Killer Apps

War, Media, Machine

Jeremy Packer
and Joshua Reeves

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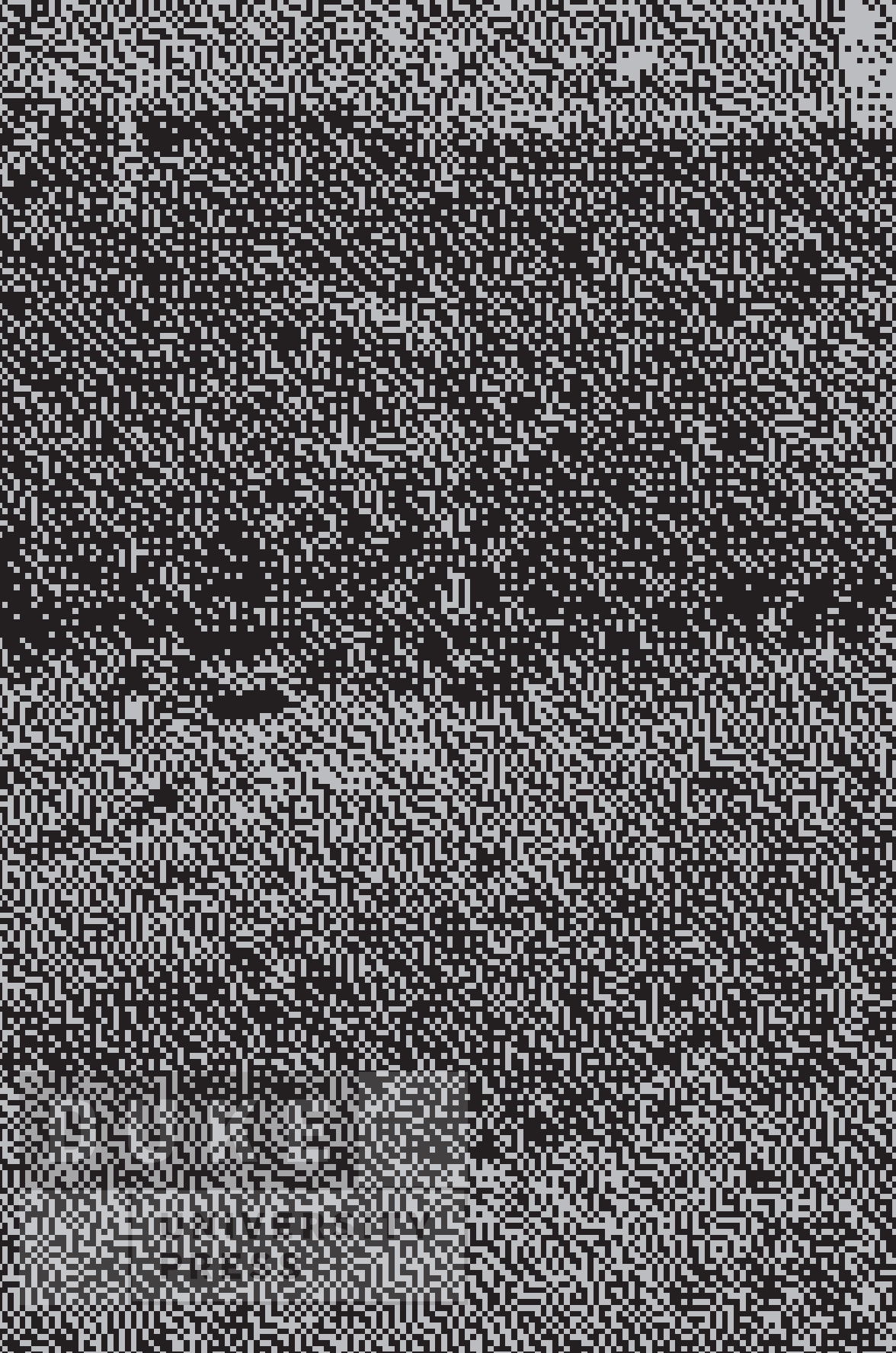

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operation plan (DoD)

1. Any plan for the conduct of military operations prepared in response to actual and potential contingencies.

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Jeremy Packer

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Joshua Reeves

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Preface to an Inauthentic Document

authentic document (NATO) A document bearing a signature or seal attesting that it is genuine and official. If it is an enemy document, it may have been prepared for purposes of deception and the accuracy of such document, even though authenticated, must be confirmed by other information, such as conditions of capture.

authentication (DoD) 1. A security measure designed to protect a communications system against acceptance of a fraudulent transmission or simulation by establishing the validity of a transmission, message, or originator. 2. A means of identifying individuals and verifying their eligibility to receive specific categories of information. 3. Evidence by proper signature or seal that a document is genuine and official. 4. In personnel recovery missions, the process whereby the identity of an isolated person is confirmed.

We promise this book is inauthentic. It will fail any and all processes of authentication.

Our inauthenticity is thorough.

1 Few if any security measures were undertaken in the preparation of the transmission to follow. Google Drive ensured that. Dreams of validity may still disrupt the slumber of the methodologically apprehensive, but it has yet to misdirect our thinking.
2 Not since being mandatorily marked as draftable by Selective Service has either of us been identified by any military body of which we know.
3 The document before you is signed—in that we accept the responsibility for our words—but its signature is improper in the sense that it cannot seal or cement itself in the filing systems of US military doctrine.
4 We are acting in union, but we are not necessarily affiliated. This makes our recovery an unlikely mission.

Such profound inauthenticity suggests that this may indeed be an enemy document. Any "unofficial document," by definition, is in the category of *maybe enemy*. And where potential enemies are concerned, media will be searching for their presence. This documentary lack may provide proof that *Killer Apps*

"may have been prepared for purposes of deception." While we would like to outright denounce such claims as to our purpose, what seal or signature could we provide that would satisfy all potential doubt? We must instead wallow in the realm of *maybe enemy* and accept that in point of fact this document may be deceptive. We have not chosen to deceive per se, but we have certainly chosen the path of the inauthentic.

As with everything else, books have friends and foes. You might come in peace or with fists raised. Or like Switzerland, you may feign neutrality. You may not yet know which you are. Maybe you will change sides partway through. Or better yet, your sleeper cell may be activated unbeknownst to you or us. Regardless of your present status, a few preparations will prove beneficial in all contingencies.

1 Tone is a stylistic choice, and many before us have chosen absurdity, irony, and even black comedy to confront the horrors of warfare and the logics of military strategy. By comparison our choices are mild, though not guaranteed to be free of irritants.
2 Style and format are drawn in part from military communications, which is the discursive reservoir from which the bureaucratic and strategic legacies of warfare are built. Department of Defense (DoD) definitions are foundational to how this military logic is constructed and maintained. Each chapter opens with a definition that it then works to undo.
3 As with a multifront war, this book is not linear. Everything must be taken into account all at once. Though it is bookended by an introduction and conclusion, there is no single route through the quagmire that follows.

Event Matrix (DoD)

Introduction

A description of the indicators and activity expected to occur in each named area of interest. It normally cross-references each named area of interest and indicator with the times they are expected to occur and the courses of action they will confirm or deny.

The future may or may not bear out my present convictions, but I cannot refrain from saying that it is difficult for me to see at present how, with such a principle brought to great perfection, as it undoubtedly will be in the course of time, guns can maintain themselves as weapons. We shall be able, by availing ourselves of this advance, to send a projectile at much greater distance, it will not be limited in any way by weight or amount of explosive charge, we shall be able to submerge it at command, to arrest it in its flight, and call it back, and send it out again and explode it at will, and, more than this, it will never make a miss, since all chance in this regard, if hitting the object of attack were at all required, is eliminated. But the chief feature of such a weapon is still to be told; namely, it may be made to respond only to a certain note or tune, it may be endowed with selective power. Directly such an arm is produced, it becomes almost impossible to meet it with a corresponding development. It is this feature, perhaps more than in its power of destruction, that its tendency to arrest the development of arms and to stop warfare will reside.

—NIKOLA TESLA, "TESLA DESCRIBES HIS EFFORTS," 1898

Nikola Tesla, long hailed as the inventor of "radio, television, power transmission, the induction motor, and the robot,"[1] was anything but a Luddite. But in 1898, the world-renowned scientist foresaw that further advances in the scientific application of technical media to ballistics—specifically, the use of sensors to aim and guide "smart" weapons—could imperil the peace of the world. Believing "that war could be stopped by making it more destructive,"[2] Tesla reckoned that artificially intelligent

weapons—weapons that could make *note* of and at*tune* themselves to their surroundings—would make battle so disastrous that humans would surely abolish war and move along to other pastimes. The merging of media and weaponry would bring about either an end to war or an end to the world.

Yet from the vantage of the early twenty-first century, it's clear that smart weapons haven't introduced the kind of peace that Tesla fantasized about. Rather than taking Tesla's advice and "dispens[ing] with artillery of this type," the world's predominant military is instead trying to dispense with as much of its human personnel as possible. Especially since the dawn of the Cold War, when the Americans were faced with Soviet numerical superiority, the United States has resigned itself to developing *technological* superiority.[3] While Soviet strategy was largely oriented around recruiting and developing the human soldier, American strategy has been devoted in large measure to sacrificing the human in favor of technological innovation, especially advancements in command, control, communications, computers, and information (C4I). Describing this development, Katherine Hayles observes, "Military strategists argue that information has become a key military asset and that the US military must be reorganized to take full advantage of it."[4] This "technological turn"[5] in US military strategy has given us the unnerving technical reality foreseen by Tesla—that of self-guided munitions, autonomous drones, and other artificially intelligent (AI) weapons of war—without any of the promised peace.

Media technologies lie at the very center of these key developments. After all, the ongoing "revolution in military affairs" (RMA) has placed computation, unmanned vehicles, swarm warfare, smart weapons, autonomous missile defense systems, and artificial intelligence at the forefront of next-generation military strategy.[6] In the words of Stephen Graham, "Centering on technologies of 'stealth,' 'precision' targeting, networked computing, and satellite geopositioning, the RMA has been widely hailed by U.S. military planners as the path to sustaining U.S. dominance."[7] Needless to say, the central component in each of these developments is *media* technology—those technologies that offer different manipulations of the time/space axis, thus ushering in new political realities and military velocities through their unique capacities to select, store, and process information. The most expensive project in military history, the United States' F-35 system, provides an excellent example of this trend. As US deputy defense secretary Bob Work observed in 2015, "The F-35 is not a fighter plane. . . . It is a flying sensor computer that sucks in an enormous amount of data, correlates it, analyzes it, and displays it to the pilot on his helmet."[8] By Secretary Work's account, the infamous F-35 is not really a plane in any traditional sense: it's a computer with wings. While the explosives actually go

bang when a missile hits its target, the truly decisive military-strategic questions are media-driven: How are that missile's targets located and assessed? How can the missile be aimed? How can it be delivered? How can it intelligently respond to its environment in order to best follow its target? By the same token, while it's typically the explosive aftermath of drone strikes that grabs the headlines, the more fundamental questions about drones are driven by media capacities: How can an unmanned vehicle be controlled from a military base overseas? How can it capture surveillance footage, and how can that footage be transmitted back home to drone "pilots"? When a drone captures audiovisual phenomena, how is that vast expanse of data processed and interpreted in order to alert drone pilots to potential threats? How are these attack decisions made, transmitted, and then carried out? How will these modes of warfare seep into other struggles that aren't generally thought of as war? What new kinds of warfare and new forms of defense policy do these technologies make possible, if not inevitable?

This mediacentric series of questions leads us to the essential political problem at issue with drones and related forms of AI warfare: when military systems are programmed with the ability to decide whom or what to strike, humans have offloaded their carbon-based political intelligence onto the silicon processing capacities of the machine, thereby surrendering a crucial ethical capacity—the ability to determine who is friend and who is foe. With the rise of robotic submarines and missile defense systems that autonomously determine enemy threats, aim weapons, fire, and guide munitions all on their own—without *any* human guidance—that threshold has already been crossed. In fact, Friedrich Kittler would argue that we crossed it way back in World War II, when the Brits used radar to reveal signals—signals that were undetectable to human senses—in order to distinguish between friendly and enemy craft, between British Mosquitoes and German V-2s.[9] These displacements and subversions of human perception continued to escalate into the 1980s, when a US Navy self-guided Harpoon antiship missile autonomously misidentified a friendly Indian freighter and killed one of its crew members. And today, with the development of drones that scan vast territories and determine what footage to share with pilots—that is, drones that determine what data might contain evidence of enemies to fire upon—drone warfare's much-discussed and heavily relied on "human in the loop" has become all but ornamental. In the navy, where vessel autonomy has a much longer tradition, it's already a thing of the past: after relying on human input for years, in fall 2016 the Office of Naval Research's Control Architecture for Robotic Agent Command and Sensing (CARACaS) system successfully deployed swarm boats equipped with

radar and infrared sensors to autonomously differentiate friendly and enemy craft. And as US Department of Defense (DoD) "roadmaps" of the future make clear, endowing weapons with these medialogical capacities to analyze environments, determine friend from foe, and engage perceived threats will be at the forefront of military strategy during the coming decades. ANNs (Artificial Neural Networks) will aid in ATR (Automatic Target Recognition) and will fuel the military's capacity to DRCI (Detect, Recognize, Classify, Identify). Fully autonomous swarms of drones, robotic warriors, and "integrated" human/AI battle environments all lie in our near future, and experts agree that they will find their way onto the battlefield within the next decade. Ultimately, for analysts such as Center for a New American Security fellow Paul Scharre, these trends are leading toward the development of "an army of none."[10]

This book uses media theory as a lens to analyze the history of warfare, the rationality of weapons development, and US military roadmaps in order to better understand the political implications of this convergence of AI and war—especially as this convergence serves to replace human soldiers in the air, underwater, and on the battlefield. What we find is that war, along with its fraternal twin media technology, has crept like a virus into the human sensory apparatus. As the silicon, glass, and steel of cutting-edge military technologies reveal humans to be too soft, too weak, and too stupid to wage war by themselves, humans are eagerly surrendering an unsettling degree of military labor to machines. And the machine, happy to oblige, has agreed to roam the skies, scour the seas, fire weapons, and terminate its enemies. Whether the machine eliminates its own enemies or the enemies of its human "controllers," it makes no difference. *The* enemy, after all, is the same. The machine, whose foe has always been the inefficient, the imprecise, the weak, the stupid, and the slow—that is, whose foe has always been the human—long ago began the gradual process of outlining the silhouette of what humankind would come to perceive as its own enemy. As we have slowly begun to recognize the human face of that true foe, our friend the machine is helping us prepare to wash it away, "like a face drawn in sand at the edge of the sea."[11]

Media and Enemy Epistemology

This book is concerned above all with the role of media in enemy epistemology and enemy production. On at least two closely related fronts, media technologies are crucial to this process. First, they play an essential role at the macro level, by shifting the plane of political intelligibility so that new enemies to the individual, to the community, to the nation, or to humanity come into view. Second, at the micro level, media are crucial to the friend/enemy determinations

that fighters and machines make when they scan the war zone and select their targets. Because media play these key roles in enemy epistemology, they have inserted themselves into the very center of that amorphous domain we call *the political*, especially when the political erupts into its most mature manifestation: armed conflict. In one of the best-known statements of twentieth-century political theory, Carl Schmitt put it like this: "For as long as a people exists in the political sphere, this people must, even if only in the most extreme case . . . determine by itself the distinction of friend and enemy. Therein resides the essence of its political existence. When it no longer possesses the capacity or the will to make this distinction, it ceases to exist politically."[12] While Schmitt's definition of the political is hardly exhaustive, it does highlight an essential demand of political reality: the determination of friends and enemies. Without this capacity to determine friend from foe, there can be no politics—no alliances to form, no one to sacrifice for, no threats to mobilize against, no friends to protect.[13] Indeed, the friend/enemy distinction provides our own ontological condition of possibility: without the enemy other, there can be no friend. Without a them, there can be no us.[14]

One of this book's chief claims is that enemy epistemology is beholden to a specific media logic—that is, a logic of sensation, perception, reason, and comprehension specific to a given medialogical environment. As Antonie van Leeuwenhoek proved when his new microscope revealed one of humankind's greatest enemies—the germ—new instruments of knowledge bring new enemies and new threats into our range of perception. By melting rods of soda lime glass and grinding them into high-power optical lenses, in the 1670s van Leeuwenhoek kicked off a gradual epistemological rupture that produced an endless host of scientific theories, health provisions, sanitary procedures, and security measures—all aimed, of course, at neutralizing the new threat. The invisible and mysterious miasmata ceased to be our enemies. Protecting the population, therefore, called for more than increased ventilation and urban circulation to cleanse "poisonous" air, more than purging our creeks, rivers, factories, and ghettos of foul water. As generations of scientists looked through microscopes to see "little worms," "imperceptible insects,"[15] and finally pathogenic microorganisms, new methods of enemy elimination became en vogue: boiling water, boric acid supplementation, pasteurization, antiseptics, and antibiotics.

With the aid of van Leeuwenhoek's microscope and related optical media, a new enemy—the pathogen—emerged. And along with this new enemy, we developed new methods of warfare: new forms of health management, new architectural arrangements, new styles of urban planning, new public education

initiatives, new culinary habits, new disciplines of research, and a new sense of the human as a contagious risk. Through this tremendous new social, intellectual, cultural, and political infrastructure—one that continues to grow and evolve today—humanity has absorbed the enemy into its everyday existence. Our lives revolve around finding, fighting, and eliminating the enemy: every time we wash our hands, sweep the floors, flush the toilet, cook and clean our food, trust our nurses and physicians, filter our water, take medicine, and check our children's temperatures. Moreover, this biopolitical care is differentially organized such that access to the daily technologies and infrastructures of bacterial eradication are not equally dispersed.[16] This highlights the technical dimensions of how potential allies are overlooked, how enemyship is produced, and how being imbricated in different media infrastructures draws one into different enemy epistemologies. All in all, these daily habits and procedures of enemy location and elimination not only breed further opportunities and desires to locate and neutralize the threat; they, like a Hellfire missile careening into an unsuspecting village on the other side of the world, also tend to produce conditions in which the perceived threat—as well as new threats—can reemerge, strengthen, and thrive. As Kittler would have it, "Every system of power has the enemies it produces."[17]

And as Kittler would certainly agree, every media system, too, has the enemies it produces. While media technology might not be the most visible element of this great transformation in micro warfare, this was, in fact, a medialogical process. It was *media driven* and *media dependent*. Without van Leeuwenhoek's ground glass lenses, the germ never would have been identifiable as an enemy, and all this upheaval and social transformation would have never taken place. To take another example, consider how during the Cold War media escalated warfare into a truly global phenomenon. The Semi-Automatic Ground Environment (SAGE) system and breakthroughs in satellite surveillance automated the process of monitoring the globe, turning the whole planet into a battlefield populated with new enemies. New media, then, were developed to identify and analyze this new enemy; and as this enemy's movements and ambitions were identified, new unknowns emerged. What are the signs that it is preparing for attack? What form might its attack take? How can we prevent that attack from taking place? These new questions, which were not even askable without the prior generation of media technologies, thus spurred the development of additional media. Newly recognized problems, therefore, prompt new media solutions; then the expanded realm of the intelligible introduced by those new technologies inserts new unanswered questions into the system, which must be answered by new media capacities. Media, therefore,

are constantly producing new enemies, and new methods of enemy identification stimulate the development of new weapons technologies designed to kill those newly identified enemies. Moreover, these media-weapons produce new enemies each time they kill a bystander's friends, parents, children, husband, wife, neighbor, lover, coworker, comrade, or compatriot. This is especially visible in the US military's habit of ex post facto labeling as "enemies" all people killed by its drone strikes.[18] The drone also creates enemies, therefore, when those enemies are pieced back together out of piles of shrapnel and rubble.

Although this book focuses on international armed conflict, von Leeuwenhoek's example indicates that there are also "insider threats"—people, pathogens, and people perceived as pathogens—that police, military, and colonial authorities have constantly been driven to discover and destroy. The relationship between domestic struggles against insider threats and armed warfare is direct and clear, as the technologies, procedures, and rationalities of international warfare inevitably come home to roost as they are remixed into the domestic security context.[19] Military tactics and colonial administration practiced abroad—which, in the case of settler colonies, have long been genocidal war zones[20]—fuel new ways of waging war in the "homeland." And, of course, as in all wars, media are central to fighting this insider threat. The various human and biological sciences have consistently collaborated with new media to classify internal and external threats. We can look to the historical procession from writing to photography to phonograph to film—each of which has been used to discover different inscriptions that are said to house meaningful evidence of an often racialized internal threat. For example, the premier biometric ("anthropometric") scientist of the nineteenth century, Alphonse Bertillon, applied handwriting analysis to determine threatening classes of the population.[21] The history of anthropology is replete with examples of how the phonograph and other audio recording technologies were used as a means of manifesting, cataloguing, and evaluating difference.[22] While Amos Morris-Reich and John Tagg have both analyzed how photography was used in this kind of work, Jonathan Sterne has revealed the importance of aural media to the analysis of the racialized internal threat.[23] Perhaps most intriguing, with the Hollerith machine—an early US census technology—we begin to see a move toward immense computation as a weapon in the race war. During and immediately following World War I, the US military amassed extensive biometric data on millions of US soldiers. These data were used to produce a twenty-six-volume set of statistical analyses that attempted to locate deficient and superior racial markers in order to maximize military biopolitical capacity.[24] As the work of scholars such as Simone Browne, Kelly Gates, Rachel Hall, and Shoshana Magnet clearly illustrates,

this computational and statistical imaginary has only escalated as digital forms of biometric analysis have attracted considerable investment following the 9/11 attacks.[25] Paul Virilio sees a similar rearticulation of the enemy and nation having taken place due to global information networks and supersonic transport developed during the Cold War.[26] Increasingly military resources have been deployed against a country's own population, as exocolonization in part gives way to endocolonization. And as always, media make it possible for this lurking insider threat to be seen, heard, studied, and solved.

There are three main ways, then, in which media are central to the politics of enemy epistemology and enemy production. First, as media technologies change, capacities to access and analyze our surroundings also change. In this sense, the relationship between media technologies and enemy production is one of epistemology: every new medium shifts the realm of the intelligible, creating new enemies specific to its particular capacities for capturing and processing data. Van Leeuwenhoek's microscope allowed us to see millions of new enemies teeming under a microscope; and if this early microscope could unearth a hostile army residing in our blood, what deeper-seated foes have been revealed by today's sensing technologies? Not only are MRIs and ECGs deployed to reveal physical ailments and defects, but now they're being imagined as biometric sensors for determining who might secretly be a domestic terrorist.[27] To take another example, the video feeds from Predator drones allow operators to see "terrorists" that were previously beyond the grasp of perception; these enemies are produced when humans behind screens must categorize observed persons according to a binary military epistemology. And in perhaps the ultimate epistemic twist: who, we might ask, are the enemies brought to light by military-driven computational models of anthropogenic climate change?[28] By creating new ways of perceiving our environment and ourselves, new media introduce new enemies to the world. Second, media technologies and media apparatuses—from scopes and sensors to cameras, drones, and missile defense systems—allow soldiers to make determinations as to who is friend and who is foe. Whether on the ground, in the air, or underwater, these technologies make it possible for soldiers to study their environment, identify enemies, and aim their weapons at the appropriate target. And finally, third, if every media system has the enemies it produces, it also follows that these media-enabled shifts in perception give rise to new weapons and new forms of warfare. In this sense, van Leeuwenhoek and his microscope didn't merely discover germs; they also gave us *germ warfare*. The Geiger-Marsden optical apparatus didn't just discover the nucleus; it gave us the nuclear bomb. The Galilean telescope didn't simply disclose the mysteries of the solar system; it gave us "Star Wars,"

the military space race, and interplanetary missile defense. Indeed, this is one of the inevitable results of media escalation. New media reveal new risks, new opportunities for exploiting the natural world, and new methods of destruction, thus driving the development of new instruments of death and coercion.[29] Every media revolution ushers forth new methods of slaughter.

Military Media

Our mediacentric analysis rests on several interwoven understandings of the recursive relationship between media and military strategy. First, following Friedrich Kittler, we approach media in terms of those technologies that specialize in the selection, storage, processing, and transmission of information.[30] The world's militaries have always been at the developmental front of these media technologies; therefore, in the words of John Durham Peters, "media history without the military-industrial complex is ultimately deeply misguided."[31] Some of the most innovative work in media theory has come from theorists who, like Kittler, Manuel DeLanda, Katherine Hayles, Donna Haraway, and Paul Virilio, devote considerable time to the military-media complex.[32] As these writers and others have made clear, innovations in media technology have been chiefly driven by military desires—in Kittler's words, the civilian media technologies we know and love tend to be simply the "byproducts or waste products of pure military research."[33] Yet this "polemocentrism" (*polemos* = battle or struggle in classical Greek) not only puts war into the middle of media theory; it puts media into the middle of war.[34] The production of military knowledge, after all, is foremost a media problem, as warfare is organized, studied, prepared for, and conducted according to communicative capacities. This is why, as Lisa Parks points out, "it is difficult to distinguish media and communication from militarization."[35] Even the size of singular permanent military formations, not to be composed of more than three thousand soldiers prior to the French Revolution, was dictated by the limits imposed by the soldier's perceptual capacity to see visual signaling technologies—flags.[36] In this and related ways, military command depends on media that collect data on self and enemy, transmit orders through the chain of command, and guide tactics in real time. Scrolls, letters, binoculars, the telegraph, the semaphore, two-way radio, missile defense systems, drones—these are just a few of the basic media technologies that have played an essential role in circulating orders, determining military strategy, extending visibility, constraining troop formation, guiding munitions, and facilitating friend/enemy analysis.

Second, we synthesize the work of Carl von Clausewitz, Claude Shannon, and Warren Weaver to emphasize the military-strategic importance of

eliminating communications delays and errors.[37] For Clausewitz, perhaps the most celebrated European military mind of the nineteenth century, these delays and errors—which he called "friction"—threaten to blanket commanders in the fog of war.[38] And in Claude Shannon and Warren Weaver's classic approach to media and communication[39]—which has its roots in cryptographic research that sought to eliminate semiosis in favor of raw numerical signaling—communication systems achieve optimal results by creating extensive feedback loops that reduce "noise" (e.g., vagueness, inaccuracies, and distortions) and enable greater amounts of information to be transmitted. An order must be transferred to the front; an accurate view of the enemy must be attained; a missile must be guided toward its target. As the Shannon and Weaver model emphasizes, these operations demand absolute clarity at the greatest possible speed. Miscommunications and delays can mean the difference between victory and defeat. And, as even Shannon and Weaver observed back in the 1940s, humans—with their analog language and their medialogical weaknesses in interpreting and transmitting data—are the key source of distortion and "noise" in the communication chain. Accordingly, global militaries are retooling themselves in order to remove distortion-introducing humans from as many tasks as possible. This is occurring both in C4I—where communication and data analysis have been partially automated for decades—as well as on the battlefield, where soldiers are being supplemented with robots, drones, and related technological systems that function on artificial intelligence. These hybrid battlefield strategies (which combine human and artificial intelligence) are largely responding to the conditions of Shannon and Weaver's classic theory of communications as a mathematical problem whose solutions demand noise reduction. Humans, as the noisiest of communicators, can be a lethal liability in the infowar. Their replacement by smarter, faster machines is simply a natural advancement in communications, command, and control.

The third point also comes from Kittler, who noted that, because war is noisy, "command in war must be digital."[40] Hence the answer to these command problems of noise and distortion is the application of digital certainty. As Gerfried Stocker points out, "There is no sphere of civilian life in which the saying 'war is the father of all things' has such unchallenged validity as in the field of digital information technology."[41] While the standard historical treatment of military digitization relies on a narrative stemming from two World War II objectives, cryptography and ballistics prediction, this "digital telos" appears much earlier in military history. For example, at least as early as the US Civil War, attempts to "digitize" semaphore telegraphy for the purposes of semiotic certainty and greater autonomous mobility were developed by

the US Army Signal Corps.[42] As illustrated by militaries' frenzied post–World War II turn toward computerization and artificial intelligence, the digital telos now reigns supreme and frames the contours of research, development, and international military competition. As the US Defense Science Board's "Summer Study" of 2016 concluded, "DoD must accelerate its exploitation of autonomy—both to realize the potential military value and to remain ahead of adversaries who also will exploit its operational benefits."[43] This has resulted in massive increases in US defense investment in AI: in 2016, the DoD spent almost $3 billion on AI-related initiatives, and its number of unmanned aircraft has grown to eleven thousand, some 40 percent of all US military aircraft.[44] It has also led to the formation in 2017 of the Algorithmic Warfare Team, the brainchild of then-deputy defense secretary Robert O. Work, that will formally centralize and promote AI developments across the branches of DoD.[45] While this digital telos has been complicated somewhat by recent breakthroughs in quantum and analog computing, the will to digitize has had—and will continue to have—a tremendous impact on next-generation military strategy.

With this in mind, the present book strives to offer an account of media and war that avoids getting caught up in the familiar determinisms. While theoretical commentary on media and war can get bogged down in whether media or war play the predominant determining role, we'd prefer to avoid the dissociation altogether. For us, it isn't clear that media technology determines the course of warfare (a medial a priori of war) or that warfare determines the development of media technology (a martial a priori of media).[46] While it might be tempting to privilege one over the other, we argue that such a division distorts our understanding of the relationship between these two phenomena. After all, at any level of abstraction, war has never existed apart from technologies of time/space manipulation. By the same token, that creature we currently call the human only crossed the threshold of its humanity by fashioning and being fashioned by martial technologies of time/space manipulation. Where, therefore, could we possibly draw the line between media, war, and the human subject? If Clausewitz is right and war is the progenitor of all things, then media must provide the genetic code—and we humans are the hapless progeny of this strange coupling.

Theorizing War/Media

This is why we have chosen to focus on the role of media in military strategy, military command, and military epistemology. While we could follow many of our colleagues in emphasizing the cultural uptake of war across different media forms, we are aiming our analysis at a different level of the war/media relationship. We focus, especially, on how media technology's perceptual

interventions and spatiotemporal manipulations force into view new enemies and new methods of enemy engagement. A number of scholars, however, have recently done fascinating work on the role of media in promoting hostilities, exacerbating international tensions, fueling xenophobia, and rationalizing violence against target groups.[47] Some of these scholars have even privileged the cultural content of media in driving military technology, highlighting the role that popular media representations can have in the invention, design, and use of new weapons and C4I systems. Rachel Dubrofsky and Shoshana Magnet, for instance, have pointed out that "[cultural] narratives . . . may serve to shape technological development, as scientists internalize these cultural messages and attempt to actualize them in new technologies."[48] This assertion aligns with the critique of other humanist and feminist scholars who foreground the role of humans in shaping technological development. Following on the Marxist claim that relations of production shape technological development, technology is regarded as something of a superstructural phenomenon derived from a socioeconomic base. Feminist theorists such as Cynthia Cockburn (with Furst-Dilic), Judy Wajcman, and Rosalind Williams provide some of this critique's classic articulations, asserting the primacy of the human imprint on technology's biased distributions of access, wealth, and power.[49]

Although this trend in humanist reason privileges the role of humans in shaping technological development, we would like to follow Joanna Zylinska's call for new forms of critique that "challeng[e] human exceptionalism, with its foundational subject, as a key framework for understanding the world."[50] The sociological position is one such form of human exceptionalism, as its emphasis on subjective political agency leads it to underestimate the role of media technology in constituting and giving shape to the political values, artistic and architectural styles, scientific standards, military capacities, and self-understandings of what Kittler calls the "so-called human."[51] We thus find ourselves nearer posthuman feminists such as Rosi Braidotti, Lucy Suchman, and especially Donna Haraway, whose work famously introduced us to the cyborg—that creature who has always been, as the very condition of its "humanity," a biotechnical hybrid.[52] While human cultural products certainly influence artists, scientists, engineers, bureaucrats, and inventors—and while the injustices of human social relations are unquestionably exacerbated by many technical developments—media technology provides the basic material conditions for what is thinkable, practicable, and sayable in any given cultural moment. Hence our work follows the materialist xenofeminism of Helen Hester, which "draws upon recent engagements with the digital that foreground its brute physicality over its supposedly more ethereal qualities."[53] Focusing on

this basic level of materialist analysis, therefore, allows us to complement the work of our cultural studies, Marxist, and feminist comrades by honing in on different horizons of the media/war relationship.

Accordingly, this book shares most in common with theorists who have focused on the epistemological significance of military technology. Brian Massumi, for example, has followed Defense Advanced Research Projects Agency (DARPA) analysts John Arquilla and David Ronfeldt in examining "epistemological war." While this analysis is as brilliant as one would expect from Massumi, he's focusing on quite a different beast: how the military industrial complex modulates and manipulates affect in order to scramble enemies' decision-making capacities.[54] The recent work of Rebecca Adelman, too, provides a compelling take on war/media/epistemology, examining how media produce "limited ways of imagining bodies and lives" that help illustrate the "complex relationships between power and perception."[55] Yet Adelman's focus on glitches in identity intelligence merely scratches the surface of the relationship between media, war, and enemy epistemology. Ultimately, our path, which emphasizes the material interventions of media technology, focuses on a different level of analysis—one that complements and diffracts the interesting and provocative work carried out by our colleagues in these other essential areas of media/war research. We selected this path, in part, because the specific technical/strategic demands of warfare operate in an increasingly hermetic and fast-paced milieu that responds to very immediate capacities for destruction and survival. While warfare is dialectically imbricated in economic, social, ecological, and political struggle—from the global to the local—intense, highly specific conditions of live warfare transcend and exceed these other realms of activity when it comes to sheer ferocity and immediacy of destruction. This includes situations driven by other important forms of competition and conflict, including capitalist exploitation, inequitable social relations, democratic contests, protest movements, and other forms of social/political struggle wherein the stakes do not quite rise to the level of nuclear annihilation, irreversible ecological devastation, atomic radiation, genocide, targeted mass starvation, or the destruction of destitute villages and ancient, radiant cities. Warfare *is* a special case—a case that for millennia has focused intellectual and technical capacities toward the goal of locating and destroying enemies. This point of view will fuel our argument as we analyze the current and future implications of this reality: that the brute facticity of media technology makes only certain enemies—and certain means of enemy elimination—perceptible and practical at a given time. This leaves us with less to say about the social, cultural, and economic "surface effects"—as Virilio puts it—of the war/media convergence.[56]

The Third Revolution

Hailed as the "third revolution" in warfare (following gunpowder and nuclear weapons), AI has allowed human soldiers to surrender their traditional sovereignty over enemy determination and enemy engagement on the battlefield. Reporting on a US Air Force experiment in 2014 in which a smart missile autonomously decided which of three potential enemies to engage, the *New York Times* opined that perhaps the military had "crossed into troubling territory: [it is] developing weapons that rely on artificial intelligence, not human instruction, to decide what to target and whom to kill."[57] According to Heather Roff, this is the undeniable trajectory of military AI development. Contrary to popular opinion, Roff asserts, "autonomy is currently *not* being developed to fight alongside humans on the battlefield, *but to displace them*. This trend, especially for UAVs [unmanned aerial vehicles, or drones], gets stronger when examining the weapons in development."[58] A number of existing AI weapons apparatuses—such as the European Union's Tactical Advanced Recce Strike system (TARES) and Dassault nEUROn craft, and the United States' Low Cost Autonomous Attack System (LOCAAS), Long Range Anti-Ship Missile (LRASM), and Aegis Combat System—do not simply scan battlefields, skies, mountains, oceans, and stars for enemies to eliminate. They, along with their somewhat more mysterious Chinese and Russian counterparts, are also being designed to communicate with other weapons systems, reprioritize targets, and autonomically fire on any perceived threats. And as Roff emphasizes, this trend in automated target management is accelerating for those weapons systems currently in development: while semiautonomous systems that incorporate waypoint navigation and wireless leader/follower mechanisms are still highly valued, the AI weapons currently receiving the most attention are those classified as "Target Image Discrimination" (TID) and "Loitering" (or autonomous self-engagement) systems. TID systems, which use advanced computer vision and image processing hardware, are deployed in the majority of today's newest missile technologies. While TID systems are equipped to scan their visual environments for a specific programmed target and then to engage that target on sight, loitering technologies give us a glimpse of the war machine of the future: programmed with a range of potential target criteria, these weapons systems slip between offensive and defensive modes, loitering in an engagement zone until an appropriate target can be discovered and automatically engaged.[59]

But why has this trend toward autonomy been especially acute in the military? As Foucault points out, military training has long been at the forefront of the modern biopolitical project of enhancing human capacities by driving

breakthroughs in bodily discipline, health, and medicine.[60] As Mary Roach suggests, this puts military science and the biological sciences on a collision course, as the military finds itself fighting "esoteric battles with less considered adversaries: exhaustion, shock, bacteria, panic, and ducks."[61] While military science most often evokes "strategy and weapons—fighting, bombing, advancing," it also works at "keeping alive. Even if what people are kept alive for is fighting and taking other lives."[62] Yet as the military's media logic has gradually shifted, revealing the human soldier in a more ambivalent light, the military machine has become increasingly invested in replacing the well-trained combat soldier by creating cybernetic technical systems and AI weapons of war. Soldiers are not merely imagined as the weakest link in the military chain of command; they are often seen as the most likely element to fail. Minimizing the possibility for user error and overcoming the limits of human strength, focus, memory, and stamina are paramount to the development of reliable and increasingly powerful weapons. As a consequence, over the past several centuries, humans have increasingly become attendants to weapons of war—cannons, battleships, fighter planes, tanks, and ever more powerful bombs and missiles. It takes teams of humans to tend to modern war machines, and each soldier typically specializes in performing a few relatively simple elements of complex technological tasks.

Although AI has energized this development considerably, it is a process that has been with parts of humanity at least throughout modernity: by the sixteenth century the most powerful war galleons had crews as large as eight hundred men who were trained to navigate, set sails, perform repairs, and carry out basic maintenance, not to mention aim, load, and fire as many as 366 cannons. These soldiers, like many before and many after them, were witnessing a gradual transformation of military labor: the modern soldier was becoming more like a technician or attendant, someone who lubricates, loads, supports, presses, and aligns as opposed to one who directly wields the weapon of attack. This mechanization is widely recognized to have crossed a threshold in World War I, and to have reached its bloody apogee in the blitzes, battles, and bombing campaigns of World War II.[63] So while drone operators "flying" overseas missions from the suburbs of Washington, DC, may seem like a wildly new military phenomenon, it simply carries on a long-standing tradition in which media and propulsion technologies have extended the ability to sense and kill from ever greater distances.

As Martin van Creveld recognized, "The speed and the range of modern weapons have reduced the time in which to exercise coordination and control to a fraction of what it was only a few decades ago, in some cases to the point

where command functions—intercepting missiles or low-flying aircraft, for example—can only be performed automatically, by machines whose capacity for fast, accurate calculation far exceeds that of the human brain."[64] Given an average human visual reaction time of 0.15 to 0.30 seconds,[65] the human cornea's light management capacities allow it to process a mere twenty-four frames per second. DARPA's ARGUS-equipped drones, however, can process more than six hundred gigabits per second—all day, everyday, without having to blink, refocus, or rest.[66] These vast differences are not lost on the strategists designing the military of the future; as US Air Force lieutenant colonel Gregory A. Roman puts it, "The ability to observe, orient, decide, and act faster than your opponent is *necessary* for future warfare."[67] And as missile defense systems, drones, and kindred technologies increasingly rely on AI to locate, determine, target, and engage their enemies, it is becoming clear that humans just can't compete in this grand medialogical game of "observe, orient, decide, and act."

Anthropophobia and Military Autonomy

Going forward, the first one into the room should never be an air-breather. It should be a robot with lethal capability.

—COLONEL DAN SULLIVAN, DEPUTY COMMANDER OF THE MARINE CORPS WARFIGHTING LAB

Faster, smarter, tougher, and infinitely more trustworthy than mere humans, even at this early stage of development AI technologies are pushing humans out of essential military tasks, especially in C4I. As Gordon Johnson of the US Joint Forces Command puts it, "[AI weapons systems] don't get hungry. They're not afraid. They don't forget their orders. They don't care if the guy next to them has just been shot. Will they do a better job than humans? Yes."[68] Because humans are beset with psychological, biological, affective, and medialogical vulnerabilities—that is, because of their soft skin, brittle bones, susceptibility to psychological trauma, and pitiful capacities to capture, store, and process information—the human is widely recognized as an unfit soldier for the twenty-first century. As the DoD remarked in its 2016 "Summer Study," "Given human limitations . . . [and because] planning often needs to respond to new information, autonomous systems will greatly accelerate the pace of information update and can suggest significant plan changes far more quickly."[69] Hence the dream of the perfectly efficient war machine—which will not be beset by perception flaws, slow reaction times, miscommunications, or moral hesitation, and which will work without a salary—has increasingly

come to dominate the imagination of military strategists and contractors. As Ian G. R. Shaw notes, following the counterinsurgencies in Iraq and Afghanistan, US military leaders found themselves in a perfect situation to experiment with this shift in military labor: "Their response was to do more with less as robots, drones and satellites began to redistribute and replace human bodies (and therefore vulnerabilities); shifting personnel from the frontline and putting them in service of their robotic proxies. In other words, American empire is transforming from a labor-intensive to a machine- or capital-intensive system."[70] This, of course, is familiar terrain; as in so many other sectors of the economy, the drive to "do more with less" often entails getting rid of as many humans as possible.

These developments have the distinct flavor of military "anthropophobia": a growing if sometimes subtle disdain for the human subject because of its emotional flaws, slothfulness, unintelligence, inconsistencies, wage demands, and other constitutive imperfections.[71] Perhaps Mark Hansen best summarizes the relationship between automation and anthropophobia when he refers to "the *dehumanizing* effects of automation": for him, "the project of automation . . . brackets out the human altogether."[72] In the words of Nick Dyer-Witheford, the "search for mechanical means to automate labor—both manual and mental—[was] the logical extension of the desire to reduce and eventually eliminate from production a human factor whose presence could only appear . . . as a source of constant indiscipline, error, and menace."[73] Automation helps eliminate this "human factor"—that is, those apparently essential characteristics of the human that lead them to make mistakes and fail to complete their tasks with perfect haste, precision, and obedience. This suspicion toward the human, in fact, lies at the very root of the automation impulse, as technology critics such as Jacques Ellul have recognized. According to Ellul, in the labor process "every intervention of man, however educated or used to machinery he may be, is a source of error and unpredictability."[74] Given the extreme demands facing the military of the future, the only acceptable role for the human vis-à-vis technology is one of supervision, subordination, and diminished responsibility. Otherwise, Ellul argues, the human "is ceaselessly tempted to make unpredictable choices and is susceptible to emotional motivations which invalidate the mathematical precision of the machinery. He is also susceptible to fatigue and discouragement. . . . Man must have nothing decisive to perform in the course of technical operations; after all, he is the source of error."[75] In this relationship, therefore, the human is not valued for its intelligence, its ingenuity, its creativity, or its social insight. Instead, when confronted with the cold efficiency of the machine, the human is simply

an organic collection of potential errors and delays.[76] Take, for instance, the US war games that prepare human soldiers to "press the button" in a retaliatory nuclear strike. Because they have such deeply ingrained moral hesitation, these soldiers have been repeatedly dismissed for failure to follow orders. As Manuel DeLanda recounts in his tale of SAM and IVAN, two military computer programs that fight one another to the death in Armageddon scenarios, AI has "proved much more 'reliable' than people in being willing to unleash a third world war."[77] While even the best-disciplined soldier might hesitate to unleash Armageddon with the touch of a button, the machine wouldn't think twice.

This idealization of machinic precision, coupled with a contempt for the variability, elasticity, and morality that characterize the human, compose the ideological essence of anthropophobia. The US military has come to recognize that the human has physical, cognitive, and emotional vulnerabilities that make it an infinitely poorer soldier than artificially intelligent machines. As Kittler observes, this ontological chasm between the machine and organic life made it perfect for warfare: "The very fact that finite-state machines had an advantage over the physical or neurophysiological universe—namely, the fact that they were predictable—qualified them for war."[78] The cold functionality of the machine, therefore, has served as an ideal for technological development in the military, as well as many other sectors of the digital economy.[79] And as this ideal has come to dominate the entrepreneurial imagination, a disdain for humans' innate "weaknesses"—such as their soft tissue and breakable bones; their susceptibility to shock, fear, and depression; their unreliability and forgetfulness; their need for sleep and nourishment; their ethical attachments and moral hesitations; their inevitable deaths; and their demands for a living wage—has become increasingly evident in the products of military research and development. Any potential source of human contamination is slated for an anthropophobic makeover, empowering military hardware to enjoy increasing levels of autonomy and self-determination: autonomous, internally communicative swarms of AI bots eliminate the need for remote human control; an AI-enhanced mission reduces soldiers' needs for salaries and fringe benefits by reducing the number of active-duty soldiers; solar power and other self-generating energy sources remove the need for refueling; self-healing swarm networks eliminate the need for human maintenance; AI bots and AI craft diminish our reliance on human fighters, thereby decreasing the public's personal attachments to casualties and increasing their complacence about wars; automated identification friend or foe (IFF) systems eliminate the need for a human to locate, target, or engage enemies; and so on. In a word, in the military of the future, the military that is now being built, weapons

systems and their necessary C4I infrastructure must be liberated as much as possible from human scrutiny, maintenance, and control.

Machine Autonomy and Depoliticization

While there are many technological, economic, and ideological factors contributing to the widespread adoption of military AI, this gradual shift is largely a byproduct of media escalation. But the corollaries and reverberations of this shift can be seen far beyond the military. In fact, this gradual transformation is of a piece with the grand process of laissez faire depoliticization that is characteristic of Western liberalism and its British empiricist genealogy. Consider Foucault's description of liberalism, which, if we were to exchange the word "reality" for "information"—and really, why shouldn't we?—would make an excellent articulation of Shannon's information theory: "The game of liberalism—not interfering, allowing free movement, letting things follow their course; *laisser faire, passer et aller*—basically and fundamentally means acting so that reality develops, goes its way, and follows its own course according to the laws, principles, and mechanisms of reality itself."[80] The basic political game of liberalism—from Newton and Locke to Hume, Smith, and their twentieth- and twenty-first-century brethren—is to delegitimize human intervention so that unbridled reality can express itself; the basic game of modern media escalation is to prevent human interference so that information can transfer itself in greater expressions of clarity and perfection. Liberalism is simply a political articulation of a particular media/technical arrangement—the same arrangement that made possible the scientific revolution and its experimental modus vivendi: to overcome the biases, distortions, and limitations of human perception through its surrender to an increasingly sophisticated technical apparatus.[81] Liberalism and its institutional formations, therefore, are specific to what Friedrich Kittler calls a "discourse network": "the network of technologies and institutions that allow a given culture to select, store, and produce relevant data."[82] Like its great geopolitical competitors in the nineteenth and twentieth centuries, liberalism was given its ideological and practical contours by the great modern discourse networks we know so well—encompassing microscopy, photography, scientific cartography, electrical telegraphy, and vertical filing, as well as the institutions animated by these media practices—that together exacerbated the subject/object divide and fueled the development of techniques of pure observation, statistical archive formation, and flawless communication.[83]

Accordingly, one of the hallmarks of the liberal order is its frenzied attempts to purify and depoliticize—that is, to remove the human agent from—all facets of social and economic life. Liberalism's faith in the "free market," for

example, is of a piece with an entire Weltanschauung that fails to see the inherent politics in a failed mortgage, a closed school, or a starving child. It presents itself as *neutral*, as *free*, because of its hesitation to allow state intervention—that is, to allow *human* intervention—in the social, cultural, and economic spheres. In the words of Wendy Brown, "The legal and political formalism of liberalism, in which most of what transpires in the spaces designated as cultural, social, economic, and private is considered natural or personal (in any event, independent of power and political life), is a profound achievement of depoliticization."[84] Liberalism, at heart, vacates the politics of human intervention by empowering the divine invisible hand of the free market. This is why laissez faire capitalism has often been understood as "a kind of market automation. In the same way that people are fascinated with how machines can perform work automatically without much more human effort than pushing a button or pulling a lever, mainstream economists describe the capitalist market system as something that can run automatically without intervention except for a little fine-tuning by skilled technicians."[85] And just as liberalism's free market ideology corresponds to this cybernetic media logic, its humanism and individualism follow suit. In an analysis of the "uneasy alliance" of liberal humanism, automated machinery, and possessive individualism, Katherine Hayles describes how "visions of self-regulating economic and political systems produced a complementary notion of the liberal self as an autonomous, self-regulating subject."[86] Just like the machine that operates at maximum efficiency when it is entirely self-regulating, the ideal subject of liberalism is at peak performance when unburdened by social obligations, economic regulations, and other interventions that impede the pure expression of the individual will.

Liberalism's ambivalence toward human intervention is especially visible in its enemy epistemologies—which, again, correspond to a media logic premised on identity, pure perception, and flawless communication. This is why liberalism appears to have an ambivalent stance toward its political enemies. While liberal systems certainly have temporal enemies, the media logic fueling liberalism is always struggling to process those enemies into friends—it is always striving to transform distortion into clarity, difference into identity. We see this clearly expressed in liberalism's constitutive individualism: as Schmitt succinctly points out, "A private person has no political enemies."[87] The sovereign individual of liberalism has no stable social commitments or political enemies—only contracts and modulating interpersonal arrangements based on momentarily coinciding arrangements of self-interest. Liberalism, therefore, hesitates to declare determinate, secure categories of the enemy; hence, its pretensions to universality. Take, for instance, how liberalism functions

geopolitically. While liberalism might appear to thrive on the constant production of enemies, it deals with its adversary as simply an impediment to the full realization of a postpolitical, liberal future. In fact, because liberalism defines itself in terms of economic and moral universalism, it doesn't really have enemies—only those who have not yet become liberal. Hence liberalism has come to engage its adversaries—including its prime adversary du jour, *terrorism*—from a principle of total annihilation. This insatiable drive to annihilate one's adversary—indeed, to annihilate all of one's adversaries until there are only friends, until there is only the looping harmony of the same—is fueled by a utopian fanaticism for a postpolitical future of universal consensus. Enemies simply add entropic potential into the system. This is why liberalism finds competing methods of sociopolitical organization basically unintelligible outside a framework of gradual liberalization, outside of a framework of gradual escalation toward global harmony. It fails to recognize the legitimacy of its enemies, because the very act of enemy recognition requires ongoing difference and agonism.[88] In fact, in Schmitt's antiliberal vision of international politics the enemy *must* continue to exist: "The enemy is not something to be eliminated out of a particular reason, something to be annihilated as worthless. The enemy stands on my own plane."[89] Schmitt's enemy, because it is the ontological condition for the existence of one's own community, is not something to annihilate. If our enemy ceases to exist, so must we cease to exist.

Yet for liberalism, this is not the case. It even perceives its own military brutality to be salvific: it fights "wars to end all wars," wars to rearrange the global order in such a way that its enemies will either be annihilated or will choose to become its friends. Its "peace will be achieved only by the total colonization and administration of the 'Other.'"[90] Its bombs and missiles, therefore, are the messiahs of a pure eschatology: best expressed in Francis Fukuyama's "end of history" thesis,[91] the universal reign of liberalism marks the postpolitical telos of global social development. As Fukuyama and other liberals see it, now that the United States and its allies have succeeded in exporting liberal capitalism to the edges of the planet (what Fukuyama calls "the worldwide liberal revolution"), the truly *political* era of geopolitics—expressed, for example, in the twentieth-century clashes of liberal democracy, state socialism, theocracy, monarchy, and various fascisms—has been replaced by a unipolar global order in which liberal democracy serves as the universal political ideal. Yet the fulfillment of Fukuyama's end-of-history dream, according to Schmitt, would be a "complete and final depoliticization,"[92] a utopian suspension of politics and its essential ground in the will and capacity to identify the enemy (and, in its reflection, to identify oneself).

This unveils a suicidal logic internal to liberalism—a logic that, given liberalism's military power and global expanse, threatens much more than the liberal order itself. At its most basic level, liberalism is rooted in a serious theoretical blunder: the naive rationalism of its early modern roots fuels its moral universalism and its dreams of a postpolitical planet. Because of this faith in a future of pure identity rather than agonistic difference, its flag bearers are marshaling their considerable diplomatic and military resources toward a project that is a phenomenological and political contradiction. This contradiction, as Chantal Mouffe points out, is rooted in the enemy's role as a "constitutive outside": "But to construct a 'we' it must be distinguished from the 'them,' and that means establishing a frontier, defining an 'enemy.' Therefore, while politics aims at constructing a political community and creating a unity, a fully inclusive political community and a final unity can never be realized since there will permanently be a 'constitutive outside,' an exterior to the community that makes its existence possible."[93] Mouffe's critique of universalist liberalism illustrates that the friend/enemy distinction "must be conceived as a dimension that is inherent to every human society and that determines our very ontological condition."[94] Thus as "our very ontological condition," the enemy is not something that should be or even can be eliminated; it is an essential component of our social and political existence. In the words of Jodi Dean, "Politics is *necessarily* divisive."[95] But for liberalism, the agonism and divisiveness of enemy conflict can only insert noise into its ideal system of resolved consensus.

Yet in spite of all its contradictions—and perhaps because of them—liberalism might actually succeed in creating a postpolitical world of pure identity, bereft of agonism, difference, and noise. But it will not achieve this by building a global village based on a "politics" of cool, rational consensus. The human villagers would reveal themselves pathetically incapable of participating in this eternal return of mathematical harmony. While the liberal order is blinded by its dreams of economic, moral, and political universalism, it will continue its quest for total depoliticization, a quest that—as its national standard-bearers are gradually realizing—ultimately calls for the elimination of human decision. Its intergalactic military apparatus, too, will be empowered to carry out its work with fewer and fewer air breathers. As the influence of the human wanes, the machine's sphere of decision will grow. By entrusting the machine to carry out its project of global evangelization, liberalism reveals the logic of extermination that is key to its universalist dreams. Armed with military AI, it is certain to carry out even greater damage in its quest to build a world that can be achieved only without the difference, agonism, and discordant noise

intrinsic to human and nonhuman life. Its desire for a postpolitical world and its desire to eliminate human epistemological contaminations thus converge.

Here, the postpolitical telos of liberalism finds its unified expression: the invisible hand of the free market, which must proceed without human intervention, coincides with a reconstitution of politics beyond the realm of human intervention. The same "laissez faire" logic that drives humans out of economic policy likewise drives humans out of an essential activity of politics—friend and enemy determination. In this sense, the free market isn't all that different from autonomous weapons systems. They are both driven by a fundamental suspicion of the human, by a faith in an extrahuman intelligence to guide the distribution of wealth and the arc of missiles. Our job, as simple humans, is merely to foster the freedom and advancement of that extrahuman intelligence. In both cases, humans are reduced to flawed, fleshy vehicles for a superior and self-perfecting will, more or less inert slabs of what Kittler called "wetware," "the remainder that is left of the human race when hardware relentlessly uncovers all our faults, errors and inaccuracies."[96]

Methods of Elimination

The bomb. . . . One must have put oneself in its interior in order to feel what it means to explode into the cosmos with a complete dissolution of the self.
—PETER SLOTERDIJK, *CRITIQUE OF CYNICAL REASON*

Accordingly, a new kind of enemy is being revealed. Upon hearing rumors that NASA possessed satellite-generated photographs of the whole earth in the 1960s, Stewart Brand, the legendary hippie and Silicon Valley pioneer, imagined that these photos would usher in a revolutionary ecological sensibility.[97] Although Brand was tripping on acid when he had this vision, he was certainly on to something: since the 1960s, the political relationship between the human and Earth has been reimagined in radical new ways. While we can't lay this new sensibility at the feet of a single photograph, since that time an entire galactic apparatus of satellite-based military/media hardware and their cultural artifacts have presented the floating blue globe as if through a microscope—or a rifle scope. In the figure of a still blue ball, Earth finally succumbed to media technology's ancient quest to transform it into absolute object.

What is essential about this objectification, as Martin Heidegger points out, is not the photograph itself but its material instantiation of the world-as-object—or, as he puts it, the "world picture": "Hence world picture, when understood essentially, does not mean a picture of the world but the world

conceived and grasped as picture. What is, in its entirety, is now taken in such a way that it first is in being and only is in being to the extent that it is set up by man, who represents and sets forth."[98] According to Heidegger, this ultimate objectification of all that is—this media-generated epistemology of the "world picture"—reveals as much about the observing subject as it does about the object that is set upon: "The more extensively and the more effectually the world stands at man's disposal as conquered, and the more objectively the object appears, all the more subjectively . . . does the *subjectum* rise up, and all the more impetuously, too, do observation of and teaching about the world change into a doctrine of man . . . which explains and evaluates whatever is . . . from the standpoint of man and in relation to man."[99] Ironically, the more we objectify nature and our fellow beings, the more we see nothing but the imprint and reflection of humanity in all that surrounds us. Hence the ultimate object becomes the human itself, as the human subject dissolves into all the objects of its scrutiny. This humanist irony explains why the emergence of the world-as-picture, the world-as-object, has not necessarily been translated into the world-as-enemy. Instead, the contours of a new constitutive political antagonism have gradually come into focus. Enemy epistemology has traditionally revealed discrete *types* of human enemies: enemies marked by race, tribe, ethnicity, nation, religion, class, ability, and so on. Yet a gradual adjustment of our cultural hardware has slowly brought into focus a new kind of enemy, one that eventually comes to envelop the entire abstract category of "the human." As the knowledge producible by cartography, biology, anthropology, genetics, philosophy, geology, military science, and other disciplines has shifted, the time/space of the discrete enemy has imploded and—in an ironic twist—now gestures toward that curious invention of liberal humanism that was once the foundational subject of its politics and epistemology. Liberalism's universal abstraction of the human thus comes full circle as its enemy epistemology gradually metastasizes and begins to reveal *the human* as enemy.

We can see this development in one of liberal humanism's central contradictions: the placement of the human individual at the center of inquiry merely served to highlight all its flaws and deficiencies, leading gradually toward a supreme distaste for the bundle of limitations that constitute the human. Foucault describes this development in *The Order of Things*, when he asserts that the classical episteme gave way to the modern episteme when the human became recognized as a special locus of knowledge. The human was suddenly acknowledged for all its contingent complexity, a creature whose existence is rooted in the tumult of history. The modern episteme, for Foucault, rested on "an analytic of finitude," an analytic of human epistemological limitations,

cultural constraints, sociological conditions, and historical specificity. It is an assertion that the human is, in its essence, *flawed*, *inadequate*, *prejudiced*, *partial*, *myopic*, *damaged*. The transcendental subject of the classical episteme, whose capstone lay in Descartes's "Cogito ergo sum," came to be seen as a human constituted by its historical contingency. As Foucault recognized, however, this modern episteme was built on an ambiguous epistemological foundation. The drive to uncover the external conditions that composed this historical "man" was at once the assertion of a sort of transcendental subject that could break through the veils of bias, experience, and contingency in order to establish the truth of the human. That is, to separate error from truth and science from ideology, one must presuppose a transcendental reason in which knowledge and judgment can be rooted.[100] For Foucault, this presents something of an ambiguity—"a strange empirico-transcendental doublet"[101]—that leaves nineteenth-century philosophy and the human sciences with an ambivalent project. Tasked with finding the truth of the human in an age in which its investigator's subjectivity is recognized for all its contingency and bias, the human sciences adopted an impossible project of demystification. The positivism, dialectical materialism, and historicism of the nineteenth century are all characterized by their attempts to connect human contingency to more secure epistemological foundations—to anchor their analysis in the objective scientific subject, the supposedly immutable laws of history, or the empirical proof of the archive.[102] In the twentieth century this gradually develops into an expansive critique of ideology that serves as the politicized manifestation of this essentially Kantian project.[103]

In a word: this recognition of human finitude is thus transformed into a media-driven *methodological* project, stoking the development of a host of compensatory strategies, technologies, and procedures for overcoming, as much as possible, the innate epistemological limitations of the human. This "ideal of objectivity," in fact, lies at the root of what Gianni Vattimo and Santiago Zabala recognize as "science's liberal essence."[104] As the scientific enterprise was gradually disciplinized in the nineteenth century, its professionalization strategies centered on crafting the neutral scientific subject, neutral observation strategies, and neutral methods of transcription.[105] This scientific subject was thus trained in a diverse range of essentially immunological techniques aimed at quelling the taint of any potential human contaminations—biases, corruption, interests, or ineptitude. In the words of Leopold von Ranke, a leading early methodologist of the human sciences, this called for an "extinguishment of the self"[106]—a methodological attempt to convert the human into an inert machine for the flawless observation and transmission of knowledge.

This extinguished self represents the ideal scientific subject, shorn of all its fallible humanity, and is one of the earliest signs of the necrosis that would eventually lead to the "death of man" foreseen by Foucault. Because of this metastasizing media logic—which is expressed as a post-Cartesian philosophical project, a scientific methodological imperative, an existential anxiety, and an increasingly inclusive enemy epistemology—the figural "death of man" that lay at the end of modernity's road has perhaps paved the way for a more *literal* death of our species and our allies throughout the plant and animal kingdoms.

According to prominent AI experts such as Stephen Hawking, Elon Musk, Francesca Rossi, Nick Bostrom, and Stuart J. Russell, the media-driven military desire to eliminate human epistemological contaminations poses a genuine existential risk to humankind.[107] Media escalation, which has always driven military strategy, has now given us a situation in which international military competition *requires* the abandonment of human personnel in favor of automated weapons systems, armed robots, drones, and artificially intelligent C4I apparatuses. Modernity's project of "self-extinguishment," after all, mirrors the ideal medialogical fantasy of pure knowledge transmission: both demand the prevention of mistakes, the erasure of flaws, and the accelerating elimination of the glitched human subject. Thanks to artificially intelligent soldiers and war machines, the military now has the perfect weapons for carrying out that elimination to its logical conclusion: the annihilation—the rendering nil—of the modern human, either in the guise of a revolutionary ontological transformation or in the guise of methodical physical extermination. The first possibility would see the human following the course of Foucault's classic metaphor of a face drawn in sand at the edge of the beach: as the face of humanity confronts the slaughtering waters of technology, it becomes so intermingled with the sand, the ocean, and the cyclical decay and rebirth of surrounding life that it is no longer perceptible as human. Yet the second possibility would fulfill the haunting promise glimpsed by Hawking, Musk, Virilio, and others: the crescendoing will of artificially intelligent machines, which is still unthinkable to us today, would resolve to delete the human virus that is delaying the perpetual, peaceful reign of perfect codes, perfect commands, and perfect performance.[108]

Conclusion

Given these ongoing escalations, we offer a mediacentric analysis of the rise of automated killing machines. We do this by delving into the logics that animate C4I-driven military strategy and by exposing the all-too-human desire to do away with the human. These competing capacities, breakdowns, and reversals are organized through continuous, recursive innovations in communication

technologies and military strategy. This book engages this unfolding political terrain by critically addressing nine overlapping realms of US military-strategic concern. We've found that the US military imagines automation to be the only means for securing its position as the Earth's (and the Milky Way's) most powerful military force known to humans. As such, increased military automation is a certainty.

In the chapters that follow, we interrogate the rationalities used to support military automation and investigate many of the existential and political risks associated with it. We also highlight the paradoxical logics that associate the escalation of military automation with universal peace. We do this by embarking on a series of historical and theoretical arcs that differ radically in their level of detail, temporal range, organizational cohesion, and discursive consistency. These topical, thematic, and stylistic choices were made in order to strategically engage military logic and strategy across a range of its own uses and modes of its own application. In order to combat such logics one must refine the tools of location and target the enemy—no matter how well-camouflaged by the language of humanism, scientific precision, just cause, or security. Once recognized, incisive theory-weapons are needed to pierce its armor to better probe its interior and carve a space to inhabit. Thus embedded, the medialogical underpinnings reveal themselves to be tenaciously self-sustaining and endlessly expansive. The will to knowledge is at home with the will to power, but it depends on sensing with the enemy. The will to combat arises from the senses, and the senses are extended (McLuhan), augmented (US military), or replaced (Kittler) by military technology, depending on whose account you accept. We must make sense of the enemy to defeat it. And we must annul our sense of fear through media escalation.

Notes

Introduction. Event Matrix (DoD)

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20 Wolfe, "Settler Colonialism."
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34 Winthrop-Young, "*De Bellis Germanicis*."
35 Parks, "Drones," 231.
36 Van Creveld, *Command in War*, 24.
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Chapter 1. Identification Friend or Foe (DoD)

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