL requires,

generating new sources of friction or complementarity between law and strategy. Finally, at the level of doctrine, targeted killing campaigns using drones and contemporary counterinsurgency campaigns are often seen to be at loggerheads, the controversy centering on civilian deaths. In a 2009 op-ed David Kilcullen and Andrew Exum, proponents of counterinsurgency (COIN) strategy and part of McChrystal's team to review the US strategy in Afghanistan, advanced a scathing critique of the American use of drones. They did so along three lines: for creating a 'siege mentality' in Pakistan, for alienating swathes of the population rather than merely the relatives of those killed, and for substituting as a strategy (Kilcullen & Exum, 2009). In this way, with the question of collateral damage constituting a central element of operational conduct, this condition taps into broader questions of military strategy in addition than operational or tactical conduct. It is on the basis of these conditions that the thesis now moves to the final part of the genealogy.

In the literature, much attention has been paid to the implications of drones for contemporary warfare and for the fates of civilians. "Robots in Iraq and Afghanistan today are sketching out the contours of what bodes to be a historic revolution in warfare," wrote Peter Singer (2009b) in *Wired for War*, one of the first and most influential books on robotic warfare. Drone warfare has since been posited as an 'evisceration' of the principles of international law (Chamayou, 2015), a 'remixing' of war (Gusterson, 2016), or the globalization of a 'biopolitical logic' of targeting (I. G. R. Shaw, 2013; I. G. R. Shaw & Akhter, 2014). Conversely, some have seen drones as merely evolutionary, the latest innovation (e.g. M. Benjamin, 2012; Freedman, 2016), or as offering solutions to the problem of collateral damage that go beyond the capabilities of manned aircraft (Byman, 2006; Goldsmith, 2012). This chapter enters into this debate, but adds a novel perspective. By building on the genealogy, it traces the development of the emergent collateral damage dispositif of the 1990s as well as the wider strategic, technological, and legal issues that form the basis of the investigation as a whole. In doing so, it engages with the historicity of collateral damage discourses and practices and the disjunctures and continuities made possible by drones in relation to dominant strategies, especially COIN, as well as the concomitant development of precision technologies that were already on their way in prior decades. This close inspection of the discourses and practices of collateral damage in the present day completes the genealogy as a history of the present.

This chapter is organized into three subsections that deal with drones, COIN, and the expansion of technologies designed specifically to avoid collateral damage. Through this, the contingency of the above events is reconstructed. First, I discuss the impact and interpretation of drone technology on the emergent collateral damage dispositif through historical continuities and discontinuities. In line with the approach of previous chapters, I endeavor to show how the ambiguity of this set of technologies is produced by their enmeshment in a variety of institutionally anchored discourses and practices rather than implied by the technology itself. In the second subsection, I discuss COIN strategy and the degree to which changes to military strategy after 9/11 were driven by the perceived sensitivity to collateral damage. Specifically, I engage with the widespread acknowledgement in strategic discourse of the importance of limiting collateral damage, and how this priority intersects with established strategic concepts in the Air Force. The third links these two themes with a fine-grained empirical analysis of the unprecedented sophistication of joint technologies designed to avoid civilian casualties. In sum, rather than any single technology, I argue that it is this polymorphic network, or dispositif of collateral damage discourse and practice that characterizes contemporary warfighting. Untangling this network is key to understanding the complexity and contingency of the histories that led to its existence and necessity.

6.2 DRONE PRAXIS: THE PATHOLOGIES OF OVERWHELMING INTELLIGENCE

One of the productive tensions in this genealogy of collateral damage is that between the discourse of technological novelty and continuity at the level of practice. This is repeated in terms of drones, namely between the position that drones are merely another instrument of force, and therefore subject to the same practices and restrictions as before, and conversely the claim that drones qualitatively change the face if not the nature of modern warfare. CJCS Martin Dempsey said in 2014,

You will never hear me use the word ‘drone,’ and you’ll never hear me use the term ‘unmanned aerial systems’. Because they are not. They are remotely piloted aircraft. ... So long as we continue to think of them that way and so long as we continue to use them in a transparent [and] ethical way, then I have no concerns about their use. (quoted in Garamone, 2014)

On the one hand, drones signify a continuation of the historical process of RMA, and on the other seemingly constitute a novelty in the conduct of armed force. While drone strikes have more commonly been associated with the CIA as a new form of covert action or decapitation of terrorist organizations, the armed forces have also deployed drones for intelligence and strikes. Although unmanned aerial vehicles (UAVs) are not new to military affairs per se, their weaponization and vastly expanded use are. Prior to the 9/11 attack, the US military operated fewer than 200 UAVs, a number that has since risen above 10,000; funding increased from \$350 million to more than \$5 billion by 2013 (Arkin, 2015). Drone strikes, especially those carried out by the CIA, surged under the Obama presidency with over 120 strikes a year at its peak, killing thousands of suspected terrorists and insurgents and thousands of civilians with them (Zenko, 2016, 2017). Against the emphasis on low casualties and the rule of law, drones threaten to create a tension centering on the question of collateral damage. At the same time, they have become an enormously widespread and practically irreplaceable tool in the effort to find and track enemies and are not limited to the counterterror campaign.

As Dempsey's statement shows, the question of history is heavily politicized, owing not least to associations with CIA's targeted killing program (Fuller, 2015). To understand how drones play into discourses of collateral damage and give rise to new practices, I undertake three tasks in the remainder of this chapter. First, I lay out the discourse of military and humanitarian expediency into which drones have been written and spoken, and which is reminiscent of older discourses on precision as a means of avoiding collateral damage. It ensures that drones not only follow the line of precision-strike instruments of force that were seen clearly since the Persian Gulf War, but also the teleology of ever-increasing precision. Second, I explore novel targeting practices, including some that were used during the Uruzgan strike, that upset the narrative of a coherent collateral damage strategy. Finally, I discuss the practice of FMV, a manifestation of the touted capability of drones to shorten decision-making and to provide unparalleled ISR capabilities.

6.2.1 'The only game in town'

Key among discourses surrounding drones, and which bind discourses on collateral damage to practices of targeted killing, is the notion of simultaneous military and humanitarian expediency that is central to the puzzle of the thesis as a whole. In 2013,

although acknowledging the civilian casualties caused President Barack Obama defended drone strikes, saying that “Conventional airpower or missiles are far less precise than drones, and are likely to cause more civilian casualties and more local outrage.” (The White House, 2013) Director of Intelligence Leon Panetta, who has defended drone strikes on numerous accounts, had claimed *inter alia* that they were “very precise [and] very limited in terms of collateral damage” and “the only game in town” against al-Qaeda (CIA, 2009). In 2012 John Brennan, then Assistant to the President for Homeland Security and Terrorism, argued that the ability of drones to avoid collateral damage was ‘unprecedented’ and it was “hard to imagine a tool that can better minimize the risk to civilians than remotely piloted aircraft”, adding that drones are not only a wise tool for reducing the danger to US pilots, but also to innocent civilians, “especially considered against massive ordnance that can cause injury and death far beyond their intended target.” (Woodrow Wilson Center, 2012). The ability to substitute pilots for drone operators is doubtful since drones have not been tested and likely would not fare well in hostile airspace (Lee, 2011; Pietrucha, 2013; J. Reed, 2013); as such, they are only proven in irregular or asymmetric settings. Still, the notion is significant because it exacerbates the conviction that (unmanned) aerial warfare is risk-free, and because it analytically contributes to the notion of risk-transfer warfare. The comparison with ‘massive ordnance’ follows something like a tradition of declaring the newest implements of war the most clean and surgical. This defense of collateral damage is repeated in Air Force discourse highlighting the tactical advantages offered by drones over manned aircraft as well as ground troops, including FMV. Drones are thus immediately subject to the same deterministic discourses that envelop precision technology in general.

Yet the use of drones and their involvement in an apparatus of collateral damage must be understood by way of its institutional and historical specificity. It was the CIA that first began carrying out strikes with armed drones; the military services, including the Air Force, soon followed suit. When it comes to the legality and legitimacy of these strikes, the CIA has followed an idiosyncratic, paramilitary path since adopting weaponized drones as the counterterrorist tool of choice (Whittle, 2014). Several factors that led the CIA to lock in organizationally on the counterterrorist mission. Against the odious reputation from ‘enhanced interrogation’ programs, the CIA considered drones to be a more attractive option legally, leading to the decisions that transformed the agency

into a paramilitary organization in less than a decade (Mazzetti, 2013; I. G. R. Shaw, 2013). Although the drone program has caused the deaths of innocent civilians in the thousands, collateral damage does not seem to have been absent from the deliberations of the CIA. In the case of the strike targeting Mullah Omar, collateral damage appears to have informed decision-making at the highest level. Evidence of drone strikes that have been called off due to concerns over collateral damage is scant and anecdotal rather than systematic, but there are indications that these strikes are subject to a politicized regulatory regime, such as in the CIA's dealings with the Pakistani government (e.g. Dilanian, 2011; O. B. Jones, 2015; Wenzl, 2018). Furthermore, McNeal (2014), in his comprehensive study of the bureaucratic practices of drone strikes, has argued that while sensitivities to collateral damage may be lower, the processes used at the CIA are probably highly similar to those of the military. Finally, the growth of the legal profession in the military chain of command described in the previous chapter mirrored a wider growth of litigation in the national security apparatus, including the CIA (Hastings, 2012; Klaidman, 2012; Levit, 2005; McCrisken, 2013; Mckelvey, 2011; Sadat, 2012). This suggests that collateral damage is not merely a smokescreen for the wanton slaughter of civilians, but is subject to strategic and political specificities at the organizational level. The dispositif of collateral damage is thus not deactivated in the face of CIA's drone program, but rather has mutated and evolved.

6.2.2 Kill chain: practical challenges to the collateral damage regime

In line with the overarching approach of this dissertation, the historical significance of drones lies not only in the metahistorical continuity that enunciations such as Dempsey's reproduce, but also in the actual practices that render these technologies effective in their day-to-day utilization. While evidence of such practices is rare, reports have surfaced of peculiarities associated with drones that call into question the continuity of the discretion-discrimination nexus that was the foundation of the conflicts of the 1990s. According to their critics, drones have enabled and exacerbated certain patterns in targeting that change the conditions of collateral damage. The CIA's logic of counterterrorism has altogether distorted the definition of a legitimate target, while the requirements of national security have precluded most critical or legal engagement. These new practices, *signature strikes* and *personality strikes*, constitute significant disjunctures from the mode of targeting expressed in the conflicts of the 1990s, including the Persian Gulf War.

A personality strike is a strike in which a named individual, who appears on a vetted 'kill list', is positively identified and targeted for engagement or capture. While the production of target lists is historically continuous per se, as the BE and derivative lists show, the epistemic conditions for its particular population vary according to strategic discourse ultimately bound up to a theory of victory. In this case the associated discourse, rather than one of a collapsing society imposed through the destruction of industry, has been one of 'decapitation'⁷⁰. Nomination reportedly involves intricate legalistic dossiers explaining the threat posed to American national security, to be vetted by lawyers (Mckelvey, 2011). Through a concatenated list of CIA and military target lists, known as the disposition matrix, these individuals would be put under observation and targeted when their presence became known, whether through intercepted phone calls, persistent drone surveillance, or other forms of intelligence (Cobain, 2013). Reportedly, under Barack Obama target nomination was vetted at the presidential level at so-called 'Terror Tuesday' meetings in which a swath of senior officials, military figures, and political advisers were in attendance (Becker & Shane, 2012). At these meetings, "baseball cards" for targeted terrorists had been developed as well as proposed strike solutions, including estimates of collateral damage (Klaidman, 2012). Despite differences in set-up and authority, this vetting practice is not altogether dissimilar to the much-maligned Tuesday luncheons of Lyndon B Johnson in which targets for ROLLING THUNDER were approved. What is significantly different is the concatenation of persistent intelligence praxis and decapitation discourse which made it desirable and possible to target individuals rather than fixed installations.

Gradually, as Obama's State Legal Adviser Harold Koh explained, this practice shifted towards what is now publicly known as *signature strikes* (Traub, 2014). While the exact criteria for establishing signatures is unknown, the basic mechanism, which was authorized under President George W Bush in 2008, was that operators were permitted to use lethal force against targets whose identities were unknown (Rohde, 2012). Mazzetti (2013) explains this logic in the case of Pakistan's Federally Administered Tribal Areas:

⁷⁰ This is established in key strategic documents after 9/11. The 2006 JCS National Military Strategic Plan for the War on Terrorism identifies leadership as a center of gravity, adding that "[m]ilitary, intelligence, and law enforcement instruments focus on capturing or killing key terrorist leaders" (US Department of Defense, Chairman of the Joint Chiefs of Staff, 2006, p. 15). Both the 2003 and 2006 National Strategies for Combating Terrorism similarly argued that the loss of a leader might cause the organization to collapse (Bush, 2003, 2006).

in areas of known militant activity, all military-aged males were considered to be enemy fighters. Therefore, anyone who was killed in a drone strike there was categorized as a combatant, unless there was explicit intelligence that posthumously proved him to be innocent. In some cases, the identities of the men being killed would remain unknown, since strikes were permitted on the basis of ‘signatures’, i.e. certain behaviors or looks deemed suspicious, effectively a vast simplification of target generation or a subjection of target nomination subject to the limits of intelligence. Examples cited by officials reveal the reliance on drone footage to track patterns of behavior, examining “the extent to which the individual performs functions for the benefit of the group that are analogous to those traditionally performed by members of State militaries” (cited in Lederman, 2016). In one case, a missile was dispatched against a group of unknown men seen assembling a car bomb (Cloud, 2010). In another case, al-Qaeda’s leader in Yemen was killed by means of a signature strike, although his identity was only discovered afterwards (Miller, 2015). Yet even before the supposed transition from personality strikes to signature strikes took place, similar practices may have been at work. A strike carried out in 2002 led to the deaths of three innocent Afghan men based on the supposed likeness of one to Osama bin Laden; he was tall, wore a white robe and was greeted by the other two with a show of ‘reverence’ (Sifton, 2012).

Established practices and principles of collateral damage mitigation and avoidance have mutated under these emergent targeting regimes. On numerous occasions, a nebulous requirement of ‘near certainty’ that no noncombatants will be harmed has been cited, as well as a ‘high degree of confidence’ that the targets are indeed terrorists (The White House, 2013; Woodrow Wilson Center, 2012). An official familiar with drone operations said in 2012 that most top terrorist leaders in Pakistan killed by the CIA had been killed by means of signature strikes, i.e. without the agency’s knowledge of their identities at the time of the strike (Miller, 2012). Harold Koh cited the raid on Osama bin Laden’s compound in 2011 as a signature strike, since his identity was not confirmed prior to the strike (Traub, 2014). The tempo of operations when an individual is identified through emergent pieces of intelligence may preclude comprehensive estimation of collateral damage, which would usually be the case in preplanned military operations (Holewinski & Shah, 2012). Closer scrutiny of claims about drone warfare at the level of

practice and the production of knowledge about targets thus reveals disparities and institutionally contingent responses rather than uniform policies.

6.2.3 FMV: legitimacy through vision

A practice that manifests the demand for the new opportunities offered by persistent reconnaissance is expressed by full-motion video (FMV) rendered by reconnaissance drones. The contribution of FMV has been linked not only to the counterterrorist campaign with which drones have often been associated, but also to counterinsurgency and stability operations. The addition of loitering UAVs, emphasized COS USAF Gen Norton Schwartz, has “[provided] an ability to really definitively, positively ID targets, beyond a reasonable doubt ... Nothing like full motion video to demonstrate what was done and what was accomplished” (The Brookings Institution, 2009) A retired colonel wrote, “ISR sensors had to be adapted to concentrate on an unconventional adversary. Perhaps the most innovative—and arguably the most valuable— application was the use of FMV. Coupled with the persistence of platforms that could loiter for long periods of time, FMV could distinguish friend from foe on the ground and avoid collateral damage in the event of an attack” (Haffa & Datla, 2014, p. 33). Others commented that these proved well-suited to the task of ‘policing’ in Iraq and Afghanistan, especially since they were capable of eliminating short-term targets of opportunity; thanks to their capability to loiter, the drones might, as in the case of the Mullah Omar strike, wait for an opportunity to strike that might cause less collateral damage (Lee, 2011).

The rapid expansion of persistent aerial surveillance with drones follows a pattern of speed and automation in making the battlefield visible. This constant gaze produces the visibility of an otherwise hidden enemy (cf. Bousquet, 2018); it aligns with perceived fleeting and temporary character of targets in COIN and CT campaigns (Jumper, 2002). Yet the availability of full-motion video has driven a demand for it that cannot be met by existing assets and on the whole probably presented more of a distraction than serious strategic value to senior commanders in the first years of the war in Afghanistan (Lambeth, 2005). Demand for ISR sorties has increased precipitously since the introduction of drones while, as a 2011 Defense Science Board report finds, counterterrorist operations and force protection soak up most of the available assets and little conceptual work on ISR for COIN has been done that would permit a more targeted use of resources (Kaminski, 2011). This phenomenon was referred to by troops as ‘Predator crack’ and

lamented as headquarters were at risk of becoming too attached to a limited view of the battlefield (Call, 2007; Haffa & Datla, 2014; Singer, 2009a). Thus, while the ‘kill chain’ might have been supposedly reduced to a single platform with armed Predators and Reapers, the sheer amount of intelligence generated by persistent airborne assets requires the employment of a veritable army of analysts. In the killing of Zarqawi, for example, it reportedly took 600 hours of Predator footage and thousands of hours of analysis for an operation that took less than 10 minutes to execute (Deptula & Brown, 2008). The technical and practical limitations of surveillance have been defining for practices of targeting, since the much-trumpeted capacity to distinguish civilian from combatant is betrayed by some of the targeting practices of the CIA in particular.

The intersection of persistent surveillance and targeting at the level of practice is demonstrated by the capacity for speed and simultaneity, which further interlocks with the tendency towards automation and virtualization of collateral damage practice. With the exception of aerial photography by Q-2 *Lightning Bugs* during the Vietnam War, especially for LINEBACKER, drones did not truly become intertwined with collateral damage discourse until they were weaponized⁷¹. Yet the ability to provide vision, which has become essential in ensuring the legitimacy of the drone as an aerial weapon, has likewise been subject to a shift towards automation and a movement of labor and specialization from gathering to analysis⁷². Nowadays, drones take off and land

⁷¹ As with several other key military technologies, notably GPS, drones fully made their entry in the US military during the 1990s, yet it is only in recent years that drones have begun to thoroughly influence public perceptions of warfare and indeed discourses on collateral damage. Prior to this, although UAVs have existed in some form as early as before World War II, very few models had seen actual operational use. Paradoxically, while the atmosphere of the Cold War ensured plentiful ‘black’ funding for experimental drone development it also fashioned a thick wall of secrecy which meant that very few in the military were privy to the advances made in drone development. In concert with service stovepiping, ‘drone constituencies’ were effectively lacking that might have carried projects beyond the initial stages, and with technical challenges outstanding (e.g. accurate location, which was unfeasible until the advent of inexpensive GPS), drones only truly broke through after the end of the Cold War (Ehrhard, 2010; Yenne, 2004). Despite the enormous sums expended on military R&D, the first *Predators* (then RQ-1) fielded in Yugoslavia were in fact purchased off-the-shelf from a private company by the CIA. The history of drones thus does not begin with the 9/11 and the start of the so-called Global War on Terror, since its operational use and capabilities were foreshadowed by the developmental history taking place in the decades preceding it and since many of the technical advances made after the Vietnam War benefited not only manned airframes and missile technology, but also unmanned vehicles (Fuller, 2015).

⁷² An example illustrates the stark difference between the ISR capabilities of today’s drones to those of the late Vietnam War. The jet-powered Q-2 drone was launched from under the wing of a DC-130 *Hercules*, flew a pre-programmed route using self-contained navigation, then returned to a recovery site where it deployed its parachute, later to be picked up by a large helicopter. The 70mm film then had to be developed for use. The total process, which took several days, involved upwards of 30 people, with a sortie rate of less than one per day (Ehrhard, 2010, pp. 23-24). Against these limitations, it is no surprise that early drone

automatically and are typically operated from bases on the US mainland in small sheds thousands of kilometers away with real-time up- and downlinks. Unmanned aerial vehicles, such as the Predator and the Reaper drones, can shorten the kill chain and perform most of the functions of targeting (finding, fixing, and finishing) all by themselves, and they can do so with minimal human interference (Deptula, 2014; Dunlap, 2007). Machine-to-machine communication is progressively enhanced with common interfacing that reduces the need for slow and meticulous human interaction, especially the manipulation and passing of information (e.g. Lawlor, 2005). This places drone practices within the wider scope of computerized targeting procedures, including mensuration and collateral damage estimation.

Substitution of expensive and rare human intelligence with persistent drone surveillance maps onto practices of signatures and patterns of life and feeds into the computational state of the art of collateral damage avoidance. Aligning with a preference for perceived cheap and low-risk alternatives to human intelligence is the sheer demand for more intelligence. One AFCENT commander stated outright that “the more ISR I have, I can minimize the risk to civilian casualties and continue the precision air campaign that we have.” (US Department of Defense, 2016b) The reluctance to ‘put boots on the ground’ has been especially marked during the latter half of Barack Obama’s presidency, with President Trump expanding and loosening the drone campaign during his first years in office (Ackerman, 2018; Diamond, 2015; J. Wilson, 2017). In addition, it refers back to the conflictual and equivocal relationship between drones and COIN, which in turn can be mapped loosely onto the institutional distinction between the Army and the Air Force. Retired LtGen David Deptula of DESERT STORM fame and former Deputy Chief of Staff for Intelligence, Surveillance and Reconnaissance, commented in 2011 on new intelligence technologies including the so-called *Gorgon Stare*, “If you look into the not-too-distant future, what these technologies will allow us to do is remove more and more ground forces and replace them with sensors where we normally would have to rely on people going somewhere to find something out.” (quoted in Nakashima & Whitlock, 2011) New ‘scopic regimes’ enacted by drones not only instantiate a deterritorialized gaze (Bousquet, 2018; Coward, 2013), they also produce pathologies along organizational

technology competed with and was often crowded out by rival technologies, including particularly satellite imagery and manned spy planes.

lines that are recognizable throughout this genealogy. Along these lines of institutional resistance and competition, rival conceptions of a workable concept of collateral damage is produced, with the Air Force interpretation strongly skewed towards one of machine vision as the foundation of discriminate engagement.

6.2.4 Institutional resistance, gradual mutation

Discourses surrounding the application of drones are historically fairly unremarkable: as new implements of warfare, the legitimacy of their surgical application and efficacy is enacted through regular statements and public affirmations. This places drones in the wake of the historical precedent of precision extending as far back as the late years of the Vietnam War, and with little variation in the articulation of this discourse, variations at the institutional and practical levels obtain greater significance. Despite the opacity of such arrangements and practices, it is evident that the negotiation of precision and historical legitimacy takes place at several levels, with technological and strategic novelties interlocking with established and paradigmatic discourses. While necessarily subject to organizational specificities, for example, the apparently legalistic nature of kill list vetting is historically contingent upon the ascendancy of the legal function in targeting that appeared after the end of the Vietnam War. The preference for persistent surveillance aligns with a preference for vision as a means to lower collateral damage, but also with the perceived 'time-sensitive' nature of targets in contemporary warfare.

It is therefore rather the alignment of new technological implements and collateral damage that is remarkable: namely, the fact that the constructed 'features' of new technologies fulfill the twin goals of low collateral damage and military efficiency at the same time. The assemblage of elements that permits the continuous recasting of drone warfare as legitimate and precise is polymorphic and decentralized. The kill-chain quite often operates in a manner in which steps occur in parallel or in a non-linear fashion altogether, especially in the case of urgent, high-value targets (Benitez, 2017; US Department of the Air Force, Curtis E. LeMay Center for Doctrine and Development, 2019). 'Assets' patrolling the skies or diverted from other missions are made available when signatures and patterns require it, reinforcing a machinic and automated regime of damage prediction. Yet the geography of collateral damage is not only one of global borderlands or spatially and temporally unbounded necro-power (Allinson, 2015; Gregory, 2011a). It must also be seen as an ongoing negotiation of discourses and

practices to the necessity of the individual, mobile target. This category of target is not necessarily less finite than the fixed, which the systematic mass population of the BE showed, and indeed practices of listing and creating target folders are most likely similar, even if targeting philosophies now emphasize individuals over industry. Nor is the seeming arbitrariness of concepts like ‘near-certainty’ unprecedented, but recalls earlier estimates of ‘truly innocents’ in Vietnam that serve real and tangible bureaucratic purposes. However, the executive practices associated with it are far more dispersed than the regular tasking process, and key to its military efficacy is the not only boundless but in particular persistent and, in terms of decision-making, *fast* drone.

6.3 COIN: COLLATERAL DAMAGE AS DOCTRINE

The response from Stanley McChrystal to the Uruzgan incident was remarkable and suggests a routinization of collateral damage as a strategic issue that is historically unprecedented. As the wars in Afghanistan and Iraq turned from the initial swift victories to long-term commitments, a doctrinal shift of power occurred within the defense establishment⁷³. By extension, the return of COIN heralded an intensified sensitivity to collateral damage since, according to conventional wisdom, now reinterpreted, such damage might jeopardize an entire operation. In the aforementioned tactical directive issued in July 2009, McChrystal stressed that tactical victories might be strategic defeats if excessive civilian casualties or damage was inflicted in the process, and in his COIN guidance a month later reiterated that the force by doing so risked sowing the seeds of its own demise (HQ ISAF, 2009; Petraeus, 2010). At first sight, this signifies a deeper reflection on the political and especially military consequences of collateral damage than the high-profile accidents of DESERT STORM and the 1990s. A closer look at COIN, in other words, contextualizes the purported strategic shift in the nature of the long post-9/11 wars in Afghanistan and the Middle East. Here, the provision of security has often been operationalized as the ability to avoid killing civilians, dovetailing the historical formation of preferences for precision as a technical solution to a political problem.

⁷³ The appointment of David Petraeus to Commanding General of Multi-National Force Iraq in 2007 and the accompanying ‘surge’ of troops, McChrystal’s appointment and new counterinsurgency guidance in ISAF, or the publishing of the Army’s new counterinsurgency manual (FM 3-24/MCWP 3.33-5, 2006) were all salient events in America’s embrace of COIN strategy.

In the literature, a great deal of attention has been paid to the wording of FM 3-24 and General Petraeus' role in it (e.g. Anderson, 2011; F. Kaplan, 2013; Kienscherf, 2011; Ricks, 2009). Petraeus' manual, the surge and what is held to be a turnaround of the war effort were extensively covered in the media, with the manual being read widely even beyond military circles (Moyar, 2009). This supposed rupture, however, does not account for continuities in the occurrence of collateral damage, nor does it pay heed to enduring attitudes towards the management of 'low-intensity conflict' generally, especially in third-world countries (Khalili, 2010; Porch, 2013). Finally, the significance of the particular formation of aerial responses to collateral damage is missed when in fact airpower has been a central instrument of counterinsurgency. This chapter instead lays out the conditions of possibility for the centering of collateral damage as a strategic component of COIN as well as Air Force responses to it: it reconstructs the historical contingency of the event.

This section proceeds as an interrogation of the specific formation of practices and statements relating to the aerial component of counterinsurgency. First, I introduce the discourse of war among peoples, which situates not only contemporary warfare but also the potential for collateral damage as a strategically sensitive phenomenon. Second, I interrogate discourses on counterinsurgency in USAF and the conditions of possibility of the 'warheads on foreheads' mantra, which suggests substantial continuity at the level of discourse and practice. Here, I trace their institutional and doctrinal experience and how it set the stage for the Air Force's promotion of existing capabilities as means of contributing to the increasingly joint fight. Finally, I show how the controversial practice of 'courageous restraint' was established and later rejected. In this way, I demonstrate the alignment between this response and the established notion that counterinsurgency is about avoiding collateral damage and how this weaves together the larger historical and governance aspects of counterinsurgency and precision strike.

6.3.1 War among peoples

The discourse that urban warfare was going to constitute the paradigm of future conflict put civilians, and thus collateral damage, squarely at the center of military attention. It would intersect naturally with ideas about low-intensity or asymmetric conflict by the time of the Iraq and Afghanistan wars. But the notion that conducting low-intensity urban operations in close vicinity of civilians - rather than stemming the tide of an armored

Soviet offensive through the Fulda Gap – emerged only slowly in the decades after the Vietnam War despite the contingency operations of the 1980s and 1990s. This subsection situates the concatenation of asymmetric warfare and the ‘new military urbanism’ of the post-Cold War period (Stephen Graham, 2011) which necessitated and legitimized discrimination and precision in COIN operations.

The rehabilitation of counterinsurgency theory took place in the context of a revisionist history of Vietnam which had to compete with existing historiographies of strategy. According to Fitzgerald (2013), defeat in the Vietnam War turned the US Army’s doctrinal attention away from counterinsurgency and back to the preferred scenario of a war against the Soviet Union. A number of high-level studies in the 1980s, mostly with participation from the Army, concluded that despite it being the most likely in the years ahead, “[the] United States does not understand fully low-intensity conflict nor does it display the capability to adequately defend against it.” (Scudder & Hamby, 1986, p. 1-1) David Petraeus (1987) echoed this sentiment in his PhD thesis, noting that Vietnam had instilled in the military an all-or-nothing attitude, an attitude that would later congeal into the so-called Weinberger doctrine and be validated by DESERT STORM (Cassidy, 2008). A strand of revisionist military literature condemned not only the Army’s failure to properly mount a counterinsurgency campaign in Vietnam, but was also highly critical of the post-Vietnam understanding (esp. Summers, 1995) that the war might have been won were it not for flawed strategic assumptions, including the theories of limited war as applied to airpower (Downie, 1998; Krepinevich, 1986; Nagl, 2002). This ‘better war’ narrative emphasized the post-1968 approach (that is, under Abrams rather than Westmoreland) as a missed opportunity and sought to rehabilitate counterinsurgency strategies and tactics for the nation-building campaigns in Afghanistan and Iraq. Victory in asymmetric war - among peoples - was possible.

In her genealogy of counterinsurgency as a form of household rule, Patricia Owens locates this resurrection of counterinsurgency in the mid-2000s,

In the context of mounting civilian and coalition casualties, the obvious lack of post-invasion planning, torture scandals and the costs and the chaos of the Iraq campaign, military strategists returned to this older vocabulary regarding the neutral population, the silent majority to be co-opted through armed social work. (P. Owens, 2015, p. 246)

The logic of collateral damage in counterinsurgency rests precisely on the ability to sway the population by means of discriminate warfare. Contemporary American counterinsurgency discourse thus fuses a strand of individualism from ‘classical’ counterinsurgency theory, which originated in French and British thought, with an American brand of rationalism. Classical, because the theory builds on French lessons from the Algerian War as well as British ‘air policing’ missions of the 1920s in the Middle East and the postwar counterinsurgency campaign in Malaysia. Indeed, critical scholars have identified a particularly colonialist tinge in the underpinning ideas about governance expressed in such strategies (see e.g. Rockel & Halpern, 2009; Satia, 2013, 2014). The latter half of the 20th century presented a different context, namely the Cold War, but the principles of classical counterinsurgency were still applied. Two principles in particular stand out: the provision of a viable state and the neutral individualism of the population⁷⁴. Because the context of this particular experience was Communist subversion and Maoist revolution, and the effort was imagined through a specifically American strand of so-called modernization theory during the Cold War (Fitzsimmons, 2008; Gilman, 2003; M. L. R. Smith & Jones, 2015). As I showed in a previous chapter, the logic of collateral damage was first operationalized by the optimistic rationalists of McNamara’s DoD, applying it to the conduct of ROLLING THUNDER in particular. Although the belief that through strategic managerial action traditional or tribal societies could be lifted out of the postcolonial backwater to become a participant in global politics and economy clearly is clearly rooted in Cold War-era liberal discourse, it has not dissipated with the demise of the Soviet Union (C. Jackson, 2014). Rather, the idea that inhabitants of these societies were susceptible to rational signals of constraint was carried through into governance through the avoidance of collateral damage.

By the late 2000s, this doctrinal reengagement had caused the combined notions of urban warfare and sensitivity to collateral damage to pervade into doctrine. In the 1997 JCS *Joint Vision 2010* as well as the *Joint Vision 2020* that came out three years later, a

⁷⁴ Robert Thompson, a British officer among the classical theorists writing on the Malayan ‘emergency’ as well as Vietnam, listed as the first principle of counterinsurgency the provision of a free, united and economically viable state with strict observance of the rule of law (1966, p. 51). The ‘neutral’ population might then be swayed to take the side of the counterinsurgents (e.g. Galula, 2006). The combined logic of these two propositions is applied to the management of a population and the provision of its security; in the modern conception, which co-author of FM 3-24 Frank Hoffman (2007) has called ‘neo-classical’ counterinsurgency, subjects engage in a constant weighing of alternative providers of security. The ‘economy’ of security is thus total and individual at the same time.

posture of ‘global engagement’ underpinned by full-spectrum dominance was the order of the day in which precision engagement generated a ‘system of systems’ offering the commander the greatest possible range of possibilities to respond to a situation and create the desired ‘effects’ (US Department of Defense, Chairman of the Joint Chiefs of Staff, 1996, 2000). Twelve years later, the tone of the JCS *Joint Force 2020* capstone concept is rather more sobering and cautious. The success of modern operations are understood to be particularly sensitive as far as collateral damage is concerned and must be “increasingly discriminate to minimize unintended consequences”, since the environment is more transparent than ever, exacerbating the risks of detrimental narratives in the media (US Department of Defense, Joint Chiefs of Staff, 2012, p. 7). A passage in the 2011 *National Military Strategy* explains this rationale in the context of ‘countering extremism’, a phrase encompassing both COIN and counterterrorist operations. Here, it is argued that

As we conduct this difficult campaign, we will employ military force in concert with other instruments of power and in a precise and principled manner ... But we must recognize the inherent complexity in war among peoples. The risk we assume by minimizing collateral damage to innocents is balanced by a reduction of risk to turning even more people against our broader mission. Thus, the disciplined application of force is consistent with our values and international law, increases our chances of strategic and operational success, and more effectively advances national policy. (US Department of Defense, Joint Chiefs of Staff, 2011b, p. 7)

In this way, avoidance of collateral damage effectively penetrated doctrine to become an explicit strategic issue. While the 2001 edition of JP 3-0 *Joint Operations* emphasized the necessity of limiting unnecessary force, the 2011 ditto elaborated considerably, positing that limiting collateral damage reduces the potential for civilian claims, supports the bid for influencing the local population, and reduces the magnitude of stability operations (US Department of Defense, Joint Chiefs of Staff, 2001, 2011a). According to the analysis of current doctrine, accelerated urbanization has increased population density in the combat area, driving an expanded number of limited contingency operations with significant restrictions (US Department of Defense, Joint Chiefs of Staff, 2013b, 2016b)⁷⁵.

⁷⁵ One real, alleged, or staged case of collateral damage might have strategic effect in this setting (JP 3-03, 2016a). Increased scrutiny of US operations may lead to ‘lasting negative operational and strategic effects’ (JP 3-09.3, 2014a). Precision is listed as a fundamental principle of counterterrorist operations because it limits collateral damage, allows for ‘scalable’ operations, and preserves legitimacy (JP 3-26, 2014b), and in the matter of stability operations, where lethal action may not be likely, collateral damage may seriously impede mission success (JP 3-07, 2016c). Because it negatively affects the opinions of the locals to be co-opted, collateral damage can stymie the COIN ‘narrative’ in favor of insurgents (JP 3-24, 2013a)⁷⁵. These assertions are repeated in contemporary Air Force doctrine, where joint concepts are related directly to the

In other words, the preponderance of CT, COIN, and stability operations has been accompanied by the diffusion of a logic of collateral damage as a strategic element in its own right throughout the levels of codified military discourse.

6.3.2 Warheads on foreheads: COIN for the Air Force

During the long wars in Iraq and Afghanistan, as McChrystal's reaction shows, airstrikes had become politically sensitive because of the potential for collateral damage. In response to the Army focus on counterinsurgency theory, the USAF reasserted the strategic versatility of existing capabilities and doctrine. At a DoD briefing during Operation IRAQI FREEDOM, an Air Combat Command spokesman remarked that "this issue of effects-based operation and collateral damage are fairly well -- closely tied together, because the best way to mitigate collateral damage is only strike the stuff that you need to strike to -- or affect the stuff that you need to affect." (Federal News Service, 2003). This subsection first analyzes USAF's discursive (re)interpretation of capabilities to situate the continuing use of airstrikes despite their political opprobrium, then reads this reaction in light of the marginalization of specialized COIN doctrine within the Air Force.

At issue for the airmen was the fact that airpower had been 'relegated' to a brief annex of FM 3-24. The Air Force community rushed to point out the significant contribution made to the COIN effort by airpower assets. What seemed to airmen as the diminution to a purely supporting role enshrined in FM 3-24 was not only offensive given the Air Force's history, but also counterproductive according to servicemen and proponents. MGen Allen Peck, commander of the Air Force Doctrine Center, opined that the manual did "probably a bit too much hand-wringing over the potential for collateral damage" (cited in Tirpak, 2007, p. 15), deliberately moving to fast-track USAF's own updated Irregular Warfare doctrine, which came out later in 2007 (Waterman, 2007). Just a year after the release of FM 3-24 and pointing to the stellar successes in Iraq, Bosnia, Kosovo, and the initial invasions of Afghanistan and Iraq again in 2003, Phillip Meilinger (2008) suggested that it was time to develop an air-centric counterinsurgency strategy, while Dunlap (2008c) argued that the new manual 'shortchanged the joint fight' by being too ground-centric. Peck also published a piece in *Air & Space Power Journal* in the

strengths and limitations of airpower (US Department of the Air Force, Curtis E. LeMay Center for Doctrine and Development, 2016a, 2016b, 2017a, 2017b).

summer issue of the same year, begrudging the unjust portrayal of an indiscriminate and ham-fisted air force in the press and highlighting the many ‘joint-force enablers’ that USAF brought to irregular warfare (Peck, 2007). Airpower, it was later argued, was rarely the actual cause of civilian deaths (Schwartz, 2011).

The defense of air power’s contribution to the COIN by means of lower casualties took either the form of technology or procedure; both speak to an expertise grounded in the institutionalization and routinization of precision and prediction, i.e. the discretion-discrimination nexus, that had been built up since the 1990s. The technological defense, which emphasizes precision, is a continuous thread throughout this genealogy and has in the context of COIN been reduced to the clumsy motto of ‘putting warheads on foreheads’ (Mulrine, 2008). It intersects with the range of new technologies covered in the next section, which are reconstructed to fit the COIN narrative. The procedural defense emphasizes the special doctrinal and informational capacities to avoid civilian casualties owned by the USAF. Michael Wynne, just after his resignation as Secretary of the Air Force in June 2008, explained that the Army “as a customer” had to “wake up” and gain the confidence that they could “predict the collateral damage, the confidence [that] they could save lives.” (cited in Tirpak, 2008, p. 10) This confidence, notes Dunlap (2008b), stems from the ‘sophisticated methodologies and processes, supported by specialized computer systems’ that permit more informed decision-making. The pervasive feeling of unfair judgment on the part of the public as well as the other services speaks not only to the enduring but technologically generic interservice battle fought over resources, but also to the specifics of ground-centric insurgency strategies. Insistence on the unique and innate capabilities of airpower is no novelty in the history of Army-Air Force rivalry, yet the positing of USAF procedures and practices that speak directly to COIN doctrine is. These practices have become effective in part due to an emergent conceptual and logical overlap of the means of collateral damage minimization and the ends of COIN: a polymorphic apparatus spanning many technologies and techniques directed and legitimized through discourse.

The notion that collateral damage and counterinsurgency are interlinked in the conventional wisdom is attested in Air Force thinking, particularly because the minimization of collateral damage has been especially sought after since the promulgation of FM 3-24 (D. E. Johnson, 2017; Kuzmarov, 2013). As with other concepts

of COIN theory, it had achieved orthodoxy quite early despite the marginalization of COIN theory as such in the community of air force strategists. In short, collateral damage has become the conceptual vehicle by which the Air Force can operationalize the ‘hearts and minds’ imperative associated with mainstream COIN theory. A typical formulation of this principle reads as follows, “The key to winning a counterinsurgency is winning the hearts and minds of the affected population. In this scenario, any weapon that reduces collateral damage to innocent people or property is advantageous.” (Cook, Fiely, & McGowan, 1995, p. 88) Weapons “need to reflect the nature of the fight” (Beebe, 2006, p. 31), with large weapons being unsuitable for counterinsurgency; similarly, in “traditional warfare, larger yields and/or quantities of weapons can compensate for targeting uncertainties, but this is generally not the case in counterinsurgency operations, in which unintended collateral damage can undermine support” (Peck, 2007, p. 13) for the cause. In the COIN conflict, overwhelming force should be replaced by overwhelming intelligence (Danskin, 2005, p. 77), since minimizing collateral damage is “even more of a force multiplier” in COIN operations (Haendschke, 2008, p. 36). The 2007 edition of the Air Force’s Irregular Warfare doctrine document affirmed the danger of collateral damage and delegitimization of the host nation but insisted that the Air Force provides the most lethal and discriminate use of force (US Department of the Air Force, 2007). Aerial firepower had become the clear weapon of choice for ground support in areas of concern about collateral damage (Vick, Grissom, Rosenau, Grill, & Mueller, 2006). Adjusting to COIN required the Air Force to style their techniques and technologies in the garb of high precision, high capacity for discrimination, and low collateral damage, but it did not require a comprehensive reconceptualization of doctrine. For that reason, new relations at the level of discourse had to be established, whereas practices could rather be the object of refinement and technical improvement.

Historiographically, the Vietnam War had been the cause for a subsequent abandonment of COIN doctrine in the Army, and the Air Force reacted similarly (Barnett, 2004; D. M. Drew, 1997, 1998; Foster, 1985; Newton, 1991). Yet whereas Army theorists would later ‘resurrect’ COIN doctrine, the Air Force would emphasize swift, decisive, strategic operations. The point of inflection for the Air Force thus instead became the conduct and results of Operations LINEBACKER I and II. In Vietnam, ROLLING THUNDER in particular was designed on the foundations of coercive airpower while

counterinsurgency was largely delegated to the Army. This flowed from the same set of beliefs as the concept of flexible response, namely the graduation of foreign-policy options and to a certain extent reassertion of civilian control (Cable, 1986; Ekbladh, 2010). At USAF, the exception was the Special Air Warfare (SAW) center, which also operated in Vietnam; with it, the task of aerial counterinsurgency was essentially relegated to special forces. As the war progressed, however, the SAW was ultimately made to perform the same conventional mission as the other commands (Alnwick, 1984; D. J. Dean, 1985). As with the obsession with counterinsurgency and Petraeus' plans in the mid-2000s, the argument was made then that the counterinsurgency wave of the early 1960s was really an attempt by the Army to reassert its importance against the Air Force and the CIA (Parrish, 1974), a claim that appears plausible with the contextual backdrop of the overwhelming focus on SIOP-like strategy. Official monographs have largely been silent on this matter, promoting instead through their celebration of *LINEBACKER* a teleological history through to *DESERT STORM* (e.g. Davis, 2002; Hallion, 1993; Kohn & Harahan, 1986; McCarthy, 1985; Momyer, 1978; Schlight, 1996; W. Thompson, 2000). In conceptual systems developing from the experiences of *DESERT STORM*, applicability throughout the 'spectrum' was mostly implicit. 'Shock and Awe' emphasized swift, high-technology solutions with low collateral damage across the board (Ullman & Wade, 1996); parallel operations following the tenets of 'effects-based operations' supposedly heralded a new character of war with lower casualties and force requirements at any level of conflict (Deptula, 2001); and proponents of network-centric warfare noted the need for ever-more intelligence in asymmetric operations, which would then simultaneously permit more discriminate operations (Alberts, Garstka, Hayes, & Signori, 2001). It was thus the doctrinal developments on the back of *DESERT STORM* that dominated the service and set the stage for a different trajectory than that of the Army and, consequently, the further promotion of precision effects as a means of producing a common ground between COIN goals and USAF capabilities.

In a time of 'neo-classical counterinsurgency', the Air Force has thus rarely had any occasion to question the fundamental assumptions of COIN for a lack of institutional memory of previous efforts. As a result of a history of skepticism towards counterinsurgency doctrine as a renewed instance of interservice rivalry, the Air Force has channeled its efforts to participate in this strategic mainstream towards promoting

existing capabilities as well as future ones directed towards the same goal: freedom for decision-makers in urban, asymmetric warfare. These capabilities, conceived and developed well ahead of FM 3-24, could then be cast as a natural complement to the war effort, the enabling discursive link being their ability to avoid civilian casualties.

6.3.3 Courageous restraint

Courageous restraint or (sometimes interchangeably) tactical patience referred to a doctrine, i.e. discourse as well as a largely tactical set of practices to delay or avoid uses of force in military confrontations, especially the use of aerial bombardment, that might threaten to cause collateral damage⁷⁶. In practice, courageous restraint took the form of the aforementioned tactical directives as well as updated standard operating procedures on e.g. CAS and night raids, the contents of which remain mostly classified. Practical efforts towards a similar end had been tried in Afghanistan in particular to bring down civilian casualties, especially such high-profile cases as wedding strikes. The ‘Karzai 12’, instituted in 2005, limited searches on locals and restricted the conditions under which US and ISAF troops were permitted to open fire (Chivers, 2011; "U.S. troops battle both Taliban and their own rules," 2009). Tactical guidance issued in 2007 under Gen McNeill required formal collateral damage estimation (CDE), modeling (CDM), and preapproval of preparatory fires while discouraging airstrikes and indirect fires on civilian buildings; Gen McKiernan’s revised tactical directive in 2008 further restricted airstrikes on mosques, homes, and other sensitive sites unless strictly necessary for force protection. These measures, however, did not significantly reduce civilian casualties resulting from NATO operations, nor did it alleviate the severe shortcomings in tracking and reporting of such incidents (Keene, 2014; Kolenda, Reid, Rogers, & Retzius, 2016; L. Lewis, 2013; McKiernan, 2008; Muhammedally, 2016; Suhrke, 2015).

While the new rules of courageous restraint instituted by Gen McChrystal might thus not have differed substantially from his predecessor’s on paper (Hoog, 2014), they generated significant controversy. Soldiers were advised to ‘be deliberate’ and conduct operations slowly (Ricks, 2009). Airstrikes and artillery support were limited: residential buildings could only be struck if troops were at an immediate risk of being overrun, or

⁷⁶ These efforts were also to a large extent directed at bringing down so-called escalation of force (EOF) incidents, often at checkpoints, as a result of which scores of Afghan civilians have been killed (Oppel, 2010).

the building had been observed for 24 hours and no civilians were spotted (Friesendorf, 2018). In addition to restrictions on airpower, ground troops were generally forbidden to fire upon enemies or suspected that enemies that did not present a clear and immediate threat, such as enemies emerging without a weapon (Soltis, 2010). An incident in Afghanistan in January 2010 in which a group of Marines had been attacked by an angry mob but held out without the use of force, which would have been legal under the circumstances, was cast as a prime example of courageous restraint. An official ISAF statement read, “There should be an opportunity to recognize and celebrate the troops who exhibit extraordinary courage and self-control by not using their weapons, but instead taking personal risk to de-escalate tense and potentially disastrous situations.” (HQ ISAF, 2010) The idea of awarding soldiers for this behavior was floated, with one British general proposing a separate medal, but the proposal received mixed reactions both in the press and among soldiers and was ultimately rejected (Abbot, 2010; Carter, 2010; McMichael, 2010; Starr, 2010).

The doctrine of courageous restraint proved politically unpalatable, at least on the surface. Media and critics reported ‘troops grumbling’ over the peril in which Western troops found themselves as a direct result of the provisions, and increased NATO casualties were even reported (Dunlap, 2010; Harding, 2010; Motlagh, 2010)⁷⁷. When Petraeus took over the reins from McChrystal, he acknowledged the problem but did not deemphasize security of the populace in his guidance, moving rather to ensure that no further restrictions were imposed down the chain of command (Jenks, 2013). However, he would later advocate ‘taking the gloves off’ against the Taliban and ‘unleashing America’s air power’ rather than continue what was seen as Obama’s lackluster policy (Petraeus & O’Hanlon, 2016a, 2016b). At the center of this controversy was the consequence of the practice of in terms of risk-transfer, namely the transfer of risk from Afghan civilians to NATO soldiers, thus feeding into the established theoretical linkage between collateral damage and risk transfer (Dixon, 2012, 2015; Tafolla, Trachtenberg, & Aho, 2012). The radical nature of this discourse if not the actual practices speaks to the legacy of collateral damage techniques. Practices of avoiding collateral damage have most commonly taken the form of managerial technologies and techniques of precision

⁷⁷ This has since been disputed, e.g. by Kolenda et al. (2016) who find that deaths due to improved explosive devices (IEDs) in fact accounted for the rise in US casualties after 2009.

in order that the use of force remain possible, viable, and desirable. Practices or discourses that call into question the necessity of the use of force altogether run counter to the institutionalized discourse of the Air Force, namely that this remains an effective political instrument. Here, it thus intersects with the idea of freedom of operations that requires collateral damage to remain an internal, technical issue for the armed forces.

6.3.4 A constructed confluence

What emerges from the engagement with doctrines of war among peoples, counterinsurgency, the applicability of Air Force practices and uses of force to the joint fight, and the curious experiment of ‘courageous restraint’, is a confluence of paradigms of the use of precision strike in an urban environment. This shows two things. First, that the development of collateral damage as an operational concept continuously inscribed in new and existing in doctrine and practice circumscribes not only the use of ‘dumb bombs’, but also the non-use of USAF assets and capabilities in general. The affirmation of an operationally viable concept of collateral damage thus defines and reproduces a discursive envelope beyond which warfare is either too restrictive or outmoded. In this way, collateral damage is heavily politicized at the fringes, such as when risk appears to be transferred to soldiers, or when continued strides in precision are emphasized for legitimacy. Meanwhile, more subterranean struggles at the level of strategy and technology occur internally, mapping onto institutional rivalries between the services. Second, that the opening of the city as an urban battlespace transformed from a political possibility (late Vietnam War) to a doctrinal fact from the 1990s and onwards, interfacing with the resurrected counterinsurgency notion of the neutral population. Where paradoxically urban warfare was both conceived as more likely and more dangerous, strategic airpower discourse has posited a technical solution revolving around the estimation and mitigation of collateral damage.

The history of the engagements in Iraq and Afghanistan is deeply ambiguous and speaks to long-term institutional misgivings about the appropriate use of force in what has been variously been termed low-intensity conflict, irregular warfare, operations other than war, foreign internal defense, internal defense and development, and so on. The preference for strategic airpower, which has shaped institutional responses to the problem of civilian deaths throughout this genealogy, has taken different forms depending on the available technology and the appropriateness of weapons, but continuity remains in the

belief in strategic destruction as an enduring component of airpower theory. In this way, the historiography of the Vietnam War has played a significant role in the internalization of strategic concepts that made it possible to synthesize the modern priorities of low collateral damage and decisive airpower into a concept of precision, using intelligence, modeling, and guided munitions, in turn enabling drones to be part of the solution. It is in this way rather than as a matter of doctrine that it has possible to construct a straight line from Vietnam through DESERT STORM to Afghanistan.

6.4 AN END IN ITSELF? EXPANDING THE PREDICTIVE REGIME

The third and final theme is the routinization of practices designed to minimize collateral damage. These have decisively taken root in the American armed forces from which they have spread to partner nations, especially NATO, and have come to dominate the conduct of aerial warfare operations. Concomitant with the campaigns in Iraq and Afghanistan were the development and marshalling of tools, especially software, and procedures, eventually consolidated at the joint level and since deployed in Allied operations, that serve to predict and reduce collateral damage. While the RMA has often been articulated in terms of ‘full-spectrum dominance’ or a technological leap ahead of competitors in terms of weapons and platforms, it is rarely recognized that the informational and computational superiority of American forces has also been consistently enlisted in service of JAGs, collateral damage analysts, and other advisors. These methods since became consolidated and streamlined, merging from various service-specific techniques into a streamlined and doctrinally ensured component of the joint targeting cycle. The development of such specialized practices, doctrine, software, etc. has been gradual and incremental since the 1990s. However, these have now become entrenched and institutionalized to such a degree that they now serve as a baseline. Such techniques are not merely a matter of military-technical esoterica. As Amoores & Raley explain, “international relations is bound historically with the development of algorithmic ways of calculating” (2017, p. 4). As I shall show below, this also applies to the science of collateral damage, tying together the arithmetic of civilian casualties to high politics in a very real way. Because these techniques are embedded in the wider strategic logic and by themselves constitutive of the conditions under which collateral damage is perceived and acted upon, they warrant special attention.

Collateral damage estimation and predictive methodologies have now come to constitute a core knowledge product of certain military agencies and must therefore be interrogated. Like the *ex ante* production of precision by means of virtual points, this knowledge production commands a great deal of labor, fuses together large amounts of data from persistent surveillance, e.g. by drones, has given rise to systematic training efforts, and is used in the very highest echelons of military and political decision-making. At the same time, the resources expended on legal services within the chain of command, combined with the secrecy surrounding operations in general, means that contesting official narratives requires access and information that is difficult to obtain. The narrative that all feasible precautions are taken thereby locks in to the use and continuous expansion of such tools. Combined with narratives of risk-free warfare, collateral damage has become an end in itself, a hegemonic discourse that the Air Force and the armed forces more generally use to derive legitimacy for their resource allocations and their status among the policy options with which civilian decision-makers are confronted.

This section proceeds along three lines that trace the expansion of the tools and implements of collateral damage mitigation. First, I discuss the development and standardization of the doctrine, procedures, and tools designed to govern and mitigate collateral damage in operations, focusing in particular on the departure from simple weaponeering. Second, I introduce and discuss the practice of NCV, one of the central mechanisms of governance and effectively a collateral damage ceiling above which political authorization is required, that illustrates the cohesiveness of this metrical regime as a whole. Third and finally, I explore accompanying advances in munitions which through continuous miniaturization are not merely interconnected through a dispositif of collateral damage, but which manifest the enduring search for usable weapons.

6.4.1 Regimes of estimation

The practices of collateral damage estimation and methodology originated in the domain of military science and as such extend and complement traditional targeting analyses. They speak further to the dual nature of everyday knowledge production that has transformed into a corollary knowledge of non-destruction. During the late 1990s and early 2000s, decision-making on collateral damage coalesced around predictive software tools, particularly with respect to deliberate targeting. These tools have since acquired a life of their own in an everyday production of knowledge for operations. As with nuclear

weapons, the effects of the delivery of a bomb have typically been expressed simply in terms of a circle showing the blast effect. The CEP (within which 50% of bombs are expected to fall) has substantial historical lineage even beyond nuclear weaponeering (see Eden, 2004). In important respects collateral damage estimation as a practice is thereby a continuation of conventional weaponeering praxis, that is, estimating the physical effects of weapons (see chapter 5). However, as the authors of the first CDE tools noted, it became clear during the early efforts just in the wake of DESERT STORM that

past work done for weaponeering analysis was not necessarily suited to collateral damage estimation. Traditionally, conventional weapon effects analyses make assumptions to conservatively underestimate the resulting damage. In this way, the weapon will probably outperform analysis estimates and be effective against the given target. However, many weapons effects that are neglected in weaponeering analysis, such as the far-field fragmentation, may cause significant collateral damage. (Wade, Wagner, & Swartz, 2003, p. 208)

This is a highly significant reversal. The creation of dedicated estimation tools for collateral damage inverts the priorities of weaponeering whose most extreme expression was the derogatory notion of *overkill*, viz. absolute certainty of destruction with complete disregard for collateral damage. In the case of deliberate targeting, CDE is formally a component of the analysis of capabilities, following weaponeering. This computation, which can be performed by specially trained and certified personnel at various echelons, then serves as a measure of ‘collateral damage risk’, which may include a whole host of diplomatic, environmental, public-relations etc. effects depending on the objects at risk.

The software tools developed to model collateral damage have followed a trajectory of greater sophistication and speed. The first Basic Collateral Damage (BCD) tool modelled air-blast and fragmentation effects, including ricochet, in a ‘free-field environment’, that is, without trees, buildings, slopes, etc. (Wade et al., 2003) Similarly, early bespoke CDE efforts were typically carried out by superimposing ‘rings’ of fragmentation effects onto maps, with additional requirements modeled manually (Martin & Gordon, 2004). Building on BCD, the first truly joint CDE tool in use was CDET (Collateral Damage Estimation Tool), which remains in use. It was funded by the Joint Warfare Analysis Center, an offshoot of the Goldwater-Nichols Act vindicated by the success of DESERT STORM and developed at the Naval Surface Warfare Center, in Dahlgren, VA (Rife & Carlisle, 2006). CDET was a high-fidelity (3D) but slow modeling tool first used in Operation ALLIED FORCE and since refined and expanded, replacing

custom-made engineering estimates (Martin & Gordon, 2004). Responding to criticism that such tools were grossly inadequate for the decision-making cycle of so-called ‘time-sensitive targets’, a new tool, the Fast Assessment Strike Tool for Collateral Damage (FAST-CD) was developed in the late 1990s, first used in Operation DESERT FOX (1998), and saw widespread use in Operation ENDURING FREEDOM and after, reducing the time needed to carry out CDE from hours to less than 15 minutes (Denny, 2003). Sometimes known as ‘Bugsplat’ for the way it rendered fragmentation effects, this software produced a 2D map overlay at much greater speeds and with considerably less manual labor by the analyst that takes into account various delivery parameters and the specifics of the munition. More recent efforts include automatic modeling of landscapes and buildings to facilitate faster decision-making in an urban warfare context (Martin & Gordon, 2005).

Parallel to the development of algorithmic tools was a wave of doctrinal and training efforts resulting in CJCSM 3160 of 2002, a joint document specifying the level of authority required for approval of strikes corresponding to the fidelity of the tools used. This first formulation of actual CDE doctrine specified four ‘tiers’ of analysis, each with a set of tools required. The latest declassified version of the CDE methodology revolves around a 5-step progressive CDE classification scale, each level representing an ever-greater level of collateral damage risk which in turn is sought mitigated with various techniques. With each level, attempts are made to reduce the risk of structural and human damage below an acceptable threshold and retain engagement authority without seeking higher approval. If there is a risk to civilians with the so-called ‘collateral hazard area’ after each step, more intricate risk management is required, with CDE 5 representing the greatest level of risk beyond which special authorization is required. A special process known as *STAR*⁷⁸, of which details are classified, exists for sensitive targets or targets the engagement of which would exceed CDE 5. CDE is described as a ‘balance’ of science and art that combines the field commander’s input with an estimation based on the selected weapon system and assists the commander in adhering to the laws of war (US Department of Defense, Chairman of the Joint Chiefs of Staff, 2012). This approach has spread to become the norm in all NATO operations (NATO School, 2019); American doctrine and tools now serve as the baseline for Allied collateral damage estimation, though many countries maintain national red lines.

⁷⁸ Sensitive Target Approval and Review, cf. *CJCSI 3122.06*.

This bureaucratic logic goes further and now incorporates all manner of support agencies and organizations, including some whose primary function has little relation to warfare. Collateral damage considerations are part of all levels of the process from early target development through to execution, and risk is organizationally distributed owing to the complexity and variety of input factors. First, in the target development stage, certain features of the operational environment or the target itself may increase chances of collateral damage and thus need to be addressed by intelligence providers (US Department of Defense, Chairman of the Joint Chiefs of Staff, 2016)⁷⁹. Second, during the estimation process itself, a number of military and non-military agencies provide specialized information and tools for use in the computation of collateral damage⁸⁰. This information is consulted as data tables for each level of CDE to establish areas of collateral effects. For example, at CDE 1 – the lowest level of risk - the Defense Threat Reduction Agency provides analysis of CBR (chemical, biological, radiological) plume hazards, while DIA’s National Center for Medical Intelligence estimates risk to humans, risks of chemical contamination, and damage to medical facilities. CDE 2 assesses target size and fragmentation hazards in particular with an evaluation of weapon feasibility (cluster, unguided, or PGM). CDE 3 programs weapons for the target with fuse mitigation to keep hazardous effects within the range to the nearest ‘object of collateral concern’. At CDE 4, assumptions about structural cover are used along with further mitigation techniques (heading, fuzing, and aimpoint offset) to reduce risk. At CDE 5, all mitigation techniques have been exhausted and a casualty estimate is produced. The Oak Ridge National Laboratory under the Department of Energy creates population density tables, with specifications of expected ‘episodic’ use of facilities at day or at night. In this way, it estimates ‘populations at risk’ using high geospatial imagery and subnational census counts apportioned to 1000 sq. ft. cells based on local factors, including elevation and

⁷⁹ Faulty geolocation rather than blast damage, for instance, was a prime cause of the 1999 bombing of the Chinese embassy in Belgrade. A number of agencies deliver such data, including CIA, the National Geospatial-Intelligence Agency (NGA), the Defense Intelligence Agency (DIA), the National Security Agency (NSA), the Office of Terrorism and Financial Intelligence within the Department of Treasury, the various intelligence capabilities within the armed services, etc. These organizations, which make up what is known as the intelligence community (IC), may be consulted for target vetting in order for the commander to effectively distribute the risk of engagement with the IC. Initially this concerned mostly the functional characteristics of the target, but was recently replaced with an interim policy that specifically includes collateral damage considerations, and suggests that the IC has been overloaded with requests during ongoing conflicts (US Department of Defense, Chairman of the Joint Chiefs of Staff, 2017).

⁸⁰ This process is documented in a released (2012) version of CJCSI 3160.01A supplemented by US Army JAG School course material (US Army Judge Advocate General's School, 2009).

proximity to slopes, roads, nighttime lights, as well as various other information (Driels, 2013; Oak Ridge National Laboratory, n.d.), information which may then be supplemented by local intelligence. This final number is then compared to a limit imposed on the target engagement authority (TEA; see NCV below) and submitted for approval, if necessary.

Collateral damage estimation has gone beyond the operationalization of restraint (Crawford, 2014). In this way, argues Sewall (2016), during the air campaigns of the 1990s, while the number of estimated civilian casualties was supposed to be one element of the overall target analysis, the CDET estimate “determined the level of political scrutiny that a target would receive. ... The civilian casualty number assumed a life of its own, and it eventually drove the entire targeting process” (pp. 125-126) Background information such as this, which is based primarily on simulations and testing, has a long track record but remains limited by the fundamentally predictive approach (McNeal, 2014; Sewall, 2016). Apart from a number of technical delimitations⁸¹, it remains limited by an inability to account for changes in the local environment not predicted by the approach, including random passers-by, faulty intelligence, concealment, or indirect collateral damage (Reynolds, 2005). This feature of American military R&D is thus co-productive of what Crawford (2013) has termed ‘systemic’ collateral damage and accounts for such prominent cases as the destruction of the Doctors Without Borders (MSF) hospital in Kunduz, 2015. As with any other regimes of practice, ‘normal accidents’ are produced in the blind spots of these technical assemblages.

The knowledge production inherent in these tools must be understood against the backdrop of what is not subject to the same regimes of knowledge. Looking back at the invasion of Iraq in 2003, military historian Anthony Cordesman remarked that “[the] U.S. military deliberately avoids developing better methodologies to make such estimates in part because of the difficulties involved, but also because of the certain public relations backlash from such estimates and the problem caused by the body counts of Vietnam.” (Cordesman, 2003, p. 248) Some advances have since been made towards this, including an annual reporting requirement ordered by President Barack Obama in 2016 and expanded with the defense authorizations bill for 2018 (“National Defense Authorization

⁸¹ Including the use of many direct fire weapon systems, secondary explosions, or artillery, mortar, naval guns, etc. beyond CDE 3 owing to significant ballistic errors associated with their use. Additionally, CDM does not limit the right of self-defense nor is it intended to delay fires under time-sensitive targeting.

Act for Fiscal Year 2018," 2018; The White House, 2016a). But the annual report submitted by the DoD for 2018 indeed noted that their practice for many years "has been not to tally systematically the number of enemy combatants killed or wounded during operations" (US Department of Defense, 2019, p. 4), citing instead compliance with the laws of war and precautions taken to avoid civilian deaths. Additionally, some reporting requirements (for CIA, amongst others), have been revoked by President Donald Trump in 2019, much to the dismay of politicians and NGOs (Losey, 2019; Trump, 2019). Additionally, the reporting that has been done, including by the DoD, has long been rejected by NGOs on account of its systematic underestimation of casualties (R. Browne, 2019; Serle, 2018; Siemion & Mahanty, 2019; Snyder, 2019). One JCS report admitted that feedback to subordinate commands on causes or lessons learned from civilian casualty incidents was "inconsistent", while US military standards for verifying third party allegations "may be construed as restrictive." (US Department of Defense, Joint Chiefs of Staff, 2018, p. 2) The regimes of estimation used in weaponeering and later the computation of collateral damage thus carry forward the same assumptions of the emergent regime of the 1990s, namely on the limits of responsibility for secondary effects and reporting after the fact.

6.4.2 NCV

The *noncombatant and civilian casualty cutoff value* (NCV) has become one of the key practices to apportion control over and centralize the limits of collateral damage⁸². It is the number of civilian casualties resulting from a strike above which further authorization (i.e. beyond the authority of the TEA) would have to be granted in advance, typically by the NAC in NATO operations and the Secretary of Defense or President in US-only cases, and is built into the applicable ROE. The NCV itself was written into doctrine under McChrystal and was along with other CD tools developed with some input from NGOs (Blum, 2019). During Operation IRAQI FREEDOM, a 'proto-NCV' was reported at 30, which was more likely to be blocked by allied red lines than higher authority in the US, i.e. Donald Rumsfeld (Cordesman, 2003; Gordon, 2003). NCVs for ongoing operations are classified, but are occasionally revealed through public pronouncements. The NCV in

⁸² The nomenclature has apparently been abolished as of 2018, but "engagement authority is still tied to tolerances for civilian and noncombatant casualties built into the respective ROE" (Curley & Golden, 2018, pp. 24-25).

Afghanistan under President Obama has been reported as 0 (McDonell, 2017), and similarly in Syria and Iraq during the early days of INHERENT RESOLVE⁸³. Ahead of the push into Ramadi, Iraq in late 2015, a figure of 5 was reported (Wong, 2015); some months later, Associated Press would report an NCV of 10 (Baldor, 2016). This apparent shift has been associated with changes to the ROE presumably made by Donald Trump (Borger, 2018; Cooper, 2017; Shane, 2017).

The NCV cannot be seen as an expression of a particular strategy, but in its fluctuation functions more rather as a tool of governance that ties into the regular, predictive knowledge production of the armed forces, and which enters into the same sites of resistance across institutions. First, because it ties in directly to a particular preference for predictive metrics of control. As Sewall (2016) argues, collateral damage estimates would not have been as powerful if not for the concomitant institutionalization of the concept of NCV. The everyday micro-practices of collateral damage thus render the dispositif as a whole effective. Second, while it might centralize decision-making in an important sense (Corn, 2015), it also frames freedom of military action as a function of collateral damage. In this way, much unlike centralized decision-making on actual targets (as was the practice of ROLLING THUNDER), the metric itself incorporates and enacts political and strategic priorities. While the tendency towards lower NCVs and onwards thus locks into COIN discourse (Kellison, 2018), the NCVs reported above apply to the regular armed forces while special operations or CIA might operate under different regimes (McNeal, 2014)⁸⁴.

As a practice, the NCV also operates on a quasi-legal level. Since ROE and CDE are often conceptualized as means of adhering to the LOAC, the NCV as practice is discursively interwoven with law. For instance, an unnamed ‘soldier’ brazenly remarked to a reporter that “as long as [estimated casualties are] under 10, we’re good to take the shot.” (Watkins, 2016) It was also reported in 2016 that a ‘sliding scale’ of allowable civilian casualties was in place where the maximum casualty number was determined by the time, location and value of the target (Brook, 2016). While an NCV of zero precludes any legal judgment on proportionality, nonzero NCVs risk standing in for a legal

⁸³ For instance, an NCV of 0 was also referenced in an investigation into civilian casualties following from a strike on an ISIS checkpoint near Al Hatra, Iraq, in 2015 (US Air Forces Central Command, 2015).

⁸⁴ A source on CIA drone operations in Pakistan, where ‘hearts and minds’ are supposedly irrelevant, explained that the NCV for Afghanistan does not apply to these strikes (McNeal, 2014, p. 756).

assessment if taken at face value (Scott Graham, 2018). Finally, the NCV replicates and carries forward issues of lawfare perceived as early as the 1990s. When asked why the US does not publish its NCV, a spokesman for US forces in Iraq argued that “if the enemy understand, 'oh if I have X number of civilians around a thing,' its [*sic*] gonna be harder for... right? So that's a piece of information that we protect.” (McDonnell, 2017) The discourse of lawfare necessitates secrecy in practices, blending and obscuring lawfulness and numerically ensured legitimacy.

6.4.3 The right bombs for the right effects

As I have shown above, a pillar of contemporary Air Force thinking about COIN is the use of weapons, particularly in terms of their miniaturization and thus ability to avoid collateral damage. Specifically, the familiar teleological narrative of increasing precision and discrimination of weapons is often detached from the overwhelming preference for the conventional mission, particularly against a Soviet invasion in Europe, which generated the demand for it. As Paul Gillespie (2006) has argued, precision-guided conventional weapons took the place of nuclear weapons during the latter decades of the Cold War, yet such weapons are now being justified in terms of the low collateral damage and high degree of ‘freedom’, versatility, and flexibility they bring to the fight. Particularly because of the ascendancy of COIN, the terms of this debate have gradually shifted, at least in public, such that accuracy is also if not more so a means of avoiding collateral damage as it is ensuring the destruction of a target, such as a hardened Soviet nuclear silo or the seemingly invincible bridges of Vietnam. In the following, I interrogate discourses surrounding the technologies advertised by Air Force proponents in the context of modern low-collateral damage operations.

Entrenched discourses of legitimacy as a function of precision intersect with practices of miniaturization. In the wake of the JDAM success⁸⁵, specialized and further miniaturized weapons have followed that appear to narrow the gap between bombs and non-lethal weapons, while the ratio of PGMs to unguided munitions has steadily climbed⁸⁶. The Small Diameter Bomb (SDB), which is the smallest weapon in USAF’s

⁸⁵ JDAM continues to be a system of choice, with almost 240,000 units procured at the time of writing and another approx. 130,000 on order by 2024. It is integrated with most aircraft in the U.S. inventory and integration with the F-35 and MQ-9 is underway (US Department of the Air Force, 2019, p. 70).

⁸⁶ From 9% in DESERT STORM through 35% in ALLIED FORCE, 64% in ENDURING FREEDOM, and 68% in IRAQI FREEDOM (Martin & Gordon, 2005, p. 315).

inventory at 250 pounds, was the result of a need identified as early as 1998, when the Air Combat Command judged that a new acquisition strategy focusing on smaller, more precise munitions was needed in light of the 1999 bombings in Yugoslavia (Cordesman, 2007). After the bomb had been deployed in record time, the principal theaters of operation had shifted to Afghanistan and Iraq and the War on Terror. Gen Gary North, Combined Forces Air Component Commander, remarked that the SDB “is uniquely qualified for urban targets that call for precision accuracy and reduced collateral damage and in close-air-support missions that our aircrews find themselves in during Operations IRAQI FREEDOM and ENDURING FREEDOM. We now have the ability to put ordnance in places where collateral damage might be a concern.” (US Department of the Air Force, 2006). Enabled by breakthroughs in precision technology and surveillance, the lethality of munitions has been reduced to the point that wholly or partially inert munitions have been deployed with the aim of lowering collateral damage (Haendschke, 2008)⁸⁷.

Yet as with the development of tactical nuclear weapons, GPS and laser guidance, and JDAMs, the interaction is complex and the (re)negotiation of technology depends on practices surrounding it. The existence of such technology – including particularly drone technology, but also bombs of dramatically lower destructiveness than hitherto – is enlisted for the purposes of legitimizing not only aerial bombardment generally, but also Western warfare more generally, obscures the different interests at stake in their development and the complexity of the R&D process. The *Hellfire* missile used with *Predator* and *Reaper* drones was in fact a repurposed Vietnam-era antitank weapon, developed for use with attack helicopters and against Soviet armor (C. T. Smith, 1975). It appears to have been selected as much for its low weight and price, allowing it to be mounted initially on the fragile *Predator* (Whittle, 2014). The need was conceptualized after frustration over using multiple aircraft to defeat single targets in Yugoslavia. In somewhat similar terms, the SDB program was justified as a means of achieving ‘multiple

⁸⁷ In 2007, a program at the Naval Air Systems Command delivered the Low Collateral Damage Bomb, a modification of an existing bomb unit, essentially a version of an existing 500-pound bomb (BLU-111) with a reduced amount of explosive material to diminish blast and fragmentation radii (NAVAIR, 2007). Further developments by the Air Force have led to the partially inert *Focused Lethality Munition* (“Big Bang, Small Space: The USA’s “Focused Lethality Munitions”,” 2012) as well as the 2011 BLU-129/B *Very Low Collateral Damage Weapon*, which replaces the steel casing of the old Mk82 bomb with an expensive carbon-fiber body that disintegrates on explosion, reducing fragmentation effects further (Bloomfield, 2012; J. Drew, 2015). An exotic variant of the AGM-114 *Hellfire* missile with an inert warhead and pop-out blades has been fielded and used twice in 2017 against high-profile CT targets (Lubold & Strobel, 2019; Wheeler, 2019).

kills per sortie’, particularly for operations with the stealthy F-22 *Raptor*, because of smaller size and weight (Department of Defense Appropriations for 2002, 2001; Department of Defense Fiscal Year 2003 Budget Priorities, 2002, p. 18; Dudney, 2002). Finally, according to a program manager working on the BLU-129/B *Very Low Collateral Damage Weapon* (VLCDW), the demand for it arose as an interaction between ‘the warfighter’ and Air Force laboratories, *given* the knowledge that new advances into composite casing materials and explosive fill technologies were reaching maturity (SLD, 2011). Layers of professional knowledge and expertise, both in engineering, military tactics, and strategy, especially COIN and urban warfare, intersect here. Collateral damage emerges as one among several weapon criteria - especially speed, flexibility, and survivability - whose overlap is produced through discourses of discretion and discrimination that tie them together, annulling deterministic or essentialist explanations of why they emerged or reemerged under different regimes.

While miniaturized and precise weapons are immediately involved in the discursive production of legitimacy, the historicity of this enmeshment in the collateral damage dispositif requires qualification. The Air Force continues to procure cruise missiles with regular steel casings, blast-fragmentation warheads, cluster munitions, ‘bunker busters’, etc. (US Department of the Air Force, 2019) Moreover, the production of very small munitions does not imply that large or relatively indiscriminate weapons are removed completely from the arsenal; instead, they are ordered through enunciations and practice into a ‘spectrum’ of operations. Thermobaric weapons, including the GBU-43/B *Massive Ordnance Air Blast* (MOAB) bomb first detonated in Afghanistan in 2017, remain in use despite the political opprobrium associated with them, especially since their use by the Russian armed forces in Grozny during the Chechen Wars in the 1990s (Greenwald, 2015; Majumdar, 2015; "Thermobaric Weapons Becoming More Common," 2005). A controversial thermobaric variant of the *Hellfire* was made ready in the early 2000s that ignites a fluorinated aluminum powder to create a sustained blast wave, subsequently sucking air out of caves and around corners of buildings and asphyxiating persons in fortified positions – suitable in particular for urban operations (Bolton, 2003; Morris, 2003; Norton-Taylor, 2001; M. Smith, 2008). Finally, a contemporary manifestation of the search for ‘options’, which is continuous not only with extensive conventional arsenals, but also nuclear weapons, is given by the current development of variable-blast

weapons. The function recalls the dial-a-kill capabilities of nuclear weapons introduced in the 1960s and will require complex manufacturing as well as testing facilities, but promises ‘cockpit selectability’ for fleeting and emerging targets (Freedberg, 2018; Waterman, 2018)⁸⁸.

Picking up the historical threads of the contemporary weapon systems that form the backbone of the Air Force mission reveals messy development processes and contingent decisions. That is not analytically surprising or controversial per se. Rather, when technology is cited today as uniquely capable of contributing to the current mission with low collateral damage, this implies a reinterpretation as well as the existence of a strategic logic that ties the social aspect of these weapons to the broader web, viz. *dispositif*, of collateral damage. This reinterpretation of technology in terms of its appropriateness for COIN and urban warfare, that is, its capacity to strike precisely and with low collateral damage, then intersects with general public pronouncements on the particular Western or American way of warfare that is supposedly ethical, but which masks and oversimplifies. Even though concerns over collateral damage did not originally or do not exclusively drive the development of these devices, they immediately – whether by continued development, procurement, force planning, or use – become intertwined with the practices by which this *dispositif* is constituted. The *dispositif*, in other words, must be understood not as a causal agent, but as the depoliticizing tendency from the range and regularity of the enunciations on collateral damage that is enabled by the association of certain weapons.

6.4.4 Governance by numbers

The tools and everyday practices of collateral damage reveal changes in thinking about collateral damage. The predictive science of collateral damage has effectively displaced all other rival conceptions of civilian deaths and the destruction of civilian property. With the maturation of CDE technologies, the continued development of precision weapons, and the concomitant expansion of intelligence-gathering capabilities, targeting too has changed. In this way, while collateral damage techniques have genealogically come about as a result of a mix of historical processes both domestic (American) and

⁸⁸ The same development is occurring in the realm of nuclear weapons modernization, in particular the upgrading of the B61-12 nuclear gravity bomb, which is to become the first precision-guided, low-collateral damage variable-yield thermonuclear device in the US inventory, at enormous expense (Kristensen, 2011, 2017).

geopolitical, the current environment has enabled their distribution beyond the United States through a mechanism of NATO standardization and training. The proceduralist logic of the American approach to civilian casualties, enshrined in predictive systems, extensive target vetting, and the promise of legalism, continues what Conway-Lanz (2006) identified from the Korean War. But what the polymorphic approach reveals is that this came about more gradually and incrementally than any overarching metahistory would suggest.

Complicated mathematical modeling done manually has been replaced by automated procedures, effectively compressing the decision-making cycle, while the spatiality of collateral damage has similarly been compressed and refined by the replacement of simple circles with complex shapes. As with the technologies of the RMA period, a dominant discourse is that these technologies thus offer greater ‘freedom’ to pursue political objectives. In an important sense, there is continuity here between technologies and techniques of surveillance and guidance, because they too were justified in terms of the increased discretionary potential. Yet these tools go remarkably further: by endogenizing the entire suite of legal and strategic concerns, and by operationalizing political involvement as a single figure, the armed forces have indeed created an unprecedentedly fast and smooth bureaucratic machine, thereby framing, reining in, and managing the process. The routinization of IHL, which began around the time of DESERT STORM, is now intertwined with these tools because they assist with compliance, occasionally threatening to render IHL irrelevant altogether. Assuming CDE methodologies are carried out and followed, when the NCV is low or zero, concerns about proportionality lose force or disappear altogether; military strategy is thereby stricter than IHL. This is both to be taken in a spatial and a temporal sense: with few counterinsurgency operations presenting ‘target-rich environments’, targets of opportunity and time-sensitive targets become the norm, thus further confining the decision-making window or providing a justification for preapproved collateral damage parameters and targeting on the basis of ‘life patterns’ in the case of CIA.

6.5 CONCLUSION

Collateral damage has become deeply embedded in the conduct of modern warfare from the level of tactical decisions through strategic decisions on the use of force to public

pronouncements on the ethical and surgical use of airpower and the armed forces more generally. For that reason, and despite ambiguous drone practices in particular, it is not appropriate to describe it as simply a euphemism for wanton destruction and arrogant disregard for the lives of civilians far from the US homeland. Evidently, efforts to avoid collateral damage have very much been institutionalized, streamlined, codified, and otherwise organizationally ensured. The dangers of excessive force, while they have been acknowledged at least since the concept of collateral damage emerged, are now essential to warfighting discourse. The importance of low-collateral damage operations in the contemporary period has given rise to a host of new training procedures, positions in the chain of command, and valuable research and development contracts. As I have argued in the previous chapters, this is not tantamount to suggesting that collateral damage follows a linear historical trajectory of ever-increasing importance and sophistication. Collateral damage continues to occur, and the dispositif outlined above reveals certain pathologies. These pathologies invite further scrutiny of collateral damage as a concept and practice of civilian casualties and of war which is not self-evident, but relies on continuous reconstruction as the most ethical and humane way of warfare, particularly at a time when secrecy has made such claims increasingly difficult to verify. To that end, three conclusions follow from the engagement with the dispositif of collateral damage as it has emerged in the contemporary period: first, a reconfiguration of discourse about civilian collateral damage; second, a range of new and institutionally specific practices that conflict with the discretion-discrimination nexus of the Gulf War; and finally, the *power-knowledge* of the predictive but largely secret regime of collateral damage estimation which serves as the anchoring point for claims to legitimacy and, ultimately, depoliticization.

First, the optimism of *Shock & Awe*, RMA, etc. that was awoken with DESERT STORM and applied in the early days of IRAQI FREEDOM has given way to the slow, careful, and painstaking nation-building of counterinsurgency. In this strategic environment, collateral damage is a severe disadvantage, no longer as much for domestic reasons as for the success of the campaign as a whole. Second, while disagreements on the symbolic value of civilians exist, COIN and CT doctrine and practice share a notion of irregularity and asymmetry in warfare that has shifted targets from the military and industrial ‘nerves’ of countries to individuals. This has changed the layout of the battlespace and lent further

clout to the regimes of estimation the contours of which were visible in the 1990s. While belief in the contribution of airpower to the strategic mission remains strong, airmen have had to posit their capabilities in terms of the highly sophisticated CD tools and discriminate weaponry developed during this same period. The revival of COIN and its subsequent success in the defense community hastened the coalescence around low-collateral damage around USAF practices, technologies, and techniques that were originally justified under different terms. Not only could the Air Force provide more degrees of freedom for the decision-maker with lower risk to the nation's own forces, they also boasted the ability to do so with a greater certainty of cleanness as well as lower risk to their own personnel than the Army alternative. Third, the nexus of legal awareness and media presence that led to complaints of 'lawfare' during the 1990s has become deeply embedded in the strike apparatuses in ambiguous ways. The performative aspect of the legal function in the strike apparatus combined with the practices of NCV and the requirements of low collateral damage mandated by COIN theory often causes IHL to be less restrictive than the strategic baseline. This result cannot be attributed to the technology alone, but must be viewed in terms of drone practice.

Second, the mutation of the emergent dispositif of discrimination-discretion outlined in the previous chapter. The Uruzgan strike revealed the historically and institutionally contingent conflict between operators of the *Predator* drone and the adherents of tactical patience. These in turn are coupled with discourses on visibility and speed and speak to one of the themes of this thesis, namely the interpretation of new technology. The historiographical argument that drones are merely the continuation of a history of precision, for instance, has been emphasized by the Air Force. Actual practices betray this notion: the cohesion of America's military strategy abroad, especially the COIN effort, has been frayed by the endeavors of the increasingly paramilitary CIA as the arming of drones sparked a frantic race to define their role in future operations. The critique of drones as a territorially unbounded means of force is poignant and accurate with respect to collateral damage (cf. Gregory, 2011a; I. G. R. Shaw, 2013; I. G. R. Shaw & Akhter, 2014). Yet it is the interlocking of a targeting philosophy that emphasizes the fleeting and ephemeral nature of individual targets and a regime of pre-approved, pre-estimated casualty levels that has enabled speed to become a goal towards which the

further development and automation of collateral damage must go, rather than tackling enduring pathologies of second-order collateral damage and misdesignation.

Third, the notion that the contemporary American approach to collateral damage is one of predictive proceduralism is explained with reference to the apparatus or *dispositif* of practices and discourses that produce that effect rather than a 'way of war'. In this way, the bounds of legitimate collateral damage are already pre-established with respect to virtual reference points that group people less according to their actual identity but to categories of behavior, cities not to their industrial output or governmental function but to the close and complex arrangement of transient bodies and physical objects in a modeled battlespace, and outcomes not to a circle of destruction but a complex topology of effects. The anticipatory quality of war that Baudrillard teased out after the Gulf War applies to collateral damage, which in the post-9/11 period is *doubly* anticipated (calculable as a function of persistent vision, yet often tragic or 'inevitable' after the fact) and teleologically avoidable (by means of research into weapons, correct strategies, and proper tactical procedures). With the backdrop of the procedural and mathematical rigor that the US military establishment favors, defenses of actual collateral damage tend to take the form of rules not being followed, faulty intelligence, or factors beyond the control of decision-makers, viz. the 'fog of war'.

This depoliticizing notion must be questioned at the level of an assemblage of practices which are made to cohere by public pronouncements that present them as a strategy. The *strategic logic* of collateral damage is constituted by the organized commitment and marshalling of technological and practical implements towards this goal. The *power-knowledge* of collateral damage, the knowledge produced by predictive tools underpinned by the institutional weight of the Air Force, is rarely questioned. What the *dispositif* shows is that the development of a dispersed but by now heavily bureaucratized network of practices to achieve precision and avoid collateral damage is neither historical accident nor imposed from the outside. Rather, a multiplicity of lines of development are at work: some, such as CDE tools, are gradual and organic, while others, such as the practice of courageous restraint, have been more radical and controversial. It is also, as the debate over counterinsurgency shows, the result of a continuous and conscious reinterpretation and recasting of extant capabilities, which are then refashioned as tools that are not just militarily, but also politically effective. Far from being merely a

restriction upon the conduct of warfare, the imperative to avoid collateral damage has been enormously productive when overlapping or conjoining with other military priorities, particularly general casualty aversion.

In sum, this analysis of the collateral damage apparatus shows that its reduction to a metahistory of precision – one in which there is a straight line denoted ‘collateral damage’ from bonus damage and early area bombardment until the discriminate warfare of today – is untenable and lacks the ability to expose the pathologies that remain. Despite strides made towards joint doctrine and common tools, collateral damage is not a unifying concept to overcome longstanding interservice rivalries or preferences for technical capabilities over doctrine. These are instead suspended in their institutionalized difference, and the emergence of new practices and discourses leads to the gradual mutation of the dispositif of collateral damage. In that sense, the abandonment of practices such as courageous restraint expresses an enduring preference for discourses and practices of low collateral damage that render weapons and implements usable and useful.

7 CONCLUSION

7.1 INTRODUCTION

In April 2017, less than a week after a missile strike on a Syrian air base, USAF carried out a much-publicized strike in Nangarhar Province, Afghanistan, using a Massive Ordnance Air Blast bomb to destroy a cave complex thought to house ISIS militants. Authority to carry it out had been delegated to Gen John Nicholson, commander of the US forces in the country. “What I do is I authorize my military”, Trump remarked. “We have the greatest military in the world, and they've done the job, as usual. We have given them total authorization, and that's what they're doing.” (quoted in Shane, 2017). This and other strikes in the early days of the Trump presidency stimulated wider speculation about Trump’s supposed relaxation of the ROE, particularly when fighting IS and Taliban, in campaigns seen to be stymied by former President Barack Obama’s excessive restrictions⁸⁹. Could this herald a new era of tougher, but less discriminate warfare with more civilian casualties?

Speculation was rife about Trump’s grand strategy or lack thereof, just as it had been prior to his assumption of office (Dombrowski & Reich, 2017). Hal Brands (2017) suggested that Trump’s presidency will be an ‘inflection point’ in the history of the US-led international order, John Ikenberry (2017) worried that Trump will spell the end of a liberal consensus, and Stewart Patrick (2017) called it the return of self-help in international relations. Against fears of a new isolationism, Barry Posen (2018) argued that Trump’s presidency is anything but: it may well be the end of a liberal hegemony, but not of global engagement. Others yet have posited that Trump’s foreign policy was in fact proving to be traditional and standard (e.g. Abrams, 2017) – or that his presidency as a whole has so far proven ordinary (Herbert, McCrisken, & Wroe, 2019)⁹⁰. In relation to the strategy pursued in Afghanistan, Max Boot (2017) opined that the use of the MOAB contradicts conventional COIN wisdom. To curb harmful tendencies of individual presidents and solidify the guidelines of successful ones, Andrew Bacevich (2016) called for a new national security doctrine on the eve of the Obama presidency. Intersecting with

⁸⁹ Reported in the Daily Mail (Joseph & Matthews, 2017), the Daily Telegraph (Farmer, Mendick, Ensor, & Crilly, 2017), the Guardian (Borger, 2018), and New York Times (Cooper, 2017), amongst others.

⁹⁰ A similar debate ran during Barack Obama’s presidency (Michael Clarke & Ricketts, 2017; Drezner, 2011).

these characterizations of Trump's presidency and his stance on the supposedly norms-based international order are critical engagements with the military policies inherited from the Obama administration. Picking up from Bush's war on terror, Bacevich argued, "it remains today, with U.S. forces more or less permanently engaged in ongoing hostilities. In one theater after another, fighting erupts, ebbs, flows, and eventually meanders toward some ambiguous conclusion, only to erupt anew or be eclipsed by a new round of fighting elsewhere. Nothing really ends." (p. 37)

In this environment of seemingly endless war, punctuations like the MOAB must be situated within the wider context not just of the presidency, but of a normalcy in the day-to-day operation of the armed forces. As it turned out, military officials would later insist that the authorization for the strike had been in place prior to Trump's term ("MOAB Strike Didn't Need Trump's Approval, Officials Say," 2017). The weapon itself had been in the arsenal since 2003, but was not used during the invasion of Iraq. When the MOAB was first introduced, it was associated rather with the doctrine of *Shock and Awe* (M. T. Owens, 2003); similar weapons were used in the past for psychological effect owing to their massive blast effect (Haulman, 2003). A former senior targeteer for the George Bush administration explained in the aftermath of the MOAB strike that its deployment then was withheld due to fears of collateral damage estimated, as they are now, using computer models (Emmons, 2017). In this way, the regulation of the US' global military engagements remains institutionalized and tied to layers of bureaucracy and altered by specific levers of change. Certain discourses and practices within the armed forces, in other words, govern the strikes that do happen and account for those that did not. One of the most important governing mechanisms in this regard is that of collateral damage.

Emergent technologies such as the MOAB do not simply usher in a new style of warfare, nor do they reflect an unchanging philosophy of the use of force. As the case illustrates, changes to the use of force and the importance attached to civilian casualties cut across lines of politics, military strategy, and technology. Furthermore, an appraisal of the rate and nature of change is complicated by the contingency of historical development within each. While the MOAB technology was developed with the invasion of Iraq in mind, technically it was built on the basis of the earlier 'daisy cutter' weapons used to clear trees in Vietnam. *Shock and Awe* was supposedly tempered by internal

routines and instruments that precluded large numbers of civilian casualties, which in turn had been developed on the back of a casualty-averse public atmosphere. Finally, Trump's invocation of 'total authorization' appears to contradict the constancy, as well as the autonomy, of the armed forces and their doctrine. While instructive in their detail, narratives that disregard the complexities in the negotiation of civilian casualties in the present risk constructing a singularity around the event, the president, or the weapon, while losing sight of the continuities and the contingencies that made the event possible in the first place. The materiality of the weapon, practices of the airstrike, and discourses on its appropriateness might indeed seem to fuse at the moment of impact or the event of collateral damage. Yet as the case of the MOAB shows, the non-use of force reveals just as much if not more about the institutional and political grounding of the event itself. Beneath the surface is a rich history of safeguards, procedures, and theories – in short, doctrine – on the avoidance of civilian casualties and the appropriate technologies for a given strategy.

This thesis is a response to the question of how this doctrine of collateral damage came into being. Against the carnage of aerial bombardment in World War II, including the use of atomic weapons, the contemporary appears careful and measured in the use of weapons and the types of targets struck. This genealogy itself is a response to the question that demonstrates the possibility of an alternative, critical history that breaks the historiographical impasse between the progress of technology and the constancy of doctrine. This conclusion consists of three sections. In the first, I revisit the background for the choice of genealogy and as well as its attractiveness to the subject matter. I also recapitulate the history of the present resulting from the engagement with collateral damage, discussing how the displacement of bonus damage by collateral damage offers new critical insights. Second, I reflect on the changing character of war viewed through the lens of this displacement, the mutations of discourse and practice it involved, and the pathologies generated by new techniques of power. All are recurring themes throughout the investigation. Specifically, I offer some observations on changing civilian subjectivities, the geographies of collaterality, and the problematic notion of precision. The final subsection looks to directions for future research given the scope and limitations of the dissertation.

7.2 INTERROGATING REGIMES OF FORCE: FROM BONUS TO COLLATERAL

The procedures by which airstrikes are made to happen or not are intensely knowledge-laden: they are conditioned by organizationally ensured routines that make up a ‘normal science’ of collateral damage. Collateral damage estimation, catalogues of weapons and their effects on the environment as well as the human body, doctrine on tactics, operational planning, target folders, theories of strategic consequences and the political and symbolic significance of bombing: these make up the current regime of collateral damage, in turn drawing on the broader scientific domains of physics, politics, military strategy, etc. This regime, as I have argued in the preceding chapters, constitutes a specific historical formation whose genealogy – its continuities and discontinuities, the formations that it displaced and the opportunities which it rendered possible, in short, its lines of descent – can be read as a history of the techniques of power by which warfare is governed. Laying out this history has been an exercise in the illumination of a network in which various institutions (academic, service, joint, government), discourses (on the appropriateness and legitimacy of the use of force) and practices (prohibitions, admonitions, standard operating procedures, etc.) are tied together.

To interrogate the issue, the thesis has outlined a framework for analyzing the nexus of knowledge and power in terms of regimes of discourse and practice, or dispositifs. With it, what M. Dean (1994) called a critical and effective history becomes possible. Such a history effectively turns the problem on its head: instead of a history of the past in terms of the present, it is a history of the present in terms of a reconstructed past. Rather than view the past as a continuity broken by the whim of a president or the use of a weapon, this critical history rebuilds the historical contingency that enabled the strike to take place. Events become subject to a meticulous and careful restaging of their historical context that reveals the webs of interest and meaning that cause them to appear natural and necessary in their own contemporary. These networks of practice and discourse exposed, the obviousness of the event unravels. Genealogy marks the necessity to engage with the emergent regimes of civilian death in their complexity. Polymorphism encapsulates the idea that the expansion of said practices and discourses has not exclusively been organic within a particular institution or profession, but relies on multiple sites and institutions to be effective. Genealogy does away with the temptation to subsume such developments under the logic of a single motion towards greater discrimination or benevolence in the

theories or implements of airpower. Instead, recovering the contingency of practices and discourses in their own historical contemporary exposes institutionalized interests and pathologies of power. As a result of these analyses a history of the present comes into view, showing the strategic logic of collateral damage underpinned by widely distributed discourses and practices. This strategic logic must be kept in view and continuously reactivated to avoid the risks of depoliticization in public discourse. It is polymorphic in the sense that it has emerged not as one hegemonic discourse or process emanating from a single actor, but the fusion and complementation of a set of discourses and practices which become productive locally for different, often overlapping reasons.

7.2.1 Towards a dispositif of collateral damage

The empirical investigation opens with the juxtaposition of the SIOP, an enormously destructive nuclear war plan, and public investigations into the air war in Vietnam in which it was suggested that the war was in fact being conducted with a minimum of collateral damage. The apparent continuity of institutions, theories, and even technologies at work calls into question the plausibility of a sudden shift between the regimes of *bonus damage* and *collateral damage* as well as the pure determinism implied by later explanations of nuclear weapons practices. Reconstructing the contingency of practices of planning, theories about civilians in the strategic calculus, and actual conduct of bombing is revealing. Discourses of damage limitation, which by means of increased civilian oversight were moving from the esoterica of nuclear strategy through to target selection and engagement, contained an incipient notion of collaterality. However, the disagreements over the symbolic value of civilians enshrined in the institutionalized regime of bonus damage meant that the implementation of early collateral damage practice was incoherent and inconsistent. Against the backdrop of fiscal constraints, interservice rivalry, and the renegotiation of technology spurred by the rapid progress in nuclear weapons, the discourse of collateral damage emerged as a fragile and superficial compromise in the later stages of the Vietnam War. The conjunction of strategic airpower, emerging weapon accuracy, and a hostile public environment captured in *LINEBACKER* would marginalize theories of limited war in favor of conventional precision strikes, setting the doctrinal stage for the next major war.

Next, the inquiry rebuilds the contingency of the strike on the al-Firdos bunker in early 1991 that caused the deaths of hundreds of Iraqi civilians. At this point, the formal

coupling between collateral damage and mission success, the contours of which were first seen in the wake of Vietnam, was beginning to solidify into doctrine. It did so through an expansion of the strategic liability of collateral damage from what was predominantly a domestic issue in Vietnam to an international spectacle: collateral damage became strategically sensitive. The result was the expansion of technical subsystems and micro-practices within engineering and law at a much lower level of abstraction than at the time of the SIOP. The institutionalization and gradual refinement of longstanding items of knowledge in the field of engineering in particular made possible an analytics and language of collateral damage as a virtual, predictive science of points rather than areas for bombardment. Precision, in addition to enabling discrimination, enabled discriminate deterrence: the transition from area to point was militarily efficacious against the presumed adversary of the late 20th century, namely the Soviet armored offensive. At the same time, a compatible idea of permissible civilian death was conceived within the emergent domain of operations law, a subfield that arose from the scandals of Vietnam. The principle of the economy of force was reinterpreted legally and posited as the principle of proportionality to include an established concept of collateral damage. The dispositif of collateral damage – the web of practices and discourses that produces discriminate, legitimate warfare within the bounds of military necessity – emerged. The decisive shift was thus not simply the mass production of precision weapons, but the constitution of a regime of *ex ante* legality and legitimacy.

Finally, the subsequent chapter maps a contemporary environment caught between on the one hand, a human terrain considered highly volatile and on the other, rapid processes of automation that quantify and virtualize collateral damage for rapid decision-making. As the high pace of the military operations of the 1990s was replaced by the protracted, lower-intensity conflicts of the 2000s, the strategic value of civilians became entrenched: minute management of collateral damage was understood to be necessary for victory. In this way, the logic that COIN operations are particularly sensitive to collateral damage exacerbated and expanded upon existing sensitivities and made them an embedded part of the target environment. At the same time, armed unmanned aerial vehicles, or drones, first saw use and subsequently rose to prominence, reinvigorating debates about airpower and expanding the regime of collateral damage along these lines. Despite public controversy over COIN in particular, the concrete practices of avoiding

collateral damage have remained stable: support agencies and doctrine centers quietly and organically continued evolving the tools and techniques used to reduce civilian casualties without fundamentally altering the predictive approach that was apparent as early as the 1990s. While the pathologies of vision and modeling lend support to explanations centering on the transfer of risk, such accounts neglect the productivity along institutional fault lines that ensures legitimacy through military options. While institutional disparities certainly do exist, drones remain subject to collateral damage as a regime of knowledge about the lethality, legality, and legitimacy of civilian death. Collateral damage has become an indispensable and indeed necessary strategic framework in which to conceptualize and operationalize drone development and warfare, and the distribution of public statements reveals that their legitimacy depends on it.

7.2.2 The contribution of the dispositif

In this dissertation, I have posited the emergence of collateral damage as the displacement of a dispositif of ‘bonus damage’. In other words, the internalization and development of ‘collateral damage’ by the armed forces is viewed through the lens of the rejection of a specific apparatus of civilian death in favor of another. This method offers two particular advances in our understanding of contemporary warfare:

First, that when regarded as dispositifs, the nature of change becomes a matter of multiple lines of descent according to different speeds and institutional priorities. At this level, the marginalization of the bonus damage dispositif has been piecemeal and uneven. It would thus be inappropriate to speak of a ‘revolution’ in affairs of civilian death caused by the military. Likewise, reducing ‘collateral damage’ to a fig leaf masking an essential continuity is also reductionist. The apparatuses of bonus damage and collateral damage have been produced by some of the same institutions and discourses, including theories of victory as a function of airpower, which make the connection worth exploring. Yet upon closer scrutiny the practices, institutions, and discourses by which discriminate bombardment because possible and plausible cannot be subsumed under the same metahistory of progress in precision. Even though they pale by today’s standards, notions of accuracy were also politically and strategically meaningful under an apparatus of bonus damage: accuracy contributed towards the fulfillment of the mission and could be enlisted for the interservice battle. The coupling of accuracy, legality, and public legitimacy enshrined in the concept of discrimination was only negotiated on the back of the Vietnam

War and consolidated by the time of al-Firdos. The history of the present is thus a history of the gradual expansion and constant repurposing of techniques of power in different fields whose legitimacy and expediency results from their applicability in multiple fields of law, strategy, and technology. It is this emergent network of relations that has made the concept of collateral damage durable and successful.

Second, when regarded as rather a form of self-governance than the external imposition of controls and regulations, these techniques of power become more apparent than either a teleological history or 'way of war' would countenance. Moreover, while explanations that emphasize greater civilian control or open-ended technological developments have merit, many practices and discourses that now make up contemporary targeting praxis were developed within the armed forces, partly in response to perceived political constraints. Therefore, the replacement of bonus damage by collateral damage must be seen not merely as the reining-in of a type of unrestricted warfare against civilians. The sidelining of nuclear war as a whole was concurrent with changes in doctrine that was instrumental in defining the scope of the next war and the conditions under which such wars might be governed, particularly by the armed forces themselves. Much of the early controversy over civilian casualties emerged from interactions or 'interferences' by civilian authorities or other outside institutions, especially over targeting decisions in Vietnam. The technologies and techniques - of law, of estimation, and of precision strike, historically rarely developed for the express purpose of avoiding collateral damage, but often redefined thereto - are techniques of power because they become part of an ensemble of targeting that clearly delimits the range of possible choices. The first debates on collateral damage in a sense re-politicized targeting decisions in relation to airpower - something that reached a high point with Vietnam - decisions that under the dispositif of bonus damage had been reduced to a SIOP that would gradually introduce 'options'. Multiple emergent intermediate technologies and strategies, including tactical nuclear weapons, were also eventually marginalized but reflect the same productivity in practices and discourses towards a practicable notion of self-regulation.

7.3 CHANGING FORMS OF WAR THROUGH CHANGING TECHNIQUES OF POWER

What does a genealogy of civilian casualties tell us about changes in warfare? The answer takes the form of changing techniques of power instantiated through regimes of discourses and practices whereby warfare is sought managed, governed, and controlled. Changes in such regimes entail differences in the effects of the techniques they order and justify, which I have set up along three lines. In the first subsection, I review the production of a set of subjectivities of civilian victims produced by the practices and discourses of warfare under study. Collateral damage signifies not just the emergence of a particular kind of collateralized civilian, but the distinctions and categories that make the tools and algorithms of collateral damage practice work percolate into political discourse, where they contest and define modes of warfare. Second, I scrutinize what might be called geographies of collaterality: historical specificities in the deployment of the collateral across spatial regimes of violence, including imaging, targeting, mensuration, bombardment, and so on. These accompany and intersect socio-technological transformations of battlefields and battlespaces. Finally, I return specifically to the issue of precision whose history is often presented as a surrogate for a critical history of collateral damage. Yet as I have shown above, the social construction of accuracy serves multiple organizational and technical ends at the same time, and the contemporary alignment of strategic and seemingly humanitarian goals is historically contingent.

7.3.1 Civilian subjectivities

Collateral damage implies, as Cohn (1987b) has argued, a particular relationship between technologies – understood here not merely in the material sense, but as sets of practice whereby the material is made operable through human engagement – and the range of subjectivities produced by their normal functioning. Differing forms of victimization are implied by the shift from bonus to collateral damage.

The eventual abandonment of the terminology of bonus damage, as I have argued above, portended a wider transformation in politico-military theories of targeting and ultimately of victory. The erstwhile analytical indistinction between combatants and noncombatants was not only produced at the level of abstract discourse, but reproduced

at almost every level: from the prevailing understanding of nuclear devastation as such to tactical and operational concerns about delivery, bonus damage was institutionally anchored. A substantial part of the critique of bonus damage (in the form of collateral damage) rested upon a bedrock of symmetry in warfare that has since become obsolete. After all, the likes of Brodie, Schelling, and Kaufmann were highly concerned with collateral damage done to American civilians, by now an unthinkable turn of phrase. Conway-Lanz (2006) singled out No Gun Ri as a formative event that cemented intentionality as the characteristically American test of collaterality, to be repeated again at My Lai and beyond. By means of repetition and a range of techniques of management, US armed forces have certainly normalized the event of collateral damage as something highly distinct from the massacre. Still, there are a number of other civilian subjectivities which remain outside of the category of the collateralized civilian: civilian deaths which do not qualify per se, the most important being the potential or assumed collaborator and the victim of second-order effects, such as the destruction of critical infrastructure. Such subjectivities were seen in Vietnam and to some extent reproduced by the indiscriminacy of drone strikes by the CIA and JSOC.

These subjectivities are thus not merely enshrined in discourse, but in fact co-constituted by the range of everyday practices by which the status of collaterality is imbued with meaning. When collateral damage became the object of legal and quasi-legal discourse, for instance, it simultaneously became involved in a different set of practices oriented towards constructing, mostly preemptively, a legal moment and a legal space for airstrikes. These practices also define the range of culpability: they include the gamut of illegal behavior which is not outside of the scope of law, but inside. A civilian who suffers indirectly from the destruction of water or electricity supply is thus doubly outside, since causality is not legally established and thus not subject to legal or quasi-legal remedy, e.g. through solatium and condolence payments, that they may have otherwise received. Collateral damage is not so much a 'third category' of death (Rosén, 2016) as it is a contextual and historical field that morphs along with the construction of other categories in the domains of professional praxis that collectively define the legitimate enterprise of warfare.

7.3.2 Geographies of collaterality

A recurrent theme in the articulation of practices of targeting and bombardment is the geographical dimension of collateral damage. This is manifest not only in the gradual compilation and standardization of world maps and navigation systems, which has numerous points of intersection with the genealogy of collateral damage, but also in a wider ontological sense of collaterality. In the context of geography, this ontology has revolved around the fixture of the city, the urban space, as a symbolic delimiter that subsequently gave rise to a number of techniques of diplomatic and military governance.

The supposed transformation of warfare must therefore be read against a history of the discursive significance of cities as targets for destruction. Practices of targeting instantiate and reify discourses of the utility of civilian deaths; targeting being a geographical endeavor *par excellence*, a spatial regime of civilian death or non-death is produced at this point of intersection. They operationalize political and strategic objectives as geospatial fixtures to be manipulated using cartography, mensuration, and destruction. Scholars have already characterized contemporary regimes according to the governmental strategy that they execute or the geopolitical orders they reproduce (Allinson, 2015; Gregory, 2011a; I. G. R. Shaw, 2013). Throughout the preceding chapters it has been the objective to question such regimes at the level of their practical, quotidian productivity rather than to ascribe them a unifying strategy. Doing so has brought out the negotiation of the geopolitical in the exchanges and intersections of these practices and discourses on military necessity and national security. Notwithstanding the contemporary joint operation of the services, aerial bombardment is spatially completely different from an operation on land: the possibilities of verticality play directly into the threat of impotence against enemies in a city (Elden, 2013; Stephen Graham, 2004). In addition to this, a range of practices negotiate the materiality of territory *as geopolitical* through such social constructs as the circular error probable, an enduring artefact of early processes of estimating bombing effects and a hallmark of the probabilistic and predictive science of bombardment whose logic is found in countless practices today (see esp. McNeal, 2013; Sewall, 2016). That is not to say that this practice necessarily signifies a probabilistic dispositif, however: it has been deployed in tandem with concepts that were never quantified, such as the imagined psychological effects of nuclear weapons used for planning in the early postwar period. Conversely, more refined versions of the same

mechanic have been used to enable strikes that were previously off limits. Everyday tools and concepts of collateral damage may thus enter into widely differing strategies as these tools interface with current organizational priorities and prevailing discourse. Devices such as these add a spatial dimension to the subsequent production of subjectivities according to their location at the time of strike, such as the civilians inhabiting the al-Firdos bunker or the presumed ‘military-aged males’ struck by drones.

Throughout most of the conceptual history of collateral damage, the city has been the spatial limit. That was the upshot of a localized and peculiar debate on nuclear strategy in which cities as analytical units formed the distinguishing feature of targeting strategies because they acted as a proxy for civilian deaths, which in turn was a proxy for industrial potential. The fluidity of such geospatial discourses on collateral damage is apparent: perceptions or experiences of the significance of cities from Japan and Germany in World War II return into play, are appropriated in new strategies, and thus in the longer term become sedimented as a symbolic boundary marker. Recast in terms of the impending nuclear confrontation, cities then became the main effort of targeting and, conversely, the main object of controversy in the confrontation between the emergent community of nuclear theorists and the entrenched nuclear planners of the Air Force. In the same way, practices to avoid collateral damage during the Vietnam War broadly centered on the cities of Hanoi and Haiphong with another layer of political meaning derived from theories of containment and the domino effect.

In the conflicts of the 1990s, withholding strikes on cities remained an important political lever at the highest levels of political and military leadership, even if the authority had shifted towards the latter. The interaction between the probabilistic science of accuracy, the practices of precision weapons, and the strategic benefits attached to attacking fixed targets in cities, made possible a transformation of the geopolitical significance of the city. It is not simply the case that ever-more sophisticated and precise weapons have driven this development to the exclusion of all other weapons, as the sudden deployment of the MOAB shows: it is the practices which have dictated the usefulness and appropriateness of certain weapons under certain circumstances and generated new pathologies as ever-more discriminate destruction has permitted an encroachment upon the previously natural boundaries of the city. The ‘recklessness’ (Cronin, 2018) of contemporary operations must be seen in the light of geopolitical levers

of collateral damage, e.g. restricted zones and bombing halts, in addition to less lethal weapons.

7.3.3 *Contra* precision

Maintaining the distinction between a conceptual history of collateral damage and one of precision is essential for a critical edge. The modernist narrative that civilians and thus collateral damage are subject to unprecedented care and caution in military practice is a contemporary moment in the history of warfare used to justify current practices and priorities (Zehfuss, 2010). Such discourses and practices are found throughout the ‘spectrum’, from the grand promises of airpower to the technical minutiae of weapons and platforms. This repetition warrants a sustained reflection on the historical contingency of this concurrence between precision and collateral damage.

A common thread running through the genealogy is this overlap between questions of military efficacy and questions of concern for civilians, which perhaps is nowhere stronger than on the topic of precision. It was militarily sound, for a number of technical and cultural reasons, for the SAC to improve bombing accuracy *despite* their weapons of choice being enormously destructive. Striving for accuracy without concern for civilian deaths, or even with an aim to cause more, is not only a logical possibility but a historical fact. Successive theories of airpower, especially Warden’s ‘Five Rings’ and its interwar predecessors, gave priority to accurate targeting of key ‘nodes’ of the enemy ‘system’; deterrence in the post-Cold War era became a matter of holding targets at risk without escalating to nuclear war, while contemporary counterterrorist operations emphasize decapitation. The self-imposed limitations of the new ‘clean war’ of the day appear more as managerial and organizational responses to align the new possibilities afforded by precision weapons and ever-more sophisticated sensors with the ritualized collective memories of previous conflicts. World War II had to be read as the capacity to stymie the industrial war machine and to end the war, Vietnam as the story of political interference amid an emerging precision revolution, the Gulf War as the opportunity to virtually end the battle before it had begun, and so on. It is ritualized because these narratives depend on a constant affirmation of the unique contribution of airpower, specifically precision strike and a correspondingly continuous social reconstruction of technologies to that effect. JDAM and GPS, which would become staples of the all-weather precision capability, were met with a lack of interest if not direct hostility in their early years. The

discursive concatenation of (low) collateral damage and precision is thus distinct and signifies an active recasting of capabilities. It is this subversion of historical necessity and self-evidence that is enabled by genealogy.

Precision, in other words, has become a technique of governing warfare unto itself. It is the confluence of *freedom*, understood as the freedom from inappropriate political interference at the level of military technicalities, and *constraint*, understood as the endogenized proceduralism of the collateral damage regime, that has allowed precision to be the byword for a peculiar mode of self-government. The notion that collateral damage 'became' a major issue for the public, for politicians, etc. during the Vietnam War, in the wake of the Gulf War, or during the counterinsurgency campaigns of the late 2000s, shifts attention away from the active role played by armed forces. As this dissertation has shown, US armed forces have established and deployed professions and expertise to rein in these 'external' pressures. As a producer of knowledge not only in military strategy and military history, but also in physics and operations law, US armed forces have garnered the intellectual and technical wherewithal to define the interfaces between the domain of politics and its own day-to-day operation. The business of collateral damage estimation is a prime example of this and one where the combined notions of power and knowledge shows its worth. The institutional backing of the armed forces is inseparable from the power of the expert knowledge it produces which outlines the parameters of civilian engagement. In this way, the armed forces define the lever (NCV) as well as the knowledge of the individual strike (CDE) by which it itself is governed, a far cry from the detailed regulation of restricted and prohibited zones of Vietnam, but also from the carpet bombing of World War II.

It is not the purpose of this dissertation to speculate on the relative causal impact of concern for civilians vis-à-vis the whole range of pecuniary, organizational, political etc. interests that have driven the development and distribution of precision technology. Instead, this genealogy has reaffirmed (esp. Mackenzie, 1990) that the technical accuracy of weapons and other implements has become cast *as precision* in discourses of military strategy and political expediency. Practical regimes incorporate elements of veridiction, namely established truths about the appropriateness of technologies, techniques, and procedures, to particular situations. The decisive transformation was thus the displacement of a regime in which accuracy was one managerial and technical aspect

among many and potentially substitutable for skill or raw force. The success of precision as an answer to the problem of collateral damage speaks to the indistinguishability of many of the practices that co-produce low collateral damage and high precision. Unprecedented intelligence, like on-demand full-motion video of the target environment, is both seen as militarily efficacious and humanitarian at the same time: it serves the dual purposes of certitude and distinction. Untangling these at the level of discourse and practice generates a platform for critique and (re)politicization.

7.4 LOOKING AHEAD

This thesis is a history of the present that lays the foundation for critical appraisals of airpower and seemingly benign efforts to reduce harm to civilians. It does so in three ways. First, in deepening the historical narrative and offering the basis for further historical interventions. From the very outset, as the reality of the missile age had settled in, collateral damage emerged specifically as a counterargument to bonus damage, which in turn had solidified as discourse and practice in the wake of World War II. Wariness of civilian casualties, and indeed casualties of any kind, was reinforced and enhanced after Vietnam. Approaching the present, with avoidance of collateral damage essential to the legitimacy of Western military operations, it is more important than ever to unpack the claims about history that serve to gain political traction from a history of benevolence aided by technology. Exposing the historical contingency of the practices and discourses that now make up the regime of collateral damage in turn allows for future historical investigations to identify new points of discontinuity or reveal continuities that upset existing teleologies. Second, in exposing the collateral damage as an active form of governance. Theories, implements, and practices of force are underpinned and enabled by the institutional wherewithal of the Air Force as it buys into and promotes a particular method of casualty avoidance in a bid for influence and resources in 21st-century conflict. This perspective may benefit from methods and studies of acquisition, since the focus of this dissertation has more narrowly been the praxis and social construction of technology. Third, to trace the logic that enables discriminate warfare to appear as a coherent strategy. Towards the turn of the millennium, collateral damage as a legal-political strategy was married to the belief in technological revolution, with concerns for casualties being the bridge. With counterinsurgency, the strategic requirement has been made explicit, while

the technical sophistication of modelling tools and infallibility of drones constitutes the next step in the articulation of technological progress. This dynamic has been central to thinking about collateral damage and civilian casualties more generally, but as of yet no single academic investigation has been able to fully uncover the technicalities or the historical and organizational specificities of the tools and the doctrine in use.

Further research agendas on contemporary and future warfare emerge from the above. First, on subjectivities. Research is already emerging that seeks to improve our understanding of civilian subjectivities would benefit from a more sustained and systematic empirical engagement with victimization, something that has largely been outside the scope of this investigation. Non-lethal and directed-energy weapons will spark new avenues for further research, while offensive cyber operations will require a comprehensive conceptualization of indirect and second-order collateral damage. Second, on the spatial practices of collateral damage. Practices such as CEP, which predate the scope of this investigation, should be subject to their own conceptual histories. Such further research may be combined with a more comprehensive examination of local, spatial practices of urban combat by armies, special forces, and other ground troops engaged in the apportioning and direction of airpower. Investigations in this field would also help contextualize and challenge notions of precision, which remain constituted not only by high-visibility drone strikes, but also by the weaponry of ground forces.

As a whole, the area of civilian casualties remains understudied, controversial, and severely hampered by access, owing partly to the unwillingness of officials to systematically record losses, or the inconsistencies of the numbers that are occasionally released. Issues of targeting and collateral damage, especially in ongoing conflicts, are by their nature considered more sensitive and are consequently treated with even greater secrecy. With its comparatively longitudinal view, this thesis has the advantage of distance from many of the events in question, although many documents on e.g. nuclear policy or specific tactics and tools remain classified to this day. This historical ‘lag’ means that empirical correctives may emerge as declassification makes otherwise sensitive government documents available. Despite these obstacles, the recent increase in activity by both scholars and organizations holds great promise for cooperation and a better understanding of the future of war.

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