Dronological Power

Remote Control Occupation and The New Epistemo-Technologies Of Sovereignty

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Declaration Page

Declaration of Authorship: I, Ramon Bloomberg, hereby declare that this thesis and the work presented in it is entirely my own. Where I have consulted the work of others, this is always clearly stated.

Signed: _____ Date: 15 February 2019

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Abstract

This doctoral thesis takes up the contemporary military drone and seeks to uncover the historical, political, and technical formations veiled by its colloquial apprehension as a remotely controlled unmanned aerial vehicle (UAV). The project has been undertaken as practice-based research in fine art and as such is composed of two equally weighted elements that are mutually constitutive. The practical element takes the form of a literary novel.

Contextualised within a global military-commercial (mil-com) projection of power, the drone is understood as a producer of knowledge (dronology) and near-sovereign within conditions of generally distributed sovereignty. The drone exerts an algorithmic governmentality differentiated from political governmentality. Agency within the drone ensemble is mutable and intensive across a distributed network topology. If the sovereign state has been in a relationship of recurrent causality with the indivisible sovereign subject, by contrast, the drone is the relation of a sovereign to *∂ivi∂uate∂* forms of life. I argue that the drone is a near-sovereignty that problematises biopolitical theories of power. The mode of power in which the body presupposes the force of law is insufficient for the drone, which I argue is instead a form of sovereign power for which the subject body is no longer meaningful. For the drone, the body lingers on as the hypo-ject – a corollary to the signature.

The drone is operational across multiple scales. The method of investigation therefore addresses the drone at a plurality of magnitudes. Furthermore, the thesis is framed by two structuring devices: the etymology of the term drone and the case of a 2015 signature strike in the Federally Administered Tribal Area (FATA) of Pakistan. The etymological account demonstrates a historical migration of ways in which the individual has been configured in relation to reason and a political framework. The 2015 signature strike serves to distinguish the current drone from its etymological precedent.

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Introduction

> Multi-sensory tele-technologies as they pertain to the implications for the enactment of agency relate fundamentally to the constitution and expression of the political subject and the many systems in which it is embedded, formulated, constructed, subsumed, and articulated.[1]

Signature Strike

The first signature drone strike is said to have occurred on February 4, 2002.[2] The attention of the team operating an MQ-1 Predator was drawn to three figures walking upon a hilltop outside of the city of Khost in Afghanistan. This was in the vicinity of a training camp thought previously abandoned after the invasion. What attracted attention was a configuration of empirical and inferred attributes that, for drone procedures, met the threshold requirements of a *signature* corresponding to that which may become a target.

One of the men was taller than the others and to the operators the behaviour of the shorter pair appeared to be reverent. It is unclear how they came to this conclusion; however, while this example is not well documented, it does provide a simplified means of explaining the signature strike. Taken together as a whole, the configuration – relative height, number of persons, behaviour, geo-location – matched the requirements of a previously structured profile or signature that had been designed to probabilistically match the predicted appearance of Osama Bin Laden who, by that time, was understood to be in hiding. The configuration of a signature will be unpacked throughout this thesis; for now, I will just note basic features. The signature is a model made through extrapolation from empirical observation: Bin Laden is tall compared to others; as a famous commander, he is held in reverence by subordinates. Once the signature is programmed – this can be with computers, only in brains, or more likely both – data from sensor feeds are processed and checked against the signature. When the observed situation matches the prepared signature, it is on the way to becoming a target. The hellfire missile that killed those three men was, therefore, not aimed at "Osama Bin

1 Ryan Bishop, "Felo de se: The Munus of Remote Sensing," boundary 2 (2017).

2 Kevin Jon Heller, "One Hell of a Killing Machine: Signature Strikes and International Law," Journal of International Criminal Justice 11, no 1 (2013): 89–119. See also: Mayer, 2009.

Laden", but at a signature corresponding to a set of probabilistic variables offering the promise of a likelihood that this oblique stratagem would result in the killing of Osama Bin Laden. The strike did not kill Osama Bin Laden and two obsequious underlings, but it did kill three civilians who had nothing to do with militant activity.[3]

While the story above illustrates the initial use of a signature to find a target, signature strikes overwhelmingly aim for groups of people whose names are not known in advance. Drone combat air patrols do not only hunt targets that fit pre-existing signatures, but are actively producing new signatures that might be discovered. The relation of the drone to the concept of discovery and knowledge is unpacked in the final sections of Chapter 1. While the first signature strike in 2002 might have been executed through the "processing" power of the drone operator's brains, more recent drone operations involve significant computational resources and machine learning techniques that rely upon and constitute a global network of machines, code, persons, data centres, and more.

The Federally Administered Tribal Areas (FATA) region of Pakistan, under the drone's remote control occupation, exhibits a conjunction of persistent unmanned aerial vehicle (UAV) combat air patrols covering a distinct geo-political territory with the mobilisation of the technical ensembles and routine procedures necessary for the unilateral punctuation of signature strikes. As Zubair Shah and Derek Gregory have noted, the FATA has been "an ideal laboratory for field testing what was, for the United States, an experimental programme".[4]

In this thesis, I argue that the programme oriented around signature strikes in the FATA exemplifies the current *state* of the drone, understood as a technical ensemble that has been subject to transformation over the course of a historical migration. This migration has displaced the drone from a term once applied to a specific type of human subject to one that now refers to the technical ensemble introduced above. This is so because of the manner in which this particular drone

3 Ibid.

4 Derek Gregory, "Dirty Dancing: Drones and Death in the Borderlands," in Life in The Age of Drone Warfare, ed. Lisa Parks and Caren Kaplan (Durham: Duke University Press, 2017), 28.

ensemble has drawn in a multiplicity of technical ensembles and objects. As I argue, the current drone is irreducible to previous iterations – for example, the drone of the 1930s – as it has been reticulated and amplified by ensembles such as the technical networks and remote sensors drawn into its interior milieu.

While I narrow the focus of the inquiry to the set of conditions and contexts noted above, I do not disavow the existence of other iterations of the drone; I am simply suggesting that this example demonstrates the state of the drone *qua* drone. That is to say, the drone, as it is found in the FATA circa 2015, is a producer of knowledge (*∂ronology*), casting its own specific epistemic frame within which external elements are drawn in and transformed.

Thus, this thesis seeks to build upon and extend a body of research that draws together subjectivity and techniques of control-at-a-distance, for example, such as that of Ryan Bishop and Jennifer Gabrys. Bishop's most recent work[5] seeks to highlight the ways in which what he refers to as "tele-technologies" are, and have been, imbricated with political subjectivity and an expanded notion of the self. Meanwhile, Gabrys' *Program Earth: Environmental Sensing Technology And The Making Of A Computational Planet* explicitly addresses the manner in which remote sensing is not a passive gathering of existing phenomena, but an active and dynamic ordering of environments or *milieux*.[6]

Thematic Matrix

In light of the above, I have adopted an oblique strategy that has refused prior knowledge of the drone *qua* UAV, framing an approach to the weaponised drone through its etymological connections. The first drone-related entry in the Oxford English Dictionary (OED) is *∂ronage*: "Many a man is reduced into a state of dronage by him (the usurer)".[7] This gives rise to a suspicion that, if a man can be *reduced* to dronage, might it not be possible that an aerial vehicle is *elevated* into dronage?

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5 "Felo de seu," and "Smart Dust and Remote Sensing: The Political Subject In Autonomous Systems," in Cold War Legacies: Systems, Theory, Aesthetics, ed. John Beck and Ryan Bishop (Edinburgh University Press, Edinburgh, 2016).

6 Jennifer Gabrys, Program Earth: Environmental Sensing Technology and the Making of a Computational Planet (Minneapolis: University of Minnesota Press, 2016), 10.

7 "Dronage," Oxford English Dictionary, 2nd Ed., 4 vol. (Oxford: Oxford University Press, 1989).

According to the OED, there are several registers of the term *drone*. The male of a honey bee who does not work but can fertilise the queen; a (human) non-worker; a lazy idler and sluggard; and a pilotless aircraft directed by remote control. A separate entry takes note of the sonic register of this term: "A continuous deep monotonous sound of humming or buzzing, as that of the bass of the bagpipe, the humming of a fly, or the like".[8] The historical shifting of the term drone frames this thesis as a structuring device. I demonstrate a historical transformation of the drone, particularly noticeable from the early modern era to the current. In the mid-20th century, the drone migrated from a term that denotes a qualified human subject to one that now stands for a technical object. The drone has, more recently, drawn in previously disparate technical objects and assemblages so that the drone of 2017 is a technical *ensemble*, irreducible to the remotely controlled vehicle of the mid 20th century. This suggestion has profound bearing upon the methodological requirements discussed shortly. I will return to the question of the drone's etymological migration later in the introduction when I discuss how I have structured the work.

In order to develop a strategic approach to this investigation, I have sought to specify those particularities of the military drone, irreducible to aerial warfare, as it is conducted more generally. Much of the small but growing corpus of drone literature is oriented towards what is termed the *targeted* or *personality* strike.[9] These are attacks that mobilise technics of specification to kill a known individual. As Gregoire Chamayou writes in *Drone Theory*, "The zone of armed conflict, having been fragmented into miniaturisable kill boxes, tends ideally to be reduced to the body of the enemy or prey. That is, his body becomes the battlefield. This is the principle of precision or specification".[10]

However, targeted airborne strikes have been carried out since at least the 1990s with the advent of guided missiles, often using helicopters as the preferred

8 Ibid.

9 See for example, Jane Mayer, "The Predator War: What Are the Risks of the C.I.A.'s Covert Drone Program?" The New Yorker, October 2009; Derek Gregory, "From a View to a Kill," Theory, Culture & Society 28, no. 7–8 (2011): 188–215; and Medea Benjamin, Drone Warfare: Killing by Remote Control (London: Verso, 2013).

10 Grégoire Chamayou and Janet Lloyd, Drone Theory (London: Penguin, 2015), 57–58.

delivery platform.[11] Unless the attribution is made available by the responsible party, it is not usually possible to know if such attacks have been launched from helicopters, unmanned aerial vehicles, or other platforms.[12] Roughly put, airborne targeted and personality strikes are assassinations in the sense that these attacks constitute the "politically motivated killing of high-profile individuals".[13] This begs the question of whether drones – understood as unmanned aerial vehicles – have been drawn in as useful elements to a pre-existing process, for example, within an "assassination complex"[14], of which the drone is a supplemental device that facilitates already institutionalised proceedings. By 2001, the Israeli military had developed a doctrine of institutionalised assassinations or "named killings".[15] This assassination programme continues to mobilise any means necessary, including: UAVs, uniformed infantry troops, undercover soldiers, spies, snipers, helicopters, manned fixed wing aircraft, and booby-trapped telephones.[16] In this context, the UAV might be best understood within the arsenal of a programme of "named killings", alongside other weapons.

Drone operations that are irreducible to aerial warfare more generally must be conditioned by, and account for, the specific capabilities and limitations of UAVs, as they are currently operationalised. As I will show, this investigation has had to consider the circular relation of cause and effect – recurrent causality – in which the drone has been initially drawn into processes that have impacted its development; at the same time, the specific qualities of the drone have caused transformations in procedural configurations. In addition to control-at-a-distance, some of the important qualities of UAVs, such as the MQ-1 Predator and MQ-9 Reaper, are the persistence of presence over a certain geo-location, the capacity to

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11 See Clyde Haberman, "Israelis Kill Chief of Pro-Iran Shiites in South Lebanon," The New York Times, February 16, 1992, accessed on January 9, 2015, http://www.nytimes.com/1992/02/17/world/israelis-kill-chief-of-pro-iran-shiites-in-south-lebanon.html; and Anthony H. Cordesman, Peace and War: The Arab-Israeli Military Balance Enters the 21st Century (Westport: Praeger, 2002), 223. The killing of Abbas al-Musawi in 1992 and Hussein Mohammed Abayat in 2000 are early examples of targeted assassination by helicopter-borne guided missiles.

12 Simon Frankel Pratt, "'Anyone Who Hurts Us': How the Logic of Israels 'Assassination Policy' Developed During the Aqsa Intifada," Terrorism and Political Violence 25, no. 2 (2013): 224–245.

13 Lindsay Porter, Assassination: A History of Political Murder (New York: Overlook Press, 2010), 22.

14 Jeremy Scahill, "The Assassination Complex," The Intercept, October 15, 2015, accessed August 3, 2016, http://www.theintercept.com/drone-papers/the-assassination-complex.

15 In 2006, targeted killings were institutionalised in Israeli law with a landmark supreme court decision. See "Israeli High Court: No Ban on Targeted Killing," The New York Times, December 14, 2006, accessed November 14, 2016, https://thelede.blogs.nytimes.com/2006/12/14/israeli-high-court-no-ban-on-targeted-killing; and Michael L. Gross, "Assassination and Targeted Killing: Law Enforcement, Execution or Self-Defence?" Journal of Applied Philosophy 23, no. 3 (2006): 323–335.

16 Ibid. See also Pratt, "'Anyone Who Hurts Us'" and Alina Korn, "Israeli Press and the War Against Terrorism: The Construction of the 'Liquidation Policy'," Crime, Law and Social Change 41, no. 3 (2004): 209–234.

host remote sensors, and technical network connectivity. In the semi-secret operations carried out in the FATA of Pakistan from around 2009, a propitious accord between geo-political and technical conditions has been realised.

The tribal areas of Pakistan had seemed to present the perfect testing ground for a remote-controlled military strategy; it is a land set apart from its own country and mostly inaccessible to the international media and human rights groups, a place where violations of international law and civilian casualties go mostly un-investigated. It is, in short, a black hole.[17]

By 2009, the FATA was under round-the-clock persistent surveillance by UAVs.[18] In Pakistan, between January 2008 and January 2016, 2,488 to 3,989 people are known to have been killed as a result of 421 missile strikes.[19] In 2010, a Reuters journalist reported "that of the 500 'militants' the CIA believed it had killed since 2008, only 14 were 'top-tier militant targets'",[20] that is to say, targeted killings or personality strikes – the assassinations that I have described above. The remaining 98 percent of "militants" killed were the victims of what are known as signature strikes.

However, less than two percent of UAV combat air patrols result in what the military refers to as a "kinetic event".[21] Thus, the signature strike, while understood as the most suitable mode of violent action for the military drone, will be understood in this thesis as a punctual event within a routine and persistent military drone project of remotely controlled occupation. The specific and current conditions that have made the FATA conducive to such operations are unfolded in Chapter 2.

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17 Pir Zubair Shah, "My Drone War," Foreign Policy, February 27, 2012, accessed December 4, 2015, http://www.foreignpolicy.com/2012/02/27/my-drone-war.

18 Kristina Benson, "'Kill 'em and Sort It Out Later:' Signature Drone Strikes and International Humanitarian Law," Pacific McGeorge Global Business & Development Law Journal 27, no. 1 (2014): 32

19 Alice Ross and Jack Serle, "Most U.S. Drone Strikes in Pakistan Attack Houses," The Bureau of Investigative Journalism, February 6, 2017, https://www.thebureauinvestigates.com/stories/2014-05-23/most-us-drone-strikes-in-pakistan-attack-houses.

20 International Human Rights and Conflict Resolution Clinic and Global Justice Clinic, Living Under Drones: Death, Injury, and Trauma to Civilians from US Drone Practices in Pakistan (Stanford Law School and NYU School of Law, 2012), 31.

21 W.J. Hennigan, "Air Force Hires Civilian Drone Pilots for Combat Patrols; Critics Question Legality," Los Angeles Times, November 27, 2015, accessed May 12, 2016, http://www.latimes.com/nation/la-fg-drone-contractor-20151127-story.html.

Primary Claims

I propose that, in the FATA, the drone is a near-sovereign, exerting an "algorithmic governmentality"[22] both wihin its interior and extended upon its exterior milieux. The geo-political context that this drone requires is understood to be conditioned by relatively weak and indeterminate sovereignty. I argue that the FATA is characterised by a general *∂istribution* of sovereignty among a multiplicity of sovereign and near-sovereign actors. Important for my argumentation is an analysis of the processes and epistemologies of the drone's remote-control occupation and algorithmic governance. I claim that, in the dronology of remote-control occupation in the FATA, the object of power is no longer the individual subject but *∂ividual* pieces, divided from the erstwhile subject by procedural data harvest and transformation. Consequentially, the human subject is elided in dronology and the object of political power is a conglomerate of data, distinct from a procedurally negligible individual. If the object of political power within established theories of modern politics has been the individual human subject, this condition no longer holds after the military drone.

Generalisability or Specificity of Primary Claims

The term drone is understood here to account for a wider set of phenomena than the individual unmanned vehicles colloquially apprehended when this word is evoked. What I address here, is an assembly constituted by the drawing together of technical objects and ensembles including, unmanned aerial vehicles, remote sensors, technical networks, people, political concepts and geo-political conditions. While the primary claims that I have stated above are intended to account for some of the consequences of drone operations oriented towards signature strikes, these claims may indeed apply to configurations, other than the drone, that also bring together some of the elements noted above. Likewise, some of my arguments rely upon conceptual formulations that are not specific or confined to the drone and may be useful in exploring diverse phenomena that mobilise computation and data gathering in their knowledge-producing processes, for example, Antoinette Rouvroy's algorithmic governmentality[23], or the concept of the dividual,

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22 See Antoinette Rouvroy, "The End(s) of Critique: Data Behaviourism Versus Due Process," in Privacy, Due Process and the Computational Turn: The Philosophy of Law Meets the Philosophy of Technology, ed. Mireille Hildebrandt and Katja De Vries (New York: Routledge, Taylor & Francis Group, 2013), 143–182.

23 Rouvroy, 2013

introduced by Gilles Deleuze in "Postscript on the Societies of Control".[24] Rouvroy writes that "the constant 'adaptation' of environments to individual and collective 'profiles' produced by 'data intelligence' – be it called 'personalisation' or 'technology of security' – is an unprecedented mode of government".[25] That mode of government, what she terms algorithmic governmentality, applies to pervasive conditions of late modernity that Mireille Hildebrandt and Katja De Vries have contextualised within a *computational turn*[26]. It is towards those geolocations that have not gone through a computational turn that dronological power is currently addressed. Jean Baudrillard has referred to these conditions as "integral reality".[27] The *integral reality* concept proposes that, in what Baudrillard identifies as the "west", referents and signs are no longer mediators of a real that is always inaccessible to direct perception. Rather, the symbolic order joins the real in an integrated reality for which there is no external referent, only a distance-less reticulation of simulation and world, whose relations have taken on the internally referential characteristics of computer code and computational ontologies.

The advent of integral reality is explicitly linked by Baudrillard to the processes, or current stage of globalisation. "What looms on the horizon with the advent of globalization is the constitution of an integral power, of an Integral Reality of power".[28] Pervasive conditions of modernity, or *integral reality*, like globalisation, is experienced in many, but not all parts of the world. It would be a stretch to characterise the FATA in Pakistan, Yemen, or Somalia with the term "integral reality", which describes a condition of electronic integration after the computational turn. On the one hand dronological power is an intrusion of integral reality into geolocations that have not been integrated by globalisation or the computational turn, on the other hand dronological power allows the remote control occupation of a geolocation without exposing the integral reality bubble to the un-integrated, thus protecting integral reality from the risk of reversal. One thing that sets apart the drone operations that I explore, is the way in which sensors and munitions are deployed remotely in the exercise of coercion and

24 Deleuze, 1992

25 Rouvroy, 2013, p. 144.

26 Hildebrandt and De Vries, 2013 p.xiv.

27 Baudrillard, 2005, p. 23.

28 Ibid.

control, in a manner that is relatively unsullied by the entanglements associated with military occupation, invasion, or civil governance. This is an important specificity of what I have termed dronological power. I attend to the concept of occupation and remote control occupation below.

I do not claim that the unmanned aerial vehicle is a singular or revolutionary technology, rather I trace the drone in its technical development, following its historical and political transformations. It is not that the primary claims are limited to drone operations that organise their epistemology around the production of signatures or profiles, it is that the drone operations oriented towards signature strikes are a clear example of new forms of sovereignty and power currently developing and deployed in multiple ways. *Dronological* may be a term that describes new forms of power in domains that do not include unmanned aerial vehicles, but this is a study of those formations that do mobilise unmanned aerial vehicles.

Space, Sovereignty and Occupation

In this work I introduce neologisms like, *remote control occupation* and *near-sovereignty*. This has been necessary because, among other things, the thesis on dronological power has had to contend with and account for transformations in the relations between power, sovereignty and space that require a reassessment of those terms. In Chapter 2 of this dissertation I substantially develop the spatiality of dronological power. Here I will provide an introduction to the problem of space, as it relates to dronological power.

Many writers have attended to the volumetric aspect of territory. Among them, Paul Virilio[29], Stuart Elden[30], Peter Sloterdijk[31] and Eyal Weizman[32]. In 2002, Weizman published "The Politics of Verticality", followed in 2007 by *Hollow Land: Israel's Architecture of Occupation.*[33] These texts opened up a critical discussion of the verticality of war, occupation and territorial conflict in the twenty first century.[34]

29 Virilio, 1989.

30 Elden, "Secure the Volume", 2013. Elden's elaboration of the concept of territory is discussed in Chapter Two.

31 Sloterdijk, 2011, 2014, 2016.

32 Weizman, 2002 and 2016. See also Elden, Terror and Territory, 2013.

33 Weizman, 2007.

34 Weizman, 2002 and 2016.

His work examined the Israeli occupation of the West Bank and demonstrated how a two dimensional perspective of conflict, looking at a map for example, had distorted and veiled important developments in the ongoing battle for territory and information dominance, both on the ground, air, subterranean strata, within the system of international law and on the stage of public opinion. Thus, attending to the two dimensions of a paper or screen based map was no longer sufficient for understanding the manner in which Israeli power had deployed in three dimensions. In addition to the conventional terrestrial surface control of what is understood to be a military occupation, several vertical tactics were deployed by the Israeli designers of the occupation. These include the construction of roads elevated above and tunnelled below areas under formal Palestinian authority, control of subterranean water tables and the closure of air space to the Palestinians. What Weizman had been alerted to, was an apprehension of what he termed the "politics of verticality". Not only was the vertical register visible to analysts, it was also written into the code of Israeli - Palestinian political negotiations and agreements. These insights have been adopted and further developed by writers like Stuart Elden, Derek Gregory and Stephen Graham.[35] While drone operations are, and have been included in this elaboration of verticality - notably by Derek Gregory[36] - attending to drone operations oriented towards the production of signature strikes has made it necessary for me to introduce other modes of spatial thinking to the consideration of dronological power. This is so, because of the ubiquitous deployment of sensors, software and technical networks in the drone operations that I explore. I propose to add to this discourse a politics of *soft-space*, or the topological reach of computational ontologies within a political space that is not confined to the topographical spatial register. This is elaborated in chapter 2.

John Agnew has sought to detach the concept of sovereignty from the exclusive domain of either the abstract nation state, or bounded territory. For Agnew "sovereignty is made out of the circulation of power among a range of actors at dispersed sites rather than simply emanating outward from an original and

35 See Elden, 2013, Graham, 2018 and Gregory, 2011.

36 See for example, Gregory, 2011 and 2017.

commanding central point".[37] While Agnew agrees that sovereignty may be understood as control and authority within a spatial field, he notes that, particularly in the context of globalisation, the nature of the spatial field requires a reassessment.[38] This reassessment is well under way. For example, Stuart Elden questions the possibility of locating a beginning to the war on terror. Noticing that while pearl harbour gets a *place*, 9-11 gets a *date*. Elden asserts that the idea of territory, "understood to be two-dimensions, destined to be conquered, and easily charted, is *passé*".[39] Not only do longitude, latitude and verticality need to be considered, but virtuality and temporalities as well.[40] In chapter 2 I attend to the forms of spatiality brought about by computing and the existence of technical networks. My introduction of the term *near-sovereignty*, recognises that no single institution, military or political body possesses a monopoly on control or authority within a given spatial order.

In *The Birth of Territory*[41], Stuart Elden traces the historical emergence of the concept of territory. Elden demonstrates how G.W. Leibniz sought to oppose the absolutism of Thomas Hobbe's concept of sovereignty by showing how the control over territory is never singular or monopolistic, but always graduated and partial. "Leibniz suggests that there are differences between sovereignty and territorial superiority, but this is because there are "degrees of *seigneurie*," of lordship".[42] In the distinction between *sovereignty* and *majesty*, Leibniz sought to specify the post-Westphalian order by distinguishing the universalism of majesty - corresponding to the hopes invested in Christendom - and the initially French conception of sovereignty that Leibniz associated to the territorial control of more local princes.[43] "It is sovereignty, then, rather than majesty, that is diminished in Leibniz's work, but in such a way that it becomes a more appropriate indicator of political actualities."[44] While not suggesting any equivalency between the post-Westphalian condition of Leibniz time and the current geopolitical order, I

37 Agnew, 2018, p.9.

38 Ibid, p. 6-7 and p. 47.

39 Elden, 2009, p. xviii.

40 Ibid.

41 Elden, 2013.

42 Ibid, p. 319-320.

43 Ibid.

44 Ibid.

propose *near-sovereignty* as a term the recognises the political actualities or relativity of power and control.

This condition of relatively weak near-sovereignties is exacerbated in regions like the FATA of Pakistan, Somalia and Yemen, where state sovereignty has been diminished, or no longer exists. As Kenneth Anderson has put it "there will not be "Predators over Paris, France", anymore than there will be "Predators over Paris, Texas", but Pakistan, Yemen, Somalia, and points beyond are a different story".[45] As I argue in chapter two, a context of relatively weak sovereignty is a condition for the deployment of dronological power, as I have understood it.

The concept of *occupation* relates to the question of sovereignty. If the expression *near-sovereign* helps to consider dronological power at an order of magnitude proper to the nation state and political institutions, *remote control occupation* is an expression that means to convey the technical conditions of drone operations, for instance, remote sensors, computational ontologies and technical networks.

Military occupation is an expression mobilised to extend the regulations regarding troop contact with a local population. What is expected of occupying troops who stay for a month is quite the same as when an armed group is passing through an area, even if that is not to be occupied more permanently.[46] Tracing the origins of military occupation, Eyal Benvenisti has remarked that the concept brings together two lines of thought, "the principle of humanity, which entails a distinction between combatants and civilians as legitimate targets of warfare, and the principle of nationality, inspired by the French Revolution".[47] The paradox of occupation is that, on one hand there is a reluctance to afford an occupying power legitimate authority over territory that has been taken by violence and on the other hand, the recognition that failure to give legal authority to an occupying power threatens to paralyse or otherwise adversely affect the continuation of life in those occupied areas.

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45 Anderson, 2011, p. 10.

46Roberts, 1985, p. 256.

47 Benvenisti, 2008, p. 624.

As a legal concept, occupation derives from the 1907 Hague Regulations and the 1949 Geneva Conventions.[48] Article 42 of the 1907 Hague Regulations states that: "territory is considered occupied when it is actually placed under the authority of the hostile army. The occupation extends only to the territory where such authority has been established and can be exercised".[49] Article Two of the Fourth Geneva Convention deals with the application of the treaty "in cases of partial or total occupation of the territory of a High Contracting Party, even if the said occupation meets with no armed resistance".[50]

The 1977 Geneva Protocol I, Article 1, paragraph 4 introduces the concept of self-determination, further widening the understanding of military occupation to "include armed conflicts in which peoples are fighting against colonial domination and alien occupation and against racist regimes in the exercise of their right of self-determination, as enshrined in the Charter of the United Nations and the Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations".[51]

I use the expression *remote control* occupation to describe one of the conditions that has made dronological power possible. This is the capacity to impose what I understand as a variant of military or belligerent occupation, without maintaining a ground presence within the internationally recognised boundaries of the occupied geolocation, in other words, remote control occupation is a form of military occupation that escapes this classification. Those under remote control occupation, as I will show in this thesis, experience the pervasive presence of an exterior military force that is out of reach and mostly out of sight, although not out

48 For a discussion of the origins of occupation law see Benvenisti, 2008.

49 Regulations concerning the Laws and Customs of War on Land. The Hague, 18 October 1907. Annex to the Convention: Regulations respecting the laws and customs of war on land - Section III : Military authority over the territory of the hostile state - Regulations: Art. 42.

50 Convention (IV) relative to the Protection of Civilian Persons in Time of War, Article Two, Geneva, 12 August 1949.

51 Protocol Additional To The Geneva Conventions Of 12 August 1949, And Relating To The Protection Of Victims Of International Armed Conflicts (Protocol I), Article 1, Paragraph 4, Of 8 June 1977

of earshot.[52] One consequence, is that the agents of a remote control occupation can evade legal – or other - responsibility as a belligerent occupier.

Another consequence of remote control occupation for this thesis, is that the expression serves to narrow the ambit of dronological power. Thus, a discrete drone strike is not equivalent to remote control occupation, just as an artillery strike or cross border incursion is not necessarily equivalent to military occupation. What I explore here are the consequences of sustained and pervasive drone operations that deploy ubiquitous remote sensor and munitions platforms to the extent that residents of territories like the FATA in Pakistan understand themselves to be under constant observation and threat. Indeed, as I argue in Chapter Two, the drone presence over the FATA in 2015, was so pervasive as to draw those under remote control occupation, into the drone, as a sovereign body.

Practice-based PhD

I have benefited from the opportunity to carry out this practice-based doctoral research in both theoretical and artistic registers. Doing so has allowed me to explore avenues of thought that would not have been accessible had this thesis been set within either the lexicon of a single academic discipline or solely as part of my ongoing practices. The practical element has been completed in the form of a literary novel, *Some Drones Dream Orchids*. The theoretical and the practical segments each account for half of the thesis. This is a whole in two parts – neither one being primary and both concomitant with the other in a process that, as I will shortly elaborate, is unitary. In light of this, the practical material does not feature within the portion of the thesis that is engaged with a theoretical analysis, and I have made an effort to remove theoretical jargon from the practical element.

Producing a literary work has allowed me to explore speculative areas of thought without argumentation grounded in published academic discourse. The fiction writing and concomitant poetic licence has extended the theoretical reach of the

52 "I can't sleep at night because when the drones are there . . . I hear them making that sound, that noise. The drones are all over my brain, I can't sleep. When I hear the drones making that drone sound, I just turn on the light and sit there looking at the light. Whenever the drones are hovering over us, it just makes me so scared." Interview with Saeed Yayha (anonymized name), in Islamabad, Pakistan (Mar. 9, 2012). Cited in Living Under Drones, 2012.

overall project. Thinking through fiction has been a fecund source of intuitive production. However, this is difficult to quantify and it is equally true that an *intellectual scratch pad* would not sufficiently justify half of a doctoral research project, but the impact remains.

The artistic register has been a means of generalising the claims of this thesis. I attend to the generalisability of primary claims above and in the conclusion section. For now, I will note some of the ways in which the writing of *Some Drones Dream Orchids* has been an instrument for extending the claims of a thesis, grounded in current military practice. If the theoretical element of this doctoral thesis sticks closely to military drone operations over the FATA at the time of the 2015 signature strike, this is because I wish to uncover as clearly as possible the material and conceptual fabric of those operations and how they constitute a dronological form of power.

One line of argumentation in this thesis is that the structure of remote control occupation within a networked condition entails the intensive and mutable distribution of agency across a networked infrastructure. In Chapter 1 of this thesis I elaborate the manner in which sub-network components (including drone operators) are folded into a global network structure, the global information grid (GIG). I am careful to note the participation of corporate actors in fulfilling aspects of the GIG. In the novel this is fully generalised. The distinction between military and corporate is elided. Drone operations are outsourced and located anywhere. Operators are precarious labourers, enterprises of themselves, who must pay subscriptions to access the networked labour market. The main character, Phillip Hostack, subscribes to the "Wackenhut drone". Wackenhut was a global security firm whose name has been changed to G4S, who now run diverse outsourced security services all over the world. In the novel, Wackenhut not only operates the drone that Phillip Hostack works on, they also run the prison to which he is rendered. Distinctions between private and public, corporate and military, police and military, are all rendered obsolete in the novel. It may be that such distinctions are obsolete in actuality, but that is not something that I have wanted, or been able, to argue in the theoretical component of the thesis because,

among other reasons, this is not a primary claim, nor one of the research questions.

The thesis stakes more on the claims made around the relation of the drone, to individual subjectivity. Specifically, as I have noted above: in the dronology of remote-control occupation in the FATA, the object of power is no longer the individual subject but *∂ivi∂ual* pieces, divided from the erstwhile subject by procedural data harvest and transformation. Consequentially, the human subject is elided in dronology and the object of political power is a conglomerate of data, distinct from a procedurally negligible individual. The novel speculates on the consequences of these primary claims. The dissolution of the subject – as the object of power - specified in the theoretical component, is performed in the fictional character, Phillip Hostack. We follow Hostack as he is transported through an integrated system of power and control, not really as an individual in the sense of the sovereign subject of the sovereign state, so much as a corporeal collection of data points and meta-descriptions. Hostack is traded in various pieces, first by the drone to which he subscribes, then to the carceral labour markets to which he is rendered and finally to the bubble of Vicky, the autonomous vehicle which carries him along like flotsam in a time shared life boat.

Unpacking theoretical terms like agency and volition in relation to the drone, individual subject and the political sphere does not convey the affective qualities of dronological power that I am advancing in the same manner as a work of fiction. The fictional register allows me to work through the consequences of my claims from within the embodied self of my first person protagonist. Hostack's ennui, his intelligence with neither ambition nor volition, are constructed in this work as a consequence of the claims advanced in the thesis.

The choice to work within the literary fictional register has been informed both by the ambition of the creative component's relation to the project overall, as I have described it above, and by the manner in which fiction writing facilitates the writer's immersion in the material of externalised thought. The performative act of fiction writing in the first person has been a strategic method for testing and developing material for the theoretical component of this work.

The work fits somewhere between the genres of speculative fiction, literary fiction, and slipstream fiction. The novel borrows widely from a range of influences, from Philip K. Dick to Jean Phillipe Toussaint, Thomas Pynchon and Herman Melville to Marcel Proust and Karl Ove Knausgård. I am wary of making claims around my contribution to the literary field, as this is my first foray into it. However, I have made an effort to formally experiment, mostly in the mobilisation of detail and texture, under the influence of Proust, or more recently, Karl Ove Knausgård. The use of detailed description as a texture, coupled with the frequent subversions of plot, by way of diverting the narration through anecdotal memoir, problematises the genres of speculative fiction and slipstream. Another term that might be useful is *itemisation*, introduced by Frederic Jameson to describe Knausgård's use of boringly detailed lists. Jameson critiques Knausgård's use of itemisation because of the manner in which feelings, emotions and such are not dramatized, but *itemised*.[53] Jameson writes of "the constant preoccupation with the pronouns, the 'I', 'we', 'it', a kind of 'you'", in other words the writer is obsessed with himself, the lists of feelings and of things are an itemisation of what surrounds him.[54] In this work I have mobilised techniques of itemisation, but in this case the lists, of food, of remembered bits of childhood, are strategically placed in order to foreground the disintegration of subjectivity, or the reversion to raw material from an integrated and synthesised whole.

I have hoped to create a work in which the narrative recedes from importance as the novel goes on. The anticipated effect is to dissipate expectations of agency in the protagonist. By the end Hostack is drifting on a stream of memories and fantasy, in a sense he has been *un-reasoned*, no longer attached to a source of volition.

Although I have used the term "instrument" above, to describe the artistic component in relation to the theoretical, clearly the instrumentality works both ways. Indeed, I had already been working for several years on the PhD project

53 Jameson, Frederic. "Itemised". London Review of Books, Vol. 40 No. 21 · 8 November 2018, pages 3-8.

54 Ibid.

before I began writing the novel. In order to more accurately describe the relations between these parts, artistic and theoretical components, I will use a term borrowed from the philosopher Gilbert Simondon: *recurrent causality*. The explanation of this term is tactically positioned and will lead into a discussion of the methodological problems that this research has uncovered.

One way to describe recurrent causality is with the procedures of a technical invention. Simondon does not accept the adaptationist evolutionary position in which individuation is effected by an external pressure upon the technical object or, indeed, biological organism. The organism, thesis, literary novel, or machine does not statically respond to an outside influence but is an element in the active relation that they both constitute. This kind of dynamism produces the *milieux* of an individual.[55] The term *milieu* will be explained and mobilised both further along in this introduction and in Chapter 2. Here, I will note that the milieu, after environment, designates the central position of an individual in relation to its surroundings. Thus, for every individual that comes into being, new milieux simultaneously emerge.[56] The dynamic relations of invented to inventor, or theoretical segment to practical segment and researcher, are such that each are "conditioned by the recurrence of causality thanks to which a process of integration and a process of differentiation can be unified while remaining distinct in their structures".[57]

55 Gilbert Simondon, L'individu et sa genèse physico-biologique (Paris: Presses Universitaires de France, 1964; Éditions Jérôme Millon, 1995), 132, and Gilbert Simondon, L'individuation À La Lumière Des Notions De Forme Et D'information (Paris, Éditions Jérôme Millon, 2005), 134.

56 Georges Canguilhem and Marrati-Guénoun Paola, Knowledge of Life (New York, Fordham University Press, 2008), 70.

57 Translation of "conditionnée par la récurrence de causalité grâce à laquelle un processus d'intégration et un processus de différenciation peuvent recevoir un couplage tout en restant distincts dans leurs structures." Simondon, L'individuation À La Lumière, 118.

Methodology: Orders of Magnitude

The initial problem with establishing a method for investigating the drone is that the drone, as I have approached it, is manifest across multiple scales and spectra. The drone is at once colloquially understood as: an UAV; a human subject who is understood to be lazy or ineffectual (although this description will be transformed by further analysis later in the thesis); a biological male in a colony of honey bees; *and* a central figure in the sonic register providing a stabilising role for those musical voices that might depart towards independence and return again to the baseline drone.

There is an additional scalar problem in that the military drone project in the FATA features what are described as "remote split" operations. Take off and landing are controlled by line-of-sight radio-frequency transmission, after which control is handed off to signals received and broadcast to and from a global network of satellites, effectively distributing control – of flight, sensor feeds and weapons – to any geo-location on the planet.[58] Thus, if previous iterations of the drone were reducible to a neat controlled/controller configuration, this is no longer the case with a drone that has been reticulated into a globally extensive technical network within which control and decision are dynamically distributed. It is not possible, therefore, to confine the inquiry to one or another scale or spectrum; the methodology must incorporate a logical schema that can address multiple spectra and scales, and cross between them.

Orders of magnitude is a conceptual tool developed by Simondon that allows an investigator to respect scalar specificities while allowing for object unity across scales. To begin with, an order of magnitude is a mathematical technique of approximation. A mathematician must gauge the order of magnitude within which she is working. In mathematics, an order of magnitude is a method of approximating to the power of ten. Each power of ten, or movement of a decimal point, is another order of magnitude. Thus 10 and 10^{10} are many orders of

58 For a graphical explanation of remote split operations see Alberto Cuadra and Craig Whitlock, "How Drones Are Controlled," The Washington Post, June 20, 2014, accessed September 20, 2017, http://www.washingtonpost.com/wp-srv/special/national/drone-crashes/how-drones-work. See also U.S. Department of Defense, Office of the Secretary of Defense, Unmanned Aircraft Systems Roadmap, 2005–2030 (Washington, DC, 2015), https://fas.org/irp/program/collect/uav_roadmap2005.pdf.

magnitude apart, with the latter adding ten decimal places, from 10 to 10 billion. Transposed into the calculation of physical scale, a Planck length, a string, and a quantum float, are orders of magnitude removed from a neutron and a proton. Many orders of magnitude later we could approach the order of magnitude proper to a dust mite, a grain of sand, and an LCD pixel, far removed from an order of magnitude proper to planets and continents. Some initial ontological and epistemological discussion will lay the foundations required to grasp the conceptual frame within which I have adapted and operationalised this methodology.

Simondon is perhaps best known for his "mechanology", beginning with his 1958 doctoral thesis: "On The Mode Of Existence Of Technical Objects"[59], a project in which he develops a theory of technical individualisation that I will schematise below. Simondon's theory of individuation is important to unfold here because of the way in which orders of magnitude are put in relation to the transformative operations in which individuals emerge. As I explain below, the emergence of an individual is at the same time an operation that puts previously incompatible orders of magnitude into compatibility. The *ontogenetic* operations of technical individualisation alone would merit the inclusion of Simondon's thought in a study of the military drone. However, Simondon's work is broader than an investigation into technics; his theory of individuation is complicated and enriched by an insistence that subjects cannot know individuation but can only individuate themselves. This is to say: "The individuation of the real external to the subject is grasped by the subject thanks to the analogical individuation of knowledge in the subject".[60]

In light of this *analogical method*, Simondon's thought is salient to an investigation of the technical essence of the weaponised drone and the incorporation into this analysis of the etymological migration of the term *∂rone*, as it individualises analogically with the technical individual and technical ensemble. This is to

59 Gilbert Simondon, On the Mode of Existence of Technical Objects (Paris: Aubier, Editions Montaigne, 1958), trans. Ninian Mellamphy (University of Western Ontario, 1980).

60 Translation of: "L'individuation du réel extérieur au sujet est saisie par le sujet grâce à l'individuation analogique de la connaissance dans le sujet." Simondon, L'individuation À La Lumière, 36.

respect the relations of recurrent causality between the mental operations of representation and language, and the technical development of formations that are grasped through the transduction of concepts and language. Simondon also theorises procedures of individuation in which the past and the present are understood in terms of recurrent causality, thus, conducive to the incorporation of a historical register to this investigation: "Because the past engages the present it continues to exist as a potentiality in the present. The past then animates the present which orders or organises the past. This schema of recurrent causality characteristic of individuation is continuously manifested throughout".[61]

Simondon initially positions his contribution against ontological models such as hylomorphism and atomism on the grounds that these modes of thinking organise their access to individuation by presupposing the existence of the individual. For Simondon, these approaches privilege an already constituted individual, thus running the "risk of not producing a true ontogenesis – that is, of not placing the individual into the system of reality in which the individuation occurs".[62] Simondon's project seeks to "grasp ontogenesis by the unfolding of its reality and to get to know the individual through individuation rather than individuation through the individual".[63]

The analogical approach to individuation is organised around a theory of relations in which the relation is not to be understood as a mediator between substantial terms or entities but has the ontological status of being. Against the hylomorphic mode of thinking, being must not be apprehended as substance or amalgamation of substances. Because there is no *a priori* individual or substance presupposing individuation, being appears as that which becomes through the multiplicity of relations linking with other relations.[64] This reticulating operation produces individuals and milieux – the close environment for which the individual always

61 Translation of: "Parce que le passé engage le présent, il continue à être sous forme potentielle dans ce présent qui le reprend; alors le passé anime le présent qui ordonne le passé. Ce schème de récurrence de causalité caractéristique de l'individualité se manifeste à travers tous les aspects du déroulement de cette longue entreprise." Simondon, L'individuation À La Lumière, 478.

62 Simondon, 2009, 4. See also Muriel Combes, Gilbert Simondon and the Philosophy of the Transindividual (Cambridge: MIT Press, 2013), 1.

63 Translation of: "On essaierait de saisir l'ontogénèse dans tout le déroulement de sa réalité, et de connaître l'individu à travers l'individuation plutôt que l'individuation à partir de l'individu." Simondon, L'individuation À La Lumière, 24.

64 Combes, Gilbert Simondon and the Philosophy of the Transindividual, 17.

takes up a central position: "The relation doesn't spring between two separate terms, it is rather an aspect of the internal resonance of a system of individuation".[65] Here, the term *resonance* indicates that Simondon understands individuation to be fundamentally dynamic. This dynamism is accounted for by the tensions and potentialities that are an inexhaustible feature of the pre-individual state from which individuation is sprung.

In Simondon's theory, individuation is only possible within a pre-individual *being*, characterised by a fragile condition of metastability charged with potential.[66] The paradigmatic physical analogy that Simondon provides is that of crystallisation in a super-saturated solution. For example, water that is kept as (super-cooled) liquid below its freezing point is metastable in the sense that a molecular structure similar to ice, if introduced into this system, can play the role of a seed that sets off the individuating (reticulating) process of crystallisation, turning the water to ice.[67] "Each already constituted molecular layer serves as an organizing basis for the layer currently being formed. The result is an amplifying reticular structure".[68] The pre-individual state is "more-than-one", that is to say: being is not singular but simultaneous, a meta-stable condition imbued with potential. Unity appears within being as the individual and its correlate, the milieu.[69]

This is the point at which the concept of orders of magnitude enters into Simondon's theory. The emergence of an individual from the pre-individual state is at the same time the resolution of incompatibilities between orders of magnitude. Muriel Combes provides the example of the individuation of a plant that, in processes of photosynthesis, "establishes communication between a cosmic order (that to which the energy of light belongs) and an infra-molecular order (that of mineral salts, oxygen, etc.)".[70] The emergence of the plant, as an individual mediating previously incompatible orders of magnitude, is accompanied by the

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65 Translation of: "La relation ne jaillit pas entre deux termes qui seraient déjà des individus ; elle est un aspect de la résonance interne d'un système d'individuation." Simondon, L'individuation À La Lumière, 29.

66 "A physical system is said to be in metastable equilibrium (or false equilibrium) when the least modification of system parameters (pressure, temperature, etc.) suffices to break its equilibrium." Combes, Gilbert Simondon and the Philosophy of the Transindividual, 3.

67 Simondon, 2009, 6.

68 Ibid, p. 11.

69 Ibid, p. 317.

70 Combes, Gilbert Simondon and the Philosophy of the Transindividual, 4.

simultaneous emergence of a milieu at the same order of magnitude. For the plant, this is the soil and the immediate environment.[71]

For Simondon's paradigmatic example of crystallisation in a super-saturated solution, characterised by the meta-stability of the pre-individual condition (introduced above), a *singularity* occurs when a limit condition is met. The singularity is information (in-formation) that propagates within the medium of the individual crystal formed – an individual that possesses the stability for successful communication between the two previously incompatible orders of magnitude: the micro scale of atoms and that of global properties, geometrical, mechanical, electrical, etc. The individual puts these orders of magnitude into compatibility, where "The true principle of individuation is mediation – assuming a duality of orders of magnitude and the initial absence of communication between them, followed [after individuation] by communication between orders of magnitude and stabilisation".[72]

Simondon derived his understanding of orders of magnitude from the work of Gaston Bachelard.[73] For Bachelard, there are two important consequences of orders of magnitude as a scientific method. Firstly, the concept of orders of magnitude recognises that a certain scale is irreducible to another, which is to refuse the common-sense notion of proportionality: "The pre-scientific mind is guilty of a similar confusion when it fails to recognise realities of scale. It transfers the same experimental judgements from the small to the large and from the large to the small. It resists the pluralism of magnitudes that is however essential to a reflective empiricism, despite the attraction of the simple ideas of proportionality".[74]

Secondly, this approach to orders of magnitude implies an acknowledgement of the limits of knowledge. Because an order of magnitude is always only an

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71 Ibid.

72 Translation of: "Le véritable principe d'individuation est médiation, supposant généralement dualité originelle des ordres de grandeur et absence initiale de communication interactive entre eux, puis communication entre ordres de grandeur et stabilisation". Simondon, L'individuation À La Lumière, 27.

73 Yuk Hui, On the Existence of Digital Objects (Minneapolis: University of Minnesota Press, 2016), 29.

74 Gaston Bachelard, The Formation of the Scientific Mind: A Contribution to a Psychoanalysis of Objective Knowledge," ed. and trans. Mary McAllester Jones (Manchester: Climamen, 2002), 222.

approximation, Bachelard uses the term to show that each investigative insertion can only be made at a single order of magnitude, performed with instruments proper to that order of magnitude. Thus, selecting phenomena at specific orders of magnitude implies neglecting all other orders of magnitude. For Bachelard, this demonstrates that the conditions of knowing are simultaneously the conditions of neglecting. In short, we can know only in proportion to what we neglect.[75]

Investigating the drone through the methodological analysis of orders of magnitude implies, first of all, orienting the investigation through the processes and operations of the drone's individuation writ large. The methodology forces the recognition of the drone as plural across orders of magnitude. This approach has facilitated narrowing the ambit of the investigation and aims to redress the deficit in the current discussion in at least two ways. Firstly, the drone, as an individual, is attended to through elaboration of the operations by which this individual emerges rather than through the presupposed and substantiated individual. Secondly, the investigation attends to the drone as an individual that is plural across diverse orders of magnitude.

Thesis Structure

The thesis is framed by two structuring devices: the etymological migration of the drone and a 2015 signature strike in the FATA of Pakistan. Tracing the etymological transformations elicits a consideration of the historical individuation of the drone, in particular, the migration from a term that denotes a human subject to one that now signals a technical object or ensemble. The 2015 signature strike in the FATA is evoked as exemplary of the current drone – a technical ensemble that emerged from historical etymology. By framing the thesis with two concurrent structuring devices, I demonstrate the ways the drone has been historically, operationally, and theoretically transformed, reticulated and amplified as a political configuration of agency and sovereign power in relation to subjectivity and reason.

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75 Ibid.

Chapter 1 contextualises the emergence of the contemporary drone within the technical and epistemological milieu of a global military and commercial endeavour of long-distance control. The chapter is framed by a discussion of how the term drone migrated from the domain of the human subject to that of the technical object in the 1930s. Against this configuration of controlled to controller, I deploy the example of a signature strike in FATA, said to have occurred in 2015. I demonstrate that the drone of 2015 is irreducible to that of the 1930s, now operating across different orders of magnitude. This initial framing sets the scene for approaching the drone through descending orders of magnitude: the globe, the network, the expedition and, finally, an examination of the epistemology proper to the drone *qua* drone, dronology. Against current prevailing claims in discussion of the drone, I argue that the object of the drone's epistemology is not the individual subject but the dividual pieces that are divided from it. As such, the drone constitutes a remote-control occupation, oriented towards the orders of magnitude accessible to remote sensors, data-mining, and machine learning.

Chapter 2 takes up the question of how dronology, established in Chapter 1, might be understood to be deployed at the orders of magnitude proper to the sovereign state, interstate "system", and the sovereign subject. In light of the epistemology described in Chapter 1, the spatiality of sovereignty is revisited. The drone ensemble operating in the FATA in 2015 is argued to be a near-sovereign capable of exerting a coercive force, oriented both internally and externally within an exterior milieu, conditioned by a general distribution of sovereignty. Structurally, the establishment of the drone ensemble as a near-sovereign is partitioned into an analysis of the drone's interior and exterior milieux. In light of the central position of Chapter 2 and the way in which the etymological discussion here suggests a historical relation of the drone to the sovereign subject, I have positioned the etymological framing device between these two parts. The etymology structurally connects this chapter's discussion of a political interior and exterior but is also set as a hinge joining the drone to the sovereign subject and thus the concerns of the first three chapters. The first section of Chapter 2 explores how space can be understood when considering a drone ensemble distributed across a global network topology, yet operational within the territorial bounds of the FATA. Here, I attend to both the extension of near-sovereignty to residents of the FATA

and to those who are normally considered to be "operators". The second part of the chapter attends to the exterior milieu of the drone. Initially, I show how the relatively weak sovereign conditions of the FATA have been conducive to the ontogenetic procedures of the drone, as a near-sovereign. The later parts of the chapter contextualise these conditions within a discussion of Carl Schmitt's theorisation around geo-political order and the weaknesses and dangers he identified in the move from a Eurocentric world order grounded in a concrete spatial understanding, to a liberal one led by the United States oriented around economic and universal concepts such as "freedom" and "humanity".

Chapter 3 develops the political consequences of the technical and epistemological claims of Chapter 1, and the geo-political topologies discussed in Chapter 2. The chapter is framed by a discussion of the sonic and musical registers of the drone's etymology and more specifically, the role of the musical drone (*bourdon*) as a central figure from which independent voices may depart. This sets up an initial discussion of political configurations (Arendt); in particular, the manner in which orders of magnitude proper to the plurality and the individual are said to be in relation to speech and action. I follow this by discussing Michel Foucault's theory of biopower and the extension of his theory by Giorgio Agamben. In a heterodox reading of Aristotle, I examine the concept of *logos*. I argue that while humans are understood to contain within them a capacity to hold *logos* and translate it into action, this is, however, not unique to the human. Consequentially, I examine the technological rationality that organises dronology to suggest that, with the drone, non-human ensembles now share the capacity to contain *logos* and translate it into action. Following Agamben, if the biopolitical mode of power is said to require a body as a prerequisite for the force of law, the subject body then is no longer a condition for the rationality operationalised by the drone ensemble. For the drone, the body lingers on as an after-thought, the hypothetical operational basis for drone reason.

The thesis is structured by the chapters described above to track the themes of technics and politics as they are brought together in the novel formations of dronological power. This sequence is important in building up the argumentation necessary to justify the primary claims. In the narrative structure, I take into

consideration the manner in which technics and epistemologies of power inform and are informed by political configurations and jurisprudence. While the circular scheme of recurrent causality is respected, proposing the drone as a near-sovereign necessitates building the technical and epistemic grounds for this proposition. Chapter 3 develops and extends the political consequences of the drone by synthesising the technical and epistemological claims of Chapter 1 with the geo-strategic formations of Chapter 2. This narrative structure thus enables me to propose by the end of the thesis that – after the drone – politics is transformed as the sphere of human action.

Chapter One: Drone Technics

This chapter contextualises the contemporary drone within the technical and epistemological scaffolding of a military and commercial structure organised at the global scale. The migration of the term *∂rone* from denoting a human subject to denoting a technical object is tracked from the early 20th-century development of wireless control to the current drone. As such, the 20th-century drone is shown to have been reticulated and amplified with the technical network, sensors, and computing. By the end of the chapter I will have shown that the current drone, while in a relation of recurrent causality with its internal and associated milieux, projects an epistemological force specific to it. Moreover, if the migration of the 20th-century drone retained the scalar configuration of its predecessors, the current drone operates across different orders of magnitude.

I place the drone within a historical condition of globalisation. The current global infrastructure, within which the drone is positioned, has a linear relation to historical forms of control-at-a-distance. I show here that, while there is a line of descent in the global context, the affordances of network reticulation reconfigure the agentic attributes of the project. The technical and epistemological attributes of the drone are shown to derive from its expeditionary contingencies and the associated milieu of a globally oriented military scaffold. Dronology addresses the drone as a producer of actionable knowledge. The epistemological force of the drone is understood as deriving from the conjunction of remotely controlled platforms, technical networks, sensors, machine learning, and data-mining procedures. The recurrent causality between the doctrines and technics of intelligence production is shown as one reason why the drone is no longer oriented to the order of magnitude proper to the individual but to the dividual.[76]

Phillip Agre has distinguished two models of privacy in relation to institutional projects of observation. These are *surveillance* and *capture*. In Chapter 2, I will develop Agre's contribution as it relates to the manner in which the drone extends

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76 Antoine Bousquet's The Scientific Way of Warfare: Order and Chaos on The Battlefields of Modernity (New York: Columbia U Press, 2009) has set a precedent in attending to the imbrication of military and scientific epistemologies. As will become clear below, this chapter seeks to build upon and extend Bousquet's foundational work.

its particular spatiality as a form of "body-politic". Here, I will introduce the distinction and how I have integrated the capture model into the lexicon of this thesis. Agre argues that the surveillance model is dominant but outdated. Surveillance relies upon visual metaphors and "derives from historical experiences of secret police surveillance".[77] Examples of visual metaphors are the all seeing eye of "Big Brother", the CCTV camera lens, or Bentham's panopticon. Agre argues that the capture model of privacy is more pertinent for the current modes of monitoring and supervision that involve computing.[78] Rather than a visual metaphor, capture mobilises linguistic metaphors such as "tracking". This is metaphorical because of the way that computing relies upon representational states and models.

One consequence of acknowledging Agre's capture model over surveillance is that the notion of *∂ata* can be re-considered. Data is a term that derives from the latin *∂atum*, or that which is given. Indeed, the English word data is translated into the French *les ∂onnées,* the given. Johanna Drucker has argued that data must be reconceived as *capta*, recognising that such material is actively taken, not assumed to be somewhat naturally given; "From this distinction, a world of differences arises. Humanistic inquiry acknowledges the situated, partial, and constitutive character of knowledge production, the recognition that knowledge is constructed, taken, not simply given as a natural representation of pre-existing fact".[79] In this thesis I have used the term "capta" over data for instances in which data is clearly taken or captured. Where the use of data is more neutral – for example when describing data-entry tasks – I have kept the term.

Structurally, this chapter is organised as a series of steps that move closer towards what is most specific to the drone: its epistemological force or *∂ronology*.

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77 Philip E. Agre, "Surveillance and Capture: Two Models of Privacy," The Information Society 10, no. 2 (1994): 101.

78 Mark Coté has highlighted the origins of metadata schemes in library and information sciences, suggesting a fundamental disjunction between the cold war surveillance practices of the STASI, and those currently employed by the NSA and GCHQ. See "Bulk Surveillance, or the Elegant Technicalities of Metadata," in Cold War Legacies: Systems, Theory, Aesthetics, ed. John Beck and Ryan Bishop (Edinburgh: Edinburgh University Press, 2016).

79 Johanna Drucker, "Humanities Approaches to Graphical Display," Digital Humanities Quarterly 5, no. 1 (2005), digitalhumanities.org/dhq/vol/5/1/000091/000091.html.

Migration of The Drone: The 20th to the 21st Century

> Be it known that I, NIKOLA TESLA, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful improvements in methods of and apparatus for controlling from a distance the operation of the propelling engines, the steering apparatus, and other mechanism carried by moving bodies or floating vessels, of which the following is a specification…[80]

In this section I show how in the 20th century the term drone migrated from the human subject to the technical object. The order of magnitude of the previous drone, a human subject within a technical milieu, is shown to maintain its scalar configuration during the migration of the term to denote a technical object also set within a technical milieu. Examining the 2015 signature strike at Wacha Dara in the FATA, one can see that by the 21st century, scalar continuity is no longer maintained. This transformation of magnitude, brought about by new technical ensembles drawn into the drone at the beginning of the 21st century, is important to establish in this chapter, as the suggestion underpins discussions that are crucial to the chapters that follow.

Perhaps the first modern attempt at remote control was undertaken by Nikola Tesla, whose plans considered the remote control of boats via electrical currents transmitted through the ground itself. However, patents filed in the first decades of the 20th century make it clear that modulated sine waves transmitted via radio became the normal means by which to experiment with control-at-a-distance.[81]

In wireless terms, the coding of a message onto a wave is called modulation. For example, networked digital communications transmitted over telephone lines require a modem ("mo-dem" is an abbreviation for modulator-demodulator). A modem is capable of both encoding or modulating a message onto a carrier-wave output and decoding or demodulating a carrier-wave input. In the early days of

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80 Nikola Tesla, Patent US 613809 A, filed July 1898.

81 See http://www.google.com/patents/US1766524 and http://www.google.com/patents/US2293166v64GABQ&ved=0CB8Q6AEwAA.

wireless control, resonant reeds of machined metal were used as demodulators, by which radio messages could be decoded once received. At the United States Naval Research Laboratory in the 1920s, the reed apparatus was mounted upon an "electric dog": a small cart with three wheels that was extensively used for testing the wireless control mechanism.[82]

Resonant reeds resemble a finer, more fragile, version of the tines of a tuning fork. Each reed is machined so that the modulated frequency of a wave causes a corresponding reed to resonate when a sine wave reaches the receiver. The vibrations allow an electrical contact to be made, triggering an actuator. In a working resonant reed array, only one reed will vibrate for any given frequency, the others being tuned to different frequencies. A radio transmitter might send out a sine wave, the frequency of which is modulated in a technique called frequency-shift keying (FSK). In FSK the sine wave is coded or modulated by the structured patterning of transmitted frequencies and demodulated by the reed receiver. The vibration of the reeds as they receive their coded message results in a warbling, drone sound.[83] Each control function (left, right, reverse, straight ahead) has its specific frequency. In this sense, the remote control of an object is melodic.

Teams of scientists and engineers transmitted sine waves of various frequencies over radio to the electric dog connected by nothing other than air. With the turn of a dial, the cart laden with vacuum tubes began to emit a warbling, droning sound, as the corresponding reeds vibrated at a high intensity. The vibrating reed array of the electric dog exhibited a conjunction of both the sonic and political registers of the drone. During the course of these experiments, someone began to use the term drone to describe the remotely controlled object.

At the time of these initial experiments with the electric dog, the term drone was regularly used to refer to a specific kind of citizen who, although qualified for political participation, is undeserving of such a qualification. This was not a

82 Hoyt Taylor, 1948.

83 A US patent from 1939 explicitly details the functioning of reed receivers as I have described it: "I claim as my invention: In a radio remote control system, a manually portable remote control unit (...) including a plurality of tuned vibratory reed elements each responsive to a different audio frequency." US 2293166 A, Harry F. Olson, "Radio Remote Control System," 1939.

specialist or academic term but widespread within general discourse. Colloquial usage of the term took on a distinct hue depending upon the tactical desires of the author. Thus, in his 1894 polemic against recently emancipated African-American citizens of the South, George F. Milton could plead for "foreign or Northern white immigration to replace this drone-like population, which saps the productive energies of the Section".[84] In 1918, just a few years before the electric dog was responding to remote commands, E. W. Morphy demanded that violin teachers "arouse the drone" in their students in order "to get control of his life forces and apply them to his study of music or leave the field for those who are willing".[85] Writing just a year later, M.H. Temple portrays the drone as a bumbling – albeit privileged – pleasure-seeking male, unjustly treated by a brutal, utilitarian and cruel Bolshevik matriarchy: "To the Bolshevik bees, the drones represent the idle rich, the leisured class, and being much more logical, and one might add more intelligent Socialists than their human counterparts, they make such use of this class as they can before applying to it the more conspicuously Bolshevik principles".[86] Those principles refer to the fate of all successful drones, which is to die. While these bits of discourse might seem wildly disparate, what the discursive field around the term *drone* shares is the context of liberal political economy. This is fully developed in chapter two, but it is important to mention it here.

In light of this discursive context, it is not difficult to understand how a visually independent object, while remotely controlled, might generate the ambivalence required for a historic migration of the term from exclusively human subject to a technical ensemble that has drawn in new qualities. The term drone had historically referred to a human subject who, although seemingly individuated and independent, nonetheless was understood to be animated by an external source of volition.

By using this expression, *source of volition*, I do not suggest that it is possible to identify a human being's source of volition. I refer to perceptions of autonomy in human subjects within the discourses around liberal political economy in the early

84 George F. Milton, "The Material Advancement of the Negro," The Sewanee Review 3, no. 1 (1894): 37–47.

85 E.W. Morphy, "Violin Teaching in Its Relation to the Organization of Civic Orchestras," The Musical Quarterly 4, no. 1 (1918): 50–60.

86 M.H. Temple, "The Bolshevik Bee," The Lotus Magazine 10, No. 2 (1919): 56–60.

modern and modern era, that mobilise the figure of the drone. As I have mentioned above, this is developed further throughout and particularly in chapter two.

The political register of the drone was accompanied by its parallel, yet distinct, presence in the discourse of classical music. In the musical register, the drone (*bourdon* in French) is understood as the dominant voicing against which subsidiary voices might depart and return in relative independence. In the musical sense of the term, the drone is the rule from which a voice might gain independence. This sonic drone supposes the relation of independence to the rule; that is to say, before the possibility of independence, dependency must be firmly established. The drone's musical etymology will be attended to in greater depth over the course of the following chapters; however, the distinction between the political register of the term and the musical reveals how the term has operated over diverse domains. Recalling Jacques Attali's sometimes overheated statements around the relation of music to politics and political economy, the scalar breadth of the drone spans temporal as well as spatial registers. In his 1985 *Noise: The Political Economy of Music*,[87] Attali repeatedly suggests that music is a herald of configurations to come. Music of an epoch is ahead of that moment's political conditions. Moreover, music "heralds the emergence of a formidable subversion, one leading to a radically new organisation never yet theorised".[88]

In the 20th-century migration from the human subject to a technical object, the scalar configuration is intact. Like the folding of a möbius strip, the drone twists from an individual human subject, foregrounded against a technical milieu – the political economy – to a technical object, stood against the ground of the technical apparatus that controls it. In both cases, the source of volition is perceived, but veiled by the discerned visual unity of the drone as an individuated entity. What is important here is the configuration of agency. In the examples given above from the early 20th and late 19th centuries, the drone is activated by an associated technical milieu within which agency is addressable. This might be the agentic

87 Jacques Attali, Noise: The Political Economy of Music, trans. Brian Massumi (Minneapolis: U of Minnesota Press, 1985).
88 Ibid., 5.

properties of wealth by which the idle rich drones' own drive is suppressed. It might refer to a mechanistic racial biologism that Milton believes to drive African-Americans of the South to sloth.

At first glance, this is also the configuration of the 21st-century drone. The remotely controlled UAV is operated by personnel stationed across the globe. The missiles fired by this UAV are initially actuated from a remote location. Yet, the orders of magnitude seemingly remain as they were historically established for the drone: a remotely controlled object configured in relation to its technical milieu. What the signature strike at Wacha Dara begins to reveal, from the confused moment of its announcement, is that this configuration has in fact not remained static throughout the drone's historical legacy.

While the Wacha Dara strike had occurred on January 15, 2015, the White House announcement was only made on April 23 of that year.[89]This may partly be accounted for by the confusion generated from evidence that an American and Italian citizen had been killed in error. However, the announcement itself – not only the President's initial commentary but the careful language of the press briefing that followed – begins to reveal the manner in which the drone has transformed. When asked whom had been targeted in the drone strike, the press secretary first refuses to use the term "strike"; rather, he mobilises the word "operation". This was, he said, a lengthy operation during which a compound came to be targeted. There is no mention of empirical evidence of any kind to support the targeting; the target had been created against, what the press secretary termed, a "near certainty standard".[90] This ambiguous language is an indication that, by 2015, the drone can no longer be contained by the discourse that I have described above. In his April 23 press briefing, Josh Earnest lets slip the fact that there is no address at which the decision taken might be located. While the White House is quick to claim responsibility, it is clear that this is an *a-posteriori* claim. The reason that this is so is because 21st-century drone agency can no longer be located at a stable or fixed addressed. The drone of 2015 is not

89 U.S. Office of the Press Secretary, Press Briefing by Press Secretary Josh Earnest, Washington, D.C., April 23, 2015, https://obamawhitehouse.archives.gov/the-press-office/2015/04/23/press-briefing-press-secretary-josh-earnest-4232015.

90 Ibid.

readily reducible to the drone of the 1920s and 1930s. In this chapter, I unpack the conditions in which agency is distributed, mutable, and concentrated across the technical ensemble that is the current drone.

Globe

> The only one who could gain power over the Earth as a whole would be someone who was in a position to approach it from outside.[91]

> The affair between occidental reason and the world-whole unfolded and exhausted itself in the sign of the geometrically perfect round form, which we still label with the Greek "sphere", and even more widely the Roman "globe".[92]

To begin attending to the significant transformation of the drone revealed in the signature strike at Wacha Dara, it is necessary to contextualise the current drone ensemble within the historical processes of globalisation. This section establishes the globe not only as an artefact that accounts for the fact of existence on a planet but as a device and concept by which the relative understanding of any given location gives rise to historical forms of speculation, risk, and futurity that continue to drive predictive projects, of which the drone is one. It is shown that the technical and epistemological framework of the drone presupposes a global concept generally, and the ambition of a *concept* of globalisation more specifically, as that term relates to the ways in which action, knowledge, and power are instrumentalised.

The globe that I initially refer to is the spherical object that, from around the 15th century, adorned the sitting rooms of the wealthy and powerful.[93] Although globes had been constructed by the ancient Greeks, circumstances, including the affordances of technical development in such fields as horology, cartography, astronomy, and geography, thrust early modern Europeans into an inventor/invented relation with these technical objects.[94]

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91 Hans Blumenberg, The Genesis of the Copernican World (Cambridge: MIT Press, 2000).

92 Peter Sloterdijk, Spheres. Vol. 2: Globes: Macrospherology. New York: Semiotext(e), 2014, p. 45.

93 Peter Sloterdijk, In the World Interior of Capital: For a Philosophical Theory of Globalization, trans. Wieland Hoban (Cambridge, UK: Polity, 2015), 46.

94 Ibid., 476, 452.

As with other technical objects, the globe features a recurrent causality between its internal coherence – the relation of its interior elements – and its associated milieu, which includes those who produce the objects.[95] Externally imposed elements entered into a globe – knowledge of cartography, astronomy, and mathematics, for example – become conditioned by limitations and affordances revealed as the technical object begin to take shape.[96] For example, the size of a globe limits the quantity of geo-references that are possible to inscribe legibly. In addition, the sphere must be more perfect than the planetary shape. Such factors, and more, condition the globe that is produced, which, in turn, conditions the globe's associated milieu, including, again, those who are constructing and inventing this object. One result of this recurrent causality has been the development, from the early-modern era, of a specific kind of globalised thought; quite literally, the possibility of mentally projecting globally oriented action, projecting oneself, or others, across a spatio-temporal representation of the planet. Peter Sloterdijk's work on the globe and globalisation is particularly salient, as his writing places the globe at the centre of modernity. Sloterdijk refers to globes and maps as "the media memory of the age of discovery".[97] Here, I will briefly do an exegesis of Sloterdijk's theory. One additional reason why this theory matters to this thesis is in the way that Sloterdijk operationalises the globe and the map. These are not simply static artefacts but dynamic engines for what he refers to as disinhibition.[98]

On the one hand, the map is important to operational power; on the other, the globe is necessary for the strategic imagining that thinks the operation.[99] Sloterdijk writes: "Sovereignty belongs to the one who decides on flattening. Only that which can be successfully stripped of one dimension can be conquered".[100] The

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95 "Technical objects which in their liaison with the natural world put into play what is essentially a recurrent causality must be invented rather than developed in stages, because such objects are the cause of their own condition of functioning. Such objects are viable only if the problem is resolved; that is to say, only if they exist along with their associated milieu". Simondon, On the Mode of Existence of Technical Objects, 50.

96 Jeremy Black, Maps and Politics (Picturing History) (Reaktion Books Ltd., 2000).

97 Sloterdijk, In the World Interior of Capital, 107.

98 Disinhibition is a fundamental concept in Sloterdijk's lexicon: "The concept of disinhibition, without which no convincing theory of modernity is possible, gathers together the motives that drive us to intervene in the imperfect and disagreeable". Ibid., 19.

99 On cartography and power see Black, Maps and Politics, 2000.

100 Sloterdijk, In the World Interior of Capital, 101.

globe and the rectangular map, distorted from its sphere onto a supporting surface like paper or a screen, mediate the domain of the cosmological with those of the human psyche and collective.

Globalisation, for Sloterdijk, is not a new phenomenon that has suddenly emerged following the fall of the Soviet Union or the spread and the maturation of technical networks. Rather, globalisation is equivalent to the world history of occidental culture from the ancients to the present. This can be understood in the verb *to globalise*, that is, the projection along vectors produced by metrological inscription.[101] The globe is a locus for the development of capabilities, organising logics, mental conditions, and the disinhibition required for launching expeditions. Sloterdijk asserts three iterations of globalisation roughly outlined below. The second and third iterations of the globe and globalisation will be attended to in detail throughout this dissertation.

The first is the globe of the ancients within a cosmos or heavenly sphere. The earth, in its initial globalisation, is a complicated and ugly place, while the cosmos around it reeks of the perfection borne from distance. One ascends from the earth to the heavens. This primary globe exists only as a space of imagination, the projection of a cosmological order that always had its reciprocal effects: the up-there called upon by the down-here as an organising logic for the disinhibition that action demands.[102]

The second globe corresponds to the emergence of modernity in the 15th to 16th centuries with the development of long-distance control.[103] This globe was a military and commercial technical system that injected into human minds the disinhibiting doctrine of chance and time travel. This globalising drew the future to the present, the layering of which produced a cartography of speculation, the transformation of distant shores into unseen spoils and riches. In real terms,

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101 Ibid., 8.

102 Sloterdijk, Globes, 2014, p. 48-67.

103 Ibid, p. 772. See also Sloterdijk, In the World Interior of Capital. While Globes ,Volume II of the Spheres Trilogy emphasizes the aesthetic aspects of the globe and globalization, The World Interior of Capital is concerned more directly upon the globe as a disinhibition device.

capital was invested into expeditions of pillage and plunder in the expectation of revenue or return.

This is the case for the initial development of technics necessary for global expeditions but, as well, for the financing of expeditions proper. Another effect of the modern globe derived from advancements in cartography, beginning with the Iberian navigators of the 15th century. The improved metrology partitioned the globe into equivalent parts with continuous, mathematically calculated lines and points. This metrology of the globe, combined with the printing press, produced the possibility of widespread globetrotting, both real and imagined.

The third iteration of globalisation corresponds to the digital: Google Earth and Google Maps, for example. Like the modern globe, the globe of the present is an abstract dream machine for countless wanderings and time-travel adventures – from holiday planning, real estate purchase, land-use zoning, and many other ways that cartographic knowledge infects plans. The present globalisation realises the promise inherent in the thought possibility of the modern globe, with the near-instantaneous transfer of digital communications from one part of the planet to another. If modern and early modern expedition necessitated various degrees of patience for invested capital return – or *revenue* –present globalisation features the restless speculative timelines in near real-time mapping. Technical networks, in combination with sensors and ubiquitous computing, produce a new kind of space and time, characteristic of this present globe. The modulations of spatial and temporal continua, both within computational ontologies and culturally, afford a continuous remapping, reconfiguration, and thus a re-ordering of the globe.[104]

The signature strike at Wacha Dara evidences a globally extensive system of control-at-a-distance. In order to properly attend to this global assemblage, explication of the globe and its active form – globalisation – is necessary. Following Sloterdijk, the globe as a disinhibiting device has been under development for millennia, with identifiable maturations in the early-modern era

104 See Celia Lury, Luciana Parisi, and Tiziana Terranova, "Introduction: The Becoming Topological of Culture," Theory, Culture & Society Journal 29, no. 4/5 (2012): 3–35, developed in greater detail later in this chapter.

of metrological partition and currently with technical networks, remote sensing, and computing. The drone as it is found in 2015 is contextualised within this current iteration of the globe and globalisation.

Early Modern Technics of Long-Distance Control

Before describing the ways in which mil-com currently globalises and how the drone fits into this overall scheme, I discuss the historical legacy of control-at-a-distance, framing the current drone in the context of a historical projection of power. One of the ways in which the current drone is distinguished from its historical predecessors is in the channelling of agency.

Mil-com drone projects of control-at-a-distance share a legacy with the sea-faring navigational projects of the early modern era that opened up the grand European imperial and colonial enterprises. The circumnavigation of the globe and the subsequent organising of global space as a grid of metrological equivalence produced the material conditions for oceanic expansion. However, at least of equal importance was the operation on the European mind announcing the novel possibility of grasping space as rational equivalence, what Peter Sloterdijk terms *location-space*.[105] Sloterdijk understands location-space as distinct from *direction-spatiality* in which, for example, the West can be understood as the direction of the sunset.[106] Sloterdijk suggests that with the discovery of the Americas, direction-spatiality gave way to a "geometricization of European behaviour in a globalised locational space".[107] Thus, the advent of departures in the western direction of the Americas began a process of *westernisation* that, unbound by directional limitation, is termed *globalisation.*[108] This mental globalising already constitutes a nascent form of long-distance control.

105 Sloterdijk, In the World Interior of Capital, 35.

106 Ibid., 34, 35.

107 Ibid.

108 Ibid.

Envelopes of durable mobility

Both the current drone and the early modern trans-oceanic expeditions necessarily feature the capability of maintaining an operational sphere, within which the internal milieu of the expedition is resistant to dis-individuation and dispersal into the external milieux. The manner in which this protective sphere is configured distinguishes the current drone from its historical legacy of distance control. While early modern expeditions had been made possible by the internalisation of knowledge and technics of orientation within the boat or fleet, one way that the current drone is distinct from its historical predecessor is that the knowledge and technics of orientation are fed into the expeditionary vehicle remotely. If agency had once been located at the order of magnitude proper to an expeditionary vehicle, with the drone this is no longer the case.

For the early modern Europeans, a precondition for overseas expansion was the development of capabilities, navigational and otherwise, that permitted the ship or flotilla to maintain internal coherence and integrity; what John Law referred to as an *envelope of durable mobility*, enabling floating islands of sovereignty to perform action at the imperial periphery.[109] Law investigates the 15th and 16th century *Carreira Da Inde*: Portuguese armadas making annual voyages between Lisbon and coastal India. While there are other and older examples of trans-oceanic expeditions, the early modern Portuguese armadas are well documented as a large-scale technical effort, initiated by the sovereign (King John II). In addition, Law's analysis provides salient grounds for including the Carreira Da Inde here as an example of control-at-a-distance, against which the current drone expeditions may be distinguished.

In this case, the technical ensemble of the Carreira Da Inde was irreducible to the boat – known as a carrack – alone, as the successful and repeatable voyage required the drawing together of disparate technical objects within the Carreira's internal milieu. Part of this technical achievement resulted from the work of an expert commission, assembled by King John II of Portugal.[110] Among the

109 John Law, "On the Methods of Long-Distance Control: Vessels, Navigation and the Portuguese Route to India," The Sociological Review 32, no. 1 (May 1984), 234-63.

110 Ibid., 243.

technical objects that this commission produced were multifarious charts and tables, reduced into a simplified form to allow for the relatively uneducated crew who, although drilled in the use of such objects, were far from cosmographers. These objects distilled not only many thousands of calculations and years of astronomical experience, but were also, in effect, surrogate cosmographers. Each carrack in the fleet now berthed a mobile and simplified version of famous navigators like Jose Vizinho and Abraham Zacuto.[111] Law writes: "Mobility, durability, capacity to exert force, ability to return – these seem to be indispensable if remote control is to be attempted. Indeed, they may be seen as specifications of a yet more general requirement: that there be no degeneration in communication between centre and periphery".[112]

Another thing that distinguishes the Carreira Da Inde from the current drone ensemble is the manner in which relatively noise-free communication is maintained. For the Portuguese armadas, the reduction of noise entailed what Law refers to as the *three d's*: documents, devices, and drilled people.[113] The pulling together of bodies of knowledge into simplified and portable formats endowed the Carreira, as a mobile sovereignty, with the internal coherence to form envelopes of durable mobility – spheres that might return relatively intact. The force of the Carreira's internal and associated milieux were such that external milieux, such as the ocean and India itself, were held off. However, the distillation of knowledge and sovereign power into the Carreira Da Inde necessitated the endowment of agency. Herein lies the key distinction that I have mentioned above between the early modern techniques of distance control, such as the Carreira Da Inde, and the current drone expeditions.

Both the handing over of agency, to the point of action, and the local entanglements of the sovereign are unnecessary in the functional projection of distance control across distributed technical networks. I will establish this in detail later in this chapter. In contrast to historical precedents – such as the Portuguese armadas – with the drone sovereign, power can be exercised at the periphery

111 Ibid., 254.

112 Ibid., 239.

113 Ibid., 246.

while agency need not be located at the point of action. Agency, with the drone, is mutable and mobile in its concentration.

The Carreira Da Inde provides an early modern example of successful control-at-a-distance. John Law's work has demonstrated the historical construction of envelopes of durable mobility, sufficient to maintain an internal milieux and resistant to external milieux, both physical and cultural. However, one result of the development of the early modern envelope of durable mobility was the necessary conferring of agency upon the flotilla and the sovereign agents who commanded it. As I will now show, this is not the case for the current drone.

The Global Information Grid

While the UAV is controlled wirelessly, the force of globally networked power projection requires a globally extensive infrastructure. I will begin to describe the technical envelope within which the drone is folded. This is necessary to establish for several reasons. One is the manner in which the drone is in a developmental relation – recurrent causality – to its associated milieux, material, and epistemological. Another reason is the necessity of tracing the external and associated milieux as a means of eventually establishing the contours and limits of the drone *qua* drone, as it is currently instantiated.

Mil-com operates a network architecture known as the Global Information Grid (GIG). The GIG is an internet-like set of standards and protocols that encompasses a wide array of projects and partners, rendered compatible by a "globally interconnected, end-to-end set of information capabilities, associated processes, and personnel for collecting, processing, storing, disseminating, and managing information".[114] Below, I attend to the scale of this endeavour.

In 2010, *The Washington Post* published the results of a two-year investigation into what it called a "Top Secret America hidden from public view".[115] The findings catalogued 1,271 government organisations and 1,931 private companies in 10,000

114 U.S. Government Accountability Office, Defence Acquisitions: The Global Information Grid and Challenges Facing Its Implementation, Washington, D.C.: U.S. Government Accountability Office, July 28, 2004, Accessed September 20, 2017, http://www.gao.gov/products/GAO-04-858.

115 Dana Priest and William M. Arkin, "Top Secret America: A Washington Post Investigation," The Washington Post, 2017, Accessed September 30, 2017, http://projects.washingtonpost.com/top-secret-america/.

locations across the United States working on programmes related to counter-terrorism, homeland security, and intelligence. The Department of Defense is estimated to pay the salaries of 3.1 million employees, military and civilian. This does not include more than 600,000 estimated to be employed directly by defence contractors.[116] According to the *Post's* investigation, 854,000 government and private-sector employees held top-secret security clearances in 2010. In the Department of Defense, only a small group of super-users has access to a full catalogue of secret programmes. As one super-user related to the *Post*: "I'm not going to live long enough to be briefed on everything".[117] Another super-user is quoted as observing that "the complexity of this system defies description".[118] All of these units, programmes, and people are using the GIG in some form.

It remains unclear, at the time of writing, if the GIG is actualised as a common architecture that has successfully roped the disparate bits and pieces of mil-com into a universal compatibility or if this remains the ambition. The publications that mil-com clears for public viewing are laden with boosterism and the language of marketing and enterprise. However, there is enough evidenced material available to analyse the GIG at both a material and conceptual level, even recognising the proliferation of overblown claims within an organisation that understands itself as a hybrid of business and state.

Much of the GIG is made up of an optical-fibre network installed under ground and sea, both in the continental United States and internationally. This backbone network is known as the Defense Information Systems Network (DISN), and is made up of several subsidiary networks, including The Secret Internet Protocol Router Network (SIPRNET), notoriously accessed by Chelsea Manning to download several hundred thousand documents and video files onto a CDR disk labelled Lady Gaga subsequently released to the public via Wikileaks.[119] The DISN was briefly in the public eye when the non-governmental organization (NGO) Reprieve accused British Telecom (BT) of complicity in extrajudicial

116 Congressional Research Service, "Defence Primer: DOD Contractors," In Focus, February 10, 2017, https://fas.org/sgp/crs/natsec/IF10600.pdf. This figure does not include classified work or contracted work by foreign nationals overseas.

117 Priest and Arkin, "Top Secret America," n.p.

118 Ibid.

119 Trial Council Joint Force Headquarters, Statement in Support of Providence Inquiry, U.S. vs Private First Class Bradley E. Manning, 2013.

drone killings due to BT's contracts with mil-com to install sections of the DISN optical-fibre network connecting the United Kingdom (UK) hub with Djibouti.[120]

Remote-sensor platforms such as satellites and UAVs are able to communicate with the DISN via what are known as teleports: brick and mortar installations sprinkled across the globe that feature large dishes or spheres. Teleports capture and deliver wireless signals, streaming not only from satellites into the DISN but, increasingly, capta-intensive full-motion video (FMV) from UAV sensors.[121] The core teleport sites are located in Virginia, Germany, Italy, Japan, Hawaii, California, Bahrain, Australia, and Guam.[122]

Capta retrieval and storage is leased from providers such as Amazon, which hold various degrees of security authorisation.[123] Mil-com agencies, departments, and their units are encouraged to understand themselves as enterprises within the greater organisation. Thus, it is up to the various organisational units to secure and arrange the proper capta-management schemes.[124]

The GIG is an infrastructural project that provides mil-com with a technical network, operational at a planetary scale. As evidenced by the quantity of clients, both real and anticipated, the GIG draws upon the inclusion of nation states and multi-national corporations and contractors. For the drone ensemble, the GIG can be seen as the outer layer of its associated technical milieu.

Network

> The use of the word comes from Diderot. The word "*réseau*" was used from the beginning by Diderot to describe matter and bodies in order

120 British Communications plc, "Reprieve: Complaint to the UK National Contact Point under the Specific Instance Procedure of the OECD Guidelines for Multinational Enterprises," British Telecommunications plc, 2014, https://www.oecdwatch.org/cases/ Case_341/1507/at_download/file.

121 Data links to ground stations are line of sight; the UAV streams to satellite and then down to either a vehicle-based teleport or other teleport installation.

122 Defense Information Systems Agency, "Department of Defense Fiscal Year (FY) 2017 President's Budget Submission," http://comptroller.defense.gov/Portals/45/Documents/def. budget/FY2017/budget_justification/pdfs/03_RDT_and_E/MDA_RDTE_MasterJustificationBook_Missile_Defense_Agency_PB_2017_1.pdf.

123 According to Amazon Web Services, Inc., "DoD SRG Compliance," Accessed September 30, 2017, https://aws.amazon.com/compliance/dod. "AWS [Amazon Web Services] enables military organizations and their business associates to leverage the secure AWS environments to process, maintain, and store DoD data. AWS has attained provisional authorizations from the Defense Information Systems Agency (DISA)".

124 Joint Staff J6, The Global Information Grid (GIG) 2.0 Concept of Operations Version 1.1. Washington, D.C.: U.S. Joint Staff J6, March 2011, https://info.publicintelligence.net/DoD-GIG2-CONOPS.pdf.

> to avoid the Cartesian divide between matter and spirit. From the beginning the word has a strong ontological component.[125]

The term *network* is used to describe both the physical structures – like information, rail, or telephone networks – and abstract models that attempt to describe specific types of arrangements or organisations. A working explanation of the network is necessary here because the drone, as it is instantiated in the signature strike at Wacha Dara, is a technical ensemble, drawing on the remotely controlled vehicle and the technical network as primary elements. However, the network is both material and theoretical. Attending to the network is imoprtant here as this technical and conceptual form underpins much of the work that follows.

To begin with a bland observation: perhaps the first thing one might say is that the network is associated with the visual image of a net, for example, a fishing net, although only the distributed form of network actually resembles the net. Lines are connected at intervals by knotted intersections. In this way, the term *network* purports to describe both the visible form of assemblages, as diverse as sewage, railways, and telephone networks, but also the linkages of activities and actors. As a diagrammatic structure, three types of network are usually drawn: centralised, decentralised, and distributed. If the page were to be covered in a line drawing of a fishing net, you would have a distributed network. This is composed of connective lines and nodes – the knots where the lines meet. In the distributed network, each node has potentially the same chance of making a connection to any other node. The first type of network – centralised – can be visualised by a central node with lines that come out of it to secondary nodes, like an exploding star. No node has any connection to another node without passing through the central node. The decentralised network is composed of several centralised networks, connected to each other by their central nodes; a good example being a railway network with several bifurcations. The figure below shows the three network diagrams as published in Paul Baran's 1964 *Memorandum On Distributed*

125 Bruno Latour, "On Actor-Network Theory: A Few Clarifications, Plus More Than a Few Complications," Philosophical Literary Journal Logos 27, no. 1 (1996): 369-381.

Communications: 1. Introduction to distributed communications networks, for the RAND corporation.[126]

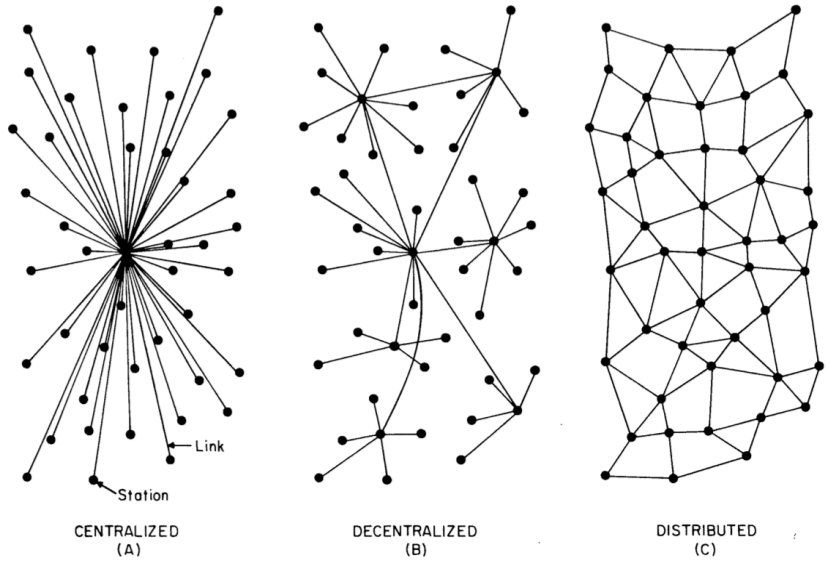

FIG. 1 — Centralized, Decentralized and Distributed Networks

The internet and the GIG are structured by distributed networks as their core design. This design enables the protocol of "packet switching", described in 1964 by Paul Baran:

In the system to be described, each node will attempt to get rid of its messages by choosing alternate routes if its preferred route is busy or destroyed. Each message is regarded as a 'hot potato', and rather than hold the 'hot potato', the node tosses the message to its neighbour, who will now try to get rid of the message.[127]

A message is broken into packets that are sent off along the distributed network to neighbouring nodes that treat each packet as a hot potato, sending it on until it gets closer to the assigned destination. Each packet contains a piece of the message and, among other capta, a return and a destination address. At the

126 Paul Baran, On Distributed Communications: 1. Introduction to Distributed Communications Networks, Memorandum RM-3420-PR, Santa Monica: RAND Corporation, 1964: 2.

127 Ibid., 25.

destination, the packets are put together into a complete message. A communications network, such as the GIG or the internet, manages to successfully handle such traffic through layers of protocol.[128] The GIG possesses much of the same protocol as the internet. Notably, its transport layer – how things are moved about – uses the TCP/IP protocol but adds other functionalities specific to the needs of mil-com.[129] Presumably, these classified military protocols have security functionality. Alexander Galloway points to a paradox of the internet – most users are actually not accessing the internet directly but are using the web.[130] The distinction is important because, while the internet makes possible a truly distributed communications network in which each peer is equal to another, the web maps a decentralised network over this base structure. This is done through the protocols of addressing. While the TCP/IP protocol makes the radical relations inherent in a distributed network possible, protocols like DNS impose a strict hierarchy upon the network.[131] Like the internet, the GIG operates layers of protocol on top of the distributed network protocol of TCP/IP.

I use the term *technical networks* in describing communications infrastructure, such as the GIG or the internet. Following Bruno Latour, I recognise that the term network is strongly related to an ontology of action and activity that animates connections. While the GIG can correctly be referred to as a network, this is only because it is in use as a technical canalisation of activity. Otherwise, following Latour, the GIG would be a pile of hardware and not a technical network.[132]

In the discipline of sociology, actor-network theory is a methodology associated with science and technology studies and, in particular, Bruno Latour, Michel Callon, and John Law. For Latour, the lines of a network are produced purely as

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128 Alexander R. Galloway, Protocol: How Control Exists after Decentralization (Cambridge: MIT Press, 2006), 6: "At the core of networked computing is the concept of protocol. A computer protocol is a set of recommendations and rules that outline specific technical standards". See also Andrew Barry's idea of Technological Zones (Andrew Berry, "Technological Zones," European Journal of Social Theory 9, no. 2 (2006): 239–53) and addressed further in Chapter 2 of this work. Briefly, one aspect of what Barry calls a technological zone is standardisation. A Simondonian way of describing the coercive force of technical protocols and standards is with the expression "over-determination". See Simondon, On the Mode of Existence of Technical Objects, 1980, 15.

129 Bruce E. White, Layered Communications Architecture for the Global Grid (Bedford: The MITRE Corporation, 2001), 2.

130 Galloway, Control After Decentralization, 8.

131 "All DNS information is controlled in a hierarchical, inverted-tree structure. Ironically, then, nearly all Web traffic must submit to a hierarchical structure (DNS) to gain access to the anarchic and radically horizontal structure of the Internet," Ibid., 9.

132 See Bruno Latour, Reassembling the Social: An Introduction to Actor-Network-Theory (Oxford: Oxford University Press, 2009).

a function of the activity that maps them.[133] There is no surface. The linkages are always continuously in the process of being created and only composed of the active interactions between nodes or actors. Put another way, there are no traces of the lines linking two nodes on a network; the trace is the activity itself. Therefore, there are no permanent connections and nothing is fixed. An unused connection is not a connection – in the same way that an unused sewage network is not a sewage network but a collection of pipes. In this, Latour is largely in line with Simondon's philosophy of ontogenesis: a constructionist thought in which entities are continuously in the process of individuation or dis-individuation. What brings the two together here is a refusal of pre-determined structures or definitions (what Simondon refers to as *hylomorphism*).

The notions of local and global are elided in this theory of networks that are local at all points, yet global according to their connections. The railway, for example, is "local at all points, since you always find sleepers and railroad workers, and you have stations and automatic ticket machines scattered along the way. Yet it is global, since it takes you from Madrid to Berlin or from Brest to Vladivostok."[134] However, the railway or the network is not universal. The railway is global as far as it goes, but it is limited to the reach of its branches. A small village that is not connected to the railway system is, then, not networked. As Latour writes, "The sewer system may be comprehensive, but nothing guarantees that the tissue I drop on my bedroom floor will end up there".[135]

Network is a term that both describes material infrastructure and theoretical abstractions. Theoretically, the network elides presuppositions of hierarchy or structure, an attribute included by design, for example, in those distributed technical networks described by Paul Baran.[136] However, I have shown that protocols such as DNS, imposed onto those such as TCP/IP, over-determine the distributed network into the constraints of decentralised network forms. Regardless of design, for writers such as Bruno Latour, the network – in both

133 Bruno Latour. We Have Never Been Modern, trans. Catherine Porter (Cambridge: Harvard University Press, 1993), 115.

134 Ibid., 117.

135 Ibid., 117.

136 Baran, On Distributed Communications, 1964.

material and abstract instantiations – only exists so far as it is active.[137] As such, the network does not model a static or pre-existing structure; rather, it is a continuous mapping of activity. One implication is that the shape or form of a network is performed rather than established. This is the case in both the abstract and concrete terms of analysis.

Network-Centricity

The GIG, as a high-level infrastructural scheme, is underwritten theoretically by the concept of *Network-Centricity*. I examine this conceptual framework that has guided mil-com procurement and development since at least the 1990s. The network, as a model, represents and thus foregrounds performance and activity. As such, the network undermines the supposition that structures exist *a priori* to activity. With the network, continuity of activity produces form over time. For organisations as diverse as the military and supermarket chains, the technical network, in conjunction with sensors, has offered a novel informatic affordance, promising a reversal of the ways in which information is seen to be compartmentalised. Network-centricity remains a catchphrase for contemporary mil-com hopes and ambitions.[138] Engaging with the conception of net-centricity is necessary in order to trace the epistemological force of the drone. This is so because the current drone, established here in the signature strike of 2015 at Wacha Dara, is not only folded within a larger network condition like the GIG but is also in relations of recurrent causality, with its associated network milieu and the epistemic frame constituted by these operations.

The development of network-centric warfare doctrines that I describe below have manifested within a military context and milieu, steeped in theoretical engagement with emergent systems theory and complexity science. The initially heterodox theories of John Boyd gained traction within military ranks.[139] Network-centricity

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137 This is encapsulated by the common use of the PING to gauge internet nodes' readiness for action. PING is a program originally written by Mike Muss while working for DARPA in the 1980s. The term PING is derived from sonar location of submarines. Mike Muss, "The Story of the PING Program," Accessed April 4, 2016, www.webcitation.org/5saCKBpgH.

138 Although net-centricity was formalised in the 1990s, it remains at the forefront of mil-com developmental plans, as evidenced by this article from September 2017. http://www.defenseone.com/technology/2017/09/future-us-military-constructing-giant-armed-nervous-system/141303.

139 Boyd's theoretical contribution began in the 1960s but became influential in 1977 with the presentation "Patterns of Conflict". The Defense and National Interest website hosts a compendium of his major works, Defense and National Interest, "John Boyd Compendium," Defense and National Interest, December 6, 2017, www.dnipogo.org/john-r-boyd.

borrows from Boyd's ideas, coupled with the possibilities afforded by the technical distributed network. While I briefly examine Boyd's contribution below, I limit the discussion to adhere closely to the technical-network condition that is most pertinent to the drone. A detailed accounting and critique of the military appropriation of scientific theories, including John Boyd's, can be found in Antoine Bousquet's 2009 *The Scientific Way Of Warfare.*[140]

The concept of net-centric warfare was championed by Vice Admiral Arthur K. Cebrowski of the United States Navy.[141] Cebrowski was inspired by the practices emerging from the Walmart retail chain. By the mid-1990s, Walmart had instituted a supply chain in which the checkout counter operated as a sensor node, sending each transaction to the company administration's computers, which maintained stock lists and were therefore able to correlate existing stock at both the warehouse and shop locations to the ongoing operations.[142] Thus, even before supermarket branch managers discovered that an item was running low or not selling, the administration and warehousing staff were already aware of the situation and taking measures. In Cebrowski's naval context, sensors mounted on ships were to be directly connected by wireless transmission to the rest of the fleet so that each discrete sensor was made available to any node on the network.[143] A ship at the edge of the battle-space might be the first to sense the enemy still over the horizon for the rest of the fleet. Where previously this ship would have been required to mediate the information – that is, to report the sighting along a well-defined hierarchy of command – in the net-centric scheme, the information is remotely available to all network nodes on an equally distributive basis, directly from the ship-mounted sensor. Thus, the ship no longer senses the enemy; it is the sensor that senses the enemy. Each filial vessel possesses the same access to the sensor as the ship upon which it is mounted. The goal is that all sensors be equally available to all nodes on the network.[144]

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140 Antoine J. Bousquet, The Scientific Way of Warfare Order and Chaos on the Battlefields of Modernity (New York: Columbia University Press, 2009).

141 Arthur K. Cebrowski and John J. Garstka, "Network-Centric Warfare: Its Origin and Future," Proceedings 124, no. 1 (January 1998): 139.

142 Ibid.

143 See Alessandro Dal Lago and Salvatore Palidda, Conflict, Security and the Reshaping of Society (London: Routledge, Taylor & Francis Group, 2010).

144 While I have described the theory of network-centricity that Cebrowski first brought to the navy, this remains a theoretical construct that has not yet been implemented as conceived. This is evident, for example, in Chief of Naval Operations Adm. John Richardson's keynote at the Naval Future Force S&T EXPO: "In the extreme theoretical limit, I would want to network everything to everything." See U.S. Navy Research, "CNO Keynote at the Naval Future Force S&T EXPO". YouTube video, 33:07. [Posted July 21, 2017], 20:28.

One key concept that was brought into the theoretical schema of net-centricity was *situational awareness*. Situational awareness (SA) is an expression derived from the lexicon of modern aerial combat. SA attempts to describe the shared mental state of multiple mutually embedded envelopes, comprising space and time-compression.[145] The notion is scalable and can refer to the shared frame of a bureaucratic team within a temporally dynamic situation, or "real time". A *situation,* here, may be read as a set of circumstances, a state, or a condition, represented in thought as an imaginary frozen temporal frame. A group of workers may be participating in a common situation but may not see the situation in the same way.

Here, John Boyd's OODA loop scheme has been influential. While Boyd later expanded his theoretical engagement outside of the fighter cockpit as a "universal logic of conflict",[146] his initial theories developed from aerial combat.[147] OODA stands for: Observe, Orient, Decide, Act. The pilot observes her surroundings, the state of the aircraft, position of enemy, and environmental and other factors. Orientation is slightly more complicated, as the concept factors the human pilot into the loop as an entity laden with predispositions, both culturally and experientially. The decision is made after many options have been considered. Finally, the action is taken, but experimentally. The results of the action conditions the next OODA looping. The logic of conflict is reduced to "a collision of organisations doing their respective OODA loops".[148]

In Cebrowski's net-centric doctrine, the first casualty of enemy contact is SA, which degrades quickly, may be re-established, but is again degraded by further

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145 Significant take-up of the term in the Aeronautics field dates from the late 1980s and is "predominantly due to the vast quantities of sensor information available in the modern cockpit, coupled with the flightcrew's 'new' role as a monitor of aircraft automation. The term 'situation(al) awareness' (SA) was adopted to describe the processes of attention, perception, and decision making that together form a pilot's mental model of the current situation". (R. Mica Endsley, "Measurement of Situation Awareness in Dynamic Systems," Human Factors 37, no 1. (1995): 65–84; Y.J. Tenney, M.J. Adams, R.W. Pew, et al., "A Principled Approach to the Measurement of Situation Awareness in Commercial Aviation," NASA contractor report 4451, Langley Research Center: NASA, 1995.

146 Colin S. Gray, Modern Strategy (Oxford: Oxford University Press, 1999), 90–91.

147 While first articulated in 1977, the ideas that would resolve in the OODA loop are apparent in his earliest work, for example, "Fast Transients," 1964. In that succinct presentation, the notion of getting inside the enemy's time scale – later phrased as getting inside the enemy's OODA loop – is already articulated. "Fast Transients" ends with a slide titled: "Message: He who can handle the quickest rate of change survives" (quoted in Frans Osinga, "Science, Strategy and War: The Strategic Theory of John Boyd," PhD dissertation, Universiteit Leiden, the Netherlands, 2005.

148 Osinga, "Science, Strategy, War,".

contact. It is possible to think of SA in terms of Cebrowski's model – the Walmart checkout sensor and stock management. Contact with the enemy is equivalent to the shop doors opening and customers arriving. Their precise activity and how it will come into contact with the shop and staff is unknown. After several hours of contact with consumers, the SA of staff has been eroded. What had been certain and calculated before the moment of contact is now in disarray. Network-centric organisation promises the persistence of SA during contact with the enemy by the dissemination of SA across a distributed network.

While there is ample opportunity for critiquing the claims bound up in net-centric doctrine, it has not been my aim here to weigh the practicality or effectiveness of mil-com discourse. I will turn to a critical register of some of mil-com's epistemological claims later on in the chapter. However, a critique worth mentioning is levied by Antoine Bousquet at the manner in which mil-com theorists put uncritical faith in the capacity of computers to make sense of the flood of capta that net-centric doctrine invites: "NCW seems to assume that greater quantities of sensor information will result in a higher quality of information – an assumption which again rests on the belief that ambiguity and uncertainty only results from a lack of information, not from confusion produced by potentially conflicting pieces of information or failures in their interpretation".[149]

One way of approaching the ideas bound up in net-centric theory and its reciprocal relations with situational awareness is through the concept of *agency*, defined provisionally as the ability to make autonomous decisions and contrasted with heteronomous decision-making. Within an idealised network-centric structure, wherein sensed capta is distributed equally to all nodes of the structure, the decision need not take place at any one node of the network but could theoretically be taken anywhere.[150] Thus, *the point of action need not be the point of decision*. With the technical network, in conjunction with remotely controlled sensors and aircraft, this is not just a theoretical possibility but also a novel

149 Ibid., 95.

150 I use the term "decision" here with knowing reference to Carl Schmitt's theory of sovereignty and the sovereign decision. I will attend to Schmitt's theories in the next chapter.

material condition that stands in contrast to both the agentic configuration that I have established for the historical precedent of long-distance control, and the presupposition of a pilot in the initial conception of situational awareness and the OODA loop.

This point is central to the rest of my argument, so is worth elaborating further; the moment that the Carreira Da Inde flotilla departed from the harbour of Lisbon, the sovereign effectively handed over agency to the commander of the voyage and, by degrees of succession, fleet and ship. With this agency, the commander was free to act as he saw fit, contingent with the circumstances, the sovereign's desires, and the agent's own agenda. This was both the result of material necessity, the pace and reliability of communication, knowledge and its location within the apparatus of documents, devices, and drilled people[151], established as a precondition for the journey. In the case of situational awareness and the OODA loop, the network offers to liberate the second O – *orientation* – from the predispositions and prejudices of a human agent. This move from SA, in what John Law describes as envelopes of durable mobility[152], to a network-centric distribution of knowledge and control, shifts the orders of magnitude at play within the organisation. As Bousquet suggests above and I show below, the displacement of agency, from the point of action to an indeterminate mutability and concentration, can have disorienting consequences.

Since Cebrowski's formative writing in the mid 1990s, net-centric warfare has come under some critique by mil-com intellectuals over the emphasis upon distribution of sensed capta away from the point of contact towards the command, that is to say, the re-centralising of SA. This discourse puts an emphasis upon delivering *power to the edge*.[153] In the book of the same title by David S. Alberts and Richard E. Hayes, power is described as "the ability to make something happen".[154] Wielding power is possible in the physical, the informational,

151 Law, "On the Methods of Long-Distance Control," 12.

152 Ibid., 18.

153 Alberts, David S., and Richard Hayes. Power to the Edge: Command and Control in the Information Age. Washington, D.C.: Command and Control Research Program, 2005.

154 Ibid., 166.

cognitive, and social domains – corresponding to what the authors term *the sources of power as a function of domain*[155] – as in the matrix reproduced below.

	Means	Opportunity
Physical	Organic resources	The right actions
		The right places at the right times
Information	Organic information	The right information at the right time
Cognitive	Knowledge and ability	The right understanding at the right time
Social	Access to information	The right rules of engagement and partners at the right time
	Command authority	The right distribution of command intent at the right time
The sources of power as a function of domain - Alberts and Haynes, 2003, p. 170		

Within this framework, the source of power is found in two categories: Means and Opportunity. The notion of power distribution is entered into the matrix only under the category of the Social. In the Means box, we find "Command Authority", while in the Opportunity box we find "the right distribution of command intent at the right time". Notably, the Opportunity column is vague. Supposing the term *right* refers to *appropriate*, what constitutes "right" would be highly contingent. While not explicit, the implication is that distribution of the means of action and knowledge in all domains is contingent upon the command hierarchy, thus returning to a command structure that, while re-concentrated, is also vague and ill defined. What becomes clear is that net-centric warfare is doctrinally organised towards the re-concentration of agency at the same time as it attempts to refine the capacity of the command (sovereign) to effect power

155 Ibid., 170.

through the distributive means of the technical network. The upshot is the retreat of the agent as a main character in the drama of military theory. This does not imply that there is an elimination of agency, only that the location of agency must begin to be understood in terms of its intensity and concentration across a technical network rather than with a specific agent. I will return to this question later in the chapter.

With the technical network, the distribution of capta is made feasible to the extent that sensors located at network nodes might be made available to other network nodes on an equally distributive basis. Network-centricity theoretically promises to flatten knowledge hierarchies and provide each node or actor on the network with equal situational awareness. The ambivalent relation of military command to theoretical arguments pointing towards the possibility of agentic distribution is demonstrated. A tendency to mobilise the network form as a means of re-concentration of information, knowledge, and agency is shown as evident in mil-com discourse.

Expedition

John Law used the phrase "envelopes of durable mobility" to describe how ships were maintained as floating islands of sovereignty during the 15th and 16th centuries.[156] For the drone, as an instantiation of control-at-a-distance, the maintenance of envelopes of durable mobility does not require the internalising of knowledge and agency within a vehicle or a fleet – as did the Carreira Da Inde with Law's three ds: documents, devices, and drilled people[157]. The inclusion of the technical network into the drone ensemble has afforded the possibility of a generalised distribution of agency. The current equivalent of the three ds is supplied to expeditions as a network service[158], delivered by a subsection of the National geo-spatial Intelligence Agency, the Office of Expeditionary Architectures (NEA)[159]. The servicing of capabilities, ensuring durable mobility to expeditionary platforms like UAVs, is returned in net-centric fashion by the

156 Law, "On Methods of Long Distance Control," 18.

157 Ibid., 12.

158 The term service is used throughout mil-com publications like Pathfinder, the NGA's journal. See Keith L. Barber, "NSG Expeditionary Architecture: Harnessing Big Data," Pathfinder 10, no. 5 (September/October 2012): 9.

159 The mil-com acronym is NEA, despite the title being Office of Expeditionary Architectures.

sensors that those vehicles carry. Put another way: as the UAV is oriented and its durable mobility maintained over the technical network, sensor feeds, canalised from the UAV into the drone ensemble, provide for an orientation – situational awareness – at an order of magnitude proper to the technical network.

The capacity of persistent UAVs to return sense capta into the drone ensemble has led to the development of what has recently been termed *geo-spatial intelligence* (GEOINT). The recurrent causality of the drone – as it is currently instantiated – with the globe, is made apparent. This relation, the UAV and the globe, is important to establish here, as the following sections demonstrate how the unmanned-ness of persistent sensor platforms condition the methodologies of knowledge production practised by mil-com. The displacement of the human agent from the co-location in the early modern techniques of distance control to remote-location in current drone expeditions is in parallel to an epistemological subordination of the human in processes of knowledge production. The recent maturation of GEOINT, described here, additionally demonstrates how mil-com's expeditionary engagement is grounded upon an increasingly abstract set of geo-spatial models and metrological devices. The salience to this study is evidenced by the centrality of the drone to the developments described below.

Geo-Spatial Intelligence

> When you think about it, everything and everybody has to be somewhere.
>
> - The Honourable James R. Clapper, 2004[160]

GEOINT integrates topographical rendering and capta harvested from sensed activity, transactions and indices of cultural or social patterns. The development of GEOINT and its progeny, activity-based intelligence (ABI), emerged at the intersection of mil-com's global war on terror. Roughly, this involved the networking of sensors mounted to UAVs and the inclusion of capta-base techniques into the drone ensemble. As I show, what began as an ad-hoc workaround has since developed into a more mature and integrated technical ensemble. The emphasis that GEOINT necessarily places upon *persistent* sensing confirms the UAV at the forefront of this enterprise.

The National Geo-spatial Intelligence Agency (NGA) is the lesser known twin to the National Security Agency (NSA). The NGA consolidates the disparate and institutionally redundant functions of mapping and imaging on one hand and its analysis for the purposes of producing intelligence[161] on the other. Prior inter-agency conflicts around these commonly overlapping functions is not the primary concern here, and it is sufficient to note that a nominal institutional compromise has been to consolidate the efforts into a single agency – the NGA – and indeed a neologism: *geo-spatial intelligence* (GEOINT).[162]

The recent origins of GEOINT are traced by Patrick Biltgen and Stephen Ryan to the period of widespread insurgency against the mil-com occupation of Iraq between 2004 and 2006.[163] Amidst the insurrection of both Shiite and Sunni Iraqis, mil-com struggled to identify legitimate targets from within the general

160 Quoted in Patrick Biltgen and Stephen Ryan, Activity-Based Intelligence: Principals and Applications (London: Artech House, 2015), 10.

161 For the term intelligence, I am simply after the dictionary definition – the acquisition and application of knowledge; from the OED (2nd Ed., 4 vol. Oxford: Oxford University Press, 1989): 1) The ability to acquire and apply knowledge and skills; 2) The collection of information of military or political value. This will become important to my argument as I will later define the manner of knowledge production and the kinds of knowledge that the expeditionary architecture produces.

162 As of this writing, 16 intelligence agencies make up the United States Intelligence "Community". U.S. Intelligence Community, "Member Agencies." U.S. Intelligence Community – Intelligence Careers, https://www.intelligencecareers.gov/icmembers.html.

163 Biltgen and Ryan, Activity-Based Intelligence, 24.

population. Workarounds were improvised, using the new technical systems and objects that network-centric warfare doctrine had delivered.[164] Geo-spatial analysts from the NGA established capta-bases with geo-referenced capta, gleaned from multiple sources, and began to deliver *adversary locations*. These geo-locations became *areas of interest*, with the people found in those areas becoming *persons of interest* by association. This initial assembly of GEOINT with capta analytics was enriched by the sensorial capabilities of the UAV. Full Motion Video (FMV) collected by the UAV's persistent surveillance capabilities provided much of the initial material from which capta was harvested. FMV analysts were the first to produce *pattern-of-life* analysis.[165] From this matrix – or "Multi-INT fusion"[166] – geo-locations were sorted along a spectrum of probable risk. The crucial point here is that, while previous counter-insurgency tactics had aimed at targeting insurgents, the new methodologies, in journalist Gareth Porter's words, targeted "phone numbers, not people".[167]

GEOINT was institutionally formalised as a concept in a October 17, 2005 memorandum from the director of the newly minted NGA – James Clapper – to the Deputy Director of National Intelligence at that time – Michael Hayden. Under the reference, *Clarification of geo-spatial Intelligence*, Clapper wrote:

The term "geo-spatial intelligence" refers to the exploitation and analysis of imagery and geo-spatial information to describe, assess, and visually depict physical features and geographically referenced activities on the Earth.[168]

The following bullet point, taken from a 2015 slide from a presentation titled, *Persistent GEOINT: A New Strategic Mindset*, reveals an increasingly mature methodology:

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164 Such as the GIG, the DISN, Teleports, Satellites, and UAVs.

165 I will deliver a full account of this expression below.

166 Biltgen and Ryan, Activity-Based Intelligence, 24.

167 Gareth Porter, "How McChrystal and Petraeus Built an Indiscriminate 'Killing Machine'," Truthout, 2011, www.truth-out.org/news/item/3588:how-mcchrystal-and-petraeus-built-an-indiscriminate-killing-machine.

168 James R. Clapper, Memorandum for Principal Deputy Director of National Intelligence, Maryland: National Geospatial Intelligence Agency, October 17, 2005, http://www.gwg.nga.mil/ntb/related/GEOINT_Definitions-Amplification_Memosigned.pdf.

A focused intelligence strategy to detect change, characterise activity, infer behaviour, and discover unknowns.[169]

In order to demonstrate further the recurrent causality of the drone with larger mil-com infrastructure and epistemology, I briefly discuss two related projects: The Map of the World (MOTW) and the Global Area Reference System (GARS). By including the MOTW and GARS in this section, I aim to emphasise the ways in which mil-com epistemologies are grounded in increasingly abstract models, not only of activity and life – as I show later in the chapter – but of geo-spatial topography and mapping.

The NGA were early investors in and partners of Keyhole Inc., a Silicon Valley start-up purchased in 2005[170] by Google and thereafter incorporated into the technical development of what was to become Google Maps and Google Earth.[171] The MOTW is a parallel Google Earth, run and developed until recently on the Google Earth Enterprise platform.[172] With the MOTW, the NGA aims to develop a single platform from which all knowledge of the world may be accessible in real time, by any node of the global-information grid. At the same time, this MOTW will be continuously transforming the perceptions of multifarious sensors in operation.

The NGA has developed and operated the Global Area Reference System (GARS) since 2007.[173] GARS dispenses with any previous grid-reference system, place names and topographic features, and divides the planet into a bespoke grid of cells. The largest unit is a 30-minute-by-30-minute cell, which is approximately 1,000 square kilometres. Those cells are divided into quadrants of 15 minutes each; the low-level quadrants are further subdivided into nine five-minute

169 Gauthier David, "A New Strategic Mindset," Presented to United States Geospatial Intelligence Foundation Working Group, December 17, 2015, http://usgif.org/system/uploads/4163/original/A_New_Strategic_Mindset_Presentation_By_NGA_s_David_Gauthier.pdf.

170 Note that the purchase by Google of Keyhole Inc. corresponds to James Clapper's formal clarification of geo-spatial intelligence.

171 Google Earth is an open-sourced three-dimensional globe that is continuously updated with GIS layers of information. It is customisable by users on the publicly available version, free of charge, but also for enterprise at a cost. The NGA licenses the platform and is currently said to be looking for an alternative as Google has recently announced its discontinuation of the service.

172 CartoDB is one software application that the NGA is exploring after Google Earth Enterprise platform was folded in 2016; Matteo Luccio, "Companies Pick Up Where Google Earth Enterprise Leaves Off," Apogeo Spatial (May 9, 2016), www. apogeo-spatial.com/companies-pick-up-where-google-earth-enterprise-leaves-off.

173 Lawrence Nault, "NGA Introduces Global Area Reference System," Pathfinder (2007), http://earth-info.nga.mil/GandG/coordsys/grids/novdec06_GARS.pdf.

"keypads". The term *keypad* corresponds to the nine numeric keys found on many computer keyboards. Thus, global space is brought into direct contact with data-entry. A clerical tap on the numerical keypad is all that is necessary to transform a portion of the abstract digital globe into a kill-zone.[174]

Mapping is an active rendering, a creative process that not only produces a specific kind of knowledge, but, in its relations of recurrent causality with the mind, modifies the possibilities of imagination. Following Deleuze and Guattari, "What distinguishes the map from the tracing is that it is entirely oriented toward an experimentation in contact with the real. The map does not reproduce an unconscious closed in upon itself; it constructs the unconscious".[175] In other words, the MOTW does not represent and distribute established knowledge of the world but is a means for the continuous transduction of the world, as it may be imagined and defined by mil-com, and emancipated from any requirement to conform with external standards.[176]

The difficulty of producing legitimate targets during the Iraqi insurgent uprising of 2004–2006 was addressed by conjoining several technical ensembles: the UAV, remote sensors, the capta-base, and the digital globe. Epistemologically, one result of this new drone ensemble is that individual subjects are no longer the *a priori* basis of target production. Despite evidence that these new operations had nothing to do with the supposed success of the "surge",[177] these techniques were valorised by the mil-com command. This apparent success had the effect of drawing the high command into a reactive codifying process, translating what began as a localised set of informal practices into formalised doctrine. Only a few years later, these locally developed techniques scaled up several orders of magnitude and diffused into the generalised organising logic of the mil-com power structure. In addition, the techniques tested in the Iraq war have – through the

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174 The kill-zone designates a volumetric portion of GARS referenced surface and airspace as a live-fire zone. For instance, if a missile is targeted at a certain keypad, the keypad shows up as a kill-zone on the MOTW, or whatever other interface is being used to access GEOINT. Ostensibly, this is to avoid multiplication of projectile flight path, collision avoidance, and reduction of friendly-fire cases.

175 Gilles Deleuze and Felix Guattari, A Thousand Plateaus: Capitalism and Schizophrenia, trans. Brian Massumi (Minneapolis: University of Minnesota Press, 1987), 12.

176 "A map is designed to show certain points and relationships, and, in doing so, creates space and spaces in the perception of the map-user and thus illustrates themes of power". Black, Maps and Politics, 12.

177 Porter, "Killing Machine,".

amplified abstraction of the globe – contributed to a re-configuration of the manner in which the world is known and knowable by mil-com.

Dronology

Technical ensembles, such as the globe and the technical network, have been drawn together with the UAV to shape the current drone ensemble as an expeditionary platform for control-at-a-distance. The assertion that the drone is reticulated with the technical network is extended in this section by a demonstration of how the drone ensemble is imbricated with technics of machine learning and capta-mining. By drawing together diverse technical ensembles, the drone ensemble constitutes an algorithmic governmentality when amplified as an expeditionary architecture of remote control occupation, as I have established with the signature strike at Wacha Dara – specifically, and the persistent-combat air patrols over the FATA in 2015 – more generally. The steady retreat of agency in the expeditionary platform from the periphery to a generally distributed concentration and mutability is concurrent with a systemic enclosure of transformative procedures into topologically self-referential computational ontologies. I establish that the object of dronology – the epistemology specific to the drone ensemble – is not the individual human target but the capta pieces that are divided from the individual: dividuals.

Activity Based Intelligence

Intelligence means knowledge. If it can't be stretched to mean all knowledge, at least it mean an amazing bulk and assortment of knowledge.[178]

Activity-Based Intelligence (ABI) is a formalised doctrine for the construction of "intelligence" that has derived from the developments discussed previously. As the terminology indicates, knowledge is drawn from practices, the legitimacy of which is grounded in an understanding of "activity" as the only reliable basis for originating truth statements. This methodological approach to the production of knowledge deriving from action is in counterpoint to practices, among others, in which the grounds for legitimacy are drawn from the human mind. This shift in

178 Kent, 1966, 3

mil-com practices has its basis not only in claims to a "scientific" methodology – as I show later – but also in more pragmatic problems associated with human agency and human resources.

It is possible to trace attempts by mil-com intellectuals to attach a stable definition to the term intelligence.[179] While most formalised approaches during the post-war period have referred almost exclusively to the collection and production of knowledge pertaining to "foreign" nation states, currently the definition is unconstrained by territorial boundaries.[180] Intelligence is roughly understood here as the formalised means by which knowledge is produced within a bureaucracy or institution. At the same time, it is recognised that the production of intelligence simultaneously aims to produce a disposition of the institution vis-à-vis the world.

In an article from the journal *Military and Strategic Affairs*, an organ of The Institute for National Security Studies in Tel Aviv,[181] Bradley Lewis decries the death of Human Intelligence (HUMINT)[182] from the 1960s to the present, in the increasing reliance upon what he terms "the use of technology".[183] HUMINT encompasses all aspects of intelligence generated by human beings in relation to other human beings; the agent and her handler, and the prisoner and his torturer, are classic configurations. Of the former, Lewis writes that built-in limitations exist on the capacity of any intelligence organisation to field qualified personnel for handling agents. Typically, only five percent of an organisation is capable of being dedicated to building a human-source network, thus limiting the possible scale of these connections.[184] The work is dangerous, as reprisal killings of suspected agents is common along with other risks to handlers.[185] A notorious

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179 For example, Michael Warner, "Wanted: A Definition of 'Intelligence'," Journal of the American Intelligence Professional 46, no. 4 (2002), https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/csi-studies/studies/vol46no3/article02.html.

180 See Vernon A. Walters, Silent Missions (New York: Doubleday, 1978), 621; see also Martin T. Bimfort, "A Definition of Intelligence," Centre for the Studies of Intelligence: Study Archive Indexes 2, no. 4 (1994), https://www.cia.gov/library/center-for-the-study-of-intelligence/kent-csi/vol2no4/html/v02i4a08p_0001.html.

181 Bradley A. Lewis, "The Death of Human Intelligence: How Human Intelligence Has Been Minimized Since the 1960s," Military and Strategic Affairs 8, no. 1 (2016).

182 Here, Lewis cites the FBI definition of HUMINT: "Human Intelligence (HUMINT) is the collection of information from human sources. The collection may be done openly, as when FBI agents interview witnesses or suspects, or it may be done through clandestine or covert means (espionage). Within the United States, HUMINT collection is the FBI's responsibility," Ibid., 77.

183 Ibid, 80.

184 Ibid, 77.

185 Ray Rivera, Sharifullah Sahak, and Eric Schmitt, "Militants Turn to Death Squads in Afghanistan," New York Times, November 28, 2011, cited in Lewis, "The Death of Human Intelligence," "Fears of reprisal are palpable and their consequences are dire. In Afghanistan alone, the United Nations observed . . . 462

example of these risks is the Camp Chapman Afghanistan attack in 2009. Humam Khalil Abu-Mulal al-Balawi was a purported double agent, groomed by Jordanian intelligence, which subsequently handed his control over to the CIA. Al-Balawi's handlers had him brought to Camp Chapman, allowing him entry without a security check. After exiting the vehicle, Al-Balawi detonated his suicide vest, killing himself along with 13 others, including seven CIA agents – the largest single loss of life the CIA experienced since 1983.[186] Lewis suggests that HUMINT-intensive methods for intelligence extraction, like torture and interrogation, are being formally disavowed because institutional faith has been displaced towards technical means. This is the case not just in terms of operational style or habit, but has been codified into law. He writes, "As technology has grown and functionality has improved, the need for HUMINT, as determined by current policy, has increasingly diminished. The Obama administration determined that the use of HUMINT in many forms is a punishable offence".[187] The regulation of HUMINT is legally binding as of Intelligence Community Directive Number 304, dated March 2008.[188]

While decrying the politicisation of intelligence might, in itself, be politically motivated – the targets of Lewis' sniping are exclusively Democratic party administrations – the arguments do reveal some of the ways in which practices like ABI have come to the forefront of mil-com doctrine.

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assassinations in 2010 in reprisal for cooperating with the coalition according to their records, double the number from the previous year. The figures may not include many killings in remote areas, like the mass beheading, because fearful villagers never reported them."

186 See The White House, "An Open Letter to the CIA from President Obama," accessed December 12, 2016, https://www.whitehouse.gov/the-press-office/message-president-cia-workforce.

187 Lewis, "The Death of Human Intelligence", 84.

188 Intelligence Community Directive (ICD), #304, Human Intelligence, March 6, 2008, amended July 9, 2009, cited in Lewis, "The Death of Human Intelligence," 78: "The DNI is committed to ensuring that HUMINT activities are executed in a prioritized, coordinated, integrated, and professional manner; that USG elements engaged in the collection of intelligence through HUMINT activities, counterintelligence activities, or activities that involve the use of clandestine methods are coordinated and de-conflicted with IC HUMINT activities; that HUMINT practitioners use core common standards; and that there is transparency into HUMINT support capabilities to allow all IC elements to benefit from technical or other advances."

The Unknown-Unknown

Two metaphors are deployed in distinguishing Activity-Based Intelligence from other forms of knowledge production: the puzzle versus the mystery.[189] A puzzle addresses known problems; the analyst knows that there is a piece that will complete the picture, an order of things that just needs to be worked out. In a mystery, it is not clear that there is even a puzzle to solve. The analyst collects capta and makes connections, always with an eye to the possibility of being surprised, to the possibility of finding a puzzle that can be solved. In the mil-com discourse around ABI, there is a stance of non-judgemental openness to the world: "The analyst is not cued or focused on a specific target, but rather is informed by the capta as it is being presented".[190] Thus, according to mil-com discourse, there is no *a priori* entity inciting the investigation. Yet, of course there is or else there would be no such mobilisation of an extensive knowledge-seeking apparatus. The *a priori* entity worthy of this investigation of a mystery seeking a puzzle is the *unknown-unknown*.[191]

Put simply, "an *unknown-unknown* is a state of ignorance at a specific point in time for all members of the organisation".[192] This formulation derives from high-risk research and development cultures, like the aerospace industry.[193] The disposition of an organisation to recognise the unknown-unknown, as a condition, is encouraged by modern management intellectuals as a stimulant to a speculative line of thinking.[194] The unknown-unknown is not equivalent to a *risk*, which is a known unknown; rather, it is the equivalent of a *surprise*.[195]

In mil-com discourse, while the recent shift from human-centred intelligence practices to the doctrine of ABI is said to be grounded in technical development, it is shown that this methodology has not resulted from technical determinism alone. With the shift from human-oriented intelligence production to ABI, the concept of

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189 Mark Phillips, "A Brief Overview of ABI and Human Domain Analytics," Trajectory Magazine, June 22, 2011, accessed October 1, 2016, https://www.scoop.it/t/geointelligence/p/4046250147/2015/06/22/a-brief-overview-of-abi-and-human-domain-analytics.

190 Ibid.

191 Ibid.

192 Joanne Roberts, A Very Short, Fairly Interesting, and Reasonably Cheap Book about Knowledge Management (Los Angeles: SAGE, 2015), 107.

193 Ibid.

194 Ibid.

195 Norm Smith, Got Progress? Managing People and Projects with Ease, Results, and Style (Lulu.Com, 2011), 49.

the unknown-unknown has re-oriented knowledge seeking methodologies. To wit, just because an activity or transaction is phenomenologically unavailable at the present time does not validate any knowledge around its possible (non)existence. The investigator must always be open to the discovery of a new problem, one that she did not previously know that she had to solve. To some extent, the force of this argument contributes to the validation of persistent remote-control surveillance. With the unknown-unknown, it is not necessary to develop a probable-cause rationale for a surveillance operation because all prior suppositions are considered deceitful. Concurrently, the figure and formulation of the unknown-unknown has re-oriented the disposition of the mil-com intelligence-seeking apparatus to the determined elision of presupposed knowledge. In addition, and regardless of cause, what begins to be apparent is a methodological shift away from an anthropocentric scale to orders of magnitude more proper to activity and transaction and the instruments that are likely best to record their traces.

Weak Signatures and The Computational Turn

> In ABI, the target is the output of a deductive analytic process that begins with unresolved, ambiguous entities and a data landscape dominated by activities and transactions.[196]

I have shown how the development of the drone ensemble has been imbricated with mil-com's occupation of Iraq and, in particular, the problem of identifying targets during the resistance to occupation that had intensified between 2004 and 2006.[197] In the FATA, the problem has been perhaps more acute. Mil-com is even less likely than in Iraq to have cooperative allies operating within the territory covered by the drone expedition.[198] The awkward and indeterminate language mobilised by the White House, in attempting to explain the 2015 signature strike at Wacha Dara, hints at the oblique strategies that have been developed for the prosecution of this remote-control occupation. In this section, I demonstrate and

196 Biltgen and Ryan, Activity-Based Intelligence, 11.

197 See the section: Geo-spatial Intelligence.

198 The Pakistani state and military being arguably more autonomous from mil-com than the official Iraqi forces circa 2004. See Gregory, From a View to Kill, 32.

begin to examine the manner in which procedures of machine learning and capta mining have been drawn into the drone ensemble.

Weak Signatures

The military problem in Iraq during the 2004–2006 insurgency was viewed as a sorting problem. The difficulty lay in finding the means to filter or isolate Iraqis who might be legitimately killed or captured from those whose death or capture would be seen as illegitimate. This stemmed from the fact that Iraqi combatants were visually indistinct from non-combatants and intermingled among them.[199] What mil-com lacked in its operational capacity was the ability to distinguish targets by identifying markers such as uniforms and military hardware. In ABI, such identifying markers are known as *strong signatures*. In practice, ABI seeks out what are referred to as *weak signatures*. The needle-in-the-haystack metaphor is apt, but the needle has a strong signature, differentiating it from the equally strong signatures of the hay. But what happens when you are looking for a stalk of hay in a haystack?

ABI begins with the collection of sensed capta, employed to record activities and transactions, indexed to their geo-reference over time. Examples range from the physical movement of a person, car, a train or an animal to other sensed phenomena, like electronic messages or the heat emissions of electrical devices operating over time. Activities and transactions are categories of events – occurrences within time and space. These events are sensed and stored as capta. As Bachelard notes, each sensor is an instrument capable of approaching phenomena at a specific order of magnitude.[200] One implication is that the sensor at the same time neglects the orders of magnitude not being sensed. Thus, a sensor harvesting electronic emissions is not capable of perceiving that a person named Jim from a town called Trouble is carrying a mobile phone on Main Street. The

199 This is not a new problem; for a historical precedent, see the C.I.A.'s Phoenix programme during the Vietnam war. The solution then, measured in body count statistics, resulted in the murder of at least 8,000 unarmed civilians.

200 Gaston Bachelard, The Formation of the Scientific Mind: A Contribution to a Psychoanalysis of Objective Knowledge, trans. Mary McAllester Jones (Manchester: Climamen, 2002), 222.

sensor perceives a signal emitted of x strength. Any further knowledge must be extrapolated by correlating capta.[201]

One way in which ABI purports to find hay in a haystack is through the establishment of historical patterns. Pattern of Life (POL) mappings are statements of a baseline norm, against which deviations are registered as anomalies. In the case of a search for the anomalous hay stalk in a hay stack, practitioners might take the stack as a three-dimensional cube and measure its humidity over the period of a month under given conditions with a hygrometer. This would return sufficient capta to draw a POL – or pattern of humidity – mapping of the hay stack. Under persistent hygrometric surveillance, changes in the humidity levels above or below a threshold, defined by the POL map, are flagged as anomalies, i.e. as needles. The result of this operation is the identification of a humidity level anomalous to the base-line index, but within the technical system of analysis it would not be a formal identification of a hay stack.

This is not very distant from the way that ABI epistemologies understand human settlements under remote controlled occupation. Which is to say, first of all, that they don't. For the hygrometer there is only humidity, not hay. Within capta ontologies – a term elucidated below – at this stage in its process, ABI does not understand the object of its inquiry as human, or hay for that matter. Entities are understood in terms of thresholds of intensity, determined by the constraints imposed by the technical system. It is a fundamental of ABI that judgements or identifications are deferred.

Social networking maps the relational aspect of activities and transactions registered by sensors over time. The geo-spatial dimension of ABI layers network relations onto the topography of a globe. Network relations by themselves are not in a topographical register. If I often phone and text message my brother, who lives 3,000 kilometres away, and never communicate with my next-door neighbour, a social network map will show me as being very close to my brother, while the neighbour might not appear on the map at all. The question here is

201 Phillips, "A Brief Overview of ABI,".

which entity transacted with which other entity; what are their primary, secondary, tertiary relations? The relational mapping of social networks produces a topology of association. Social networks are commonly constructed from capta gathered from mobile-phone traffic and electronic communications like email. UAVs may be armed with sensor pods that possess the means to spoof mobile-phone communications, appearing to the phone as a cellular tower, convincing the device to direct its signals through the sensor.[202] Another way of speaking of social networking is to use the terms *chain analysis*, or *link analysis*.[203]

The principles and methodologies that I am discussing have been implemented into the construction of software platforms such as the Distributed Common Ground System (DCGS) and Palantir. Both of these systems aim to bring together disparate capta types into a computational environment where such material can be processed and represented in a graphical display. Several branches of mil-com use a DCGS, which is assembled from legacy-software components that have been updated since the 1990s. It is built and maintained by major defence contractors like Northrop Grumman, Booz Allen Hamilton, TASC, MITRE, and General Dynamics.[204] Palantir is a platform developed initially as a tool to prevent fraud on PayPal's online money transfer service.[205] Its core elements have since been rolled out and offered to a range of commercial and state endeavours[206]: "Using advanced artificial intelligence algorithms – coupled with an easy-to-use graphical interface – Palantir helps trained investigators to identify connections between disparate databases to rapidly discover links between people".[207]

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202 Gregory, "From a View to a Kill," 43.

203 See Matt DeLong, "Co-Traveler: Inside the NSA's Cell-Phone-Tracking Program," Washington Post, 2013, www.documentcloud.org/documents/888734-cotraveler-tracking-redacted.html; and Barton Gellman and Ashkan Soltani, "NSA Tracking Cellphone Locations Worldwide," The Washington Post, December 4, 2013, www.washingtonpost.com/world/national-security/nsa-tracking-cellphone-locations-worldwide-snowden-documents-show/2013/12/04/5492873a-5cf2-11e3-bc56-c6ca94801fac_story.html?utm_term=.7ca86672bdec.

204 U.S. Air Force, "Air Force Distributed Common Ground System," About us – Fact Sheet, accessed October 13, 2010, www.af.mil/About-Us/Fact-Sheets/Display/Article/104525/air-force-distributed-common-ground-system.

205 Jacques, Peretti, "Palantir: The 'Special Ops' Tech Giant that Wields as Much Real-World Power as Google," The Guardian, July 30, 2017, https://www.theguardian.com/world/2017/jul/30/palantir-peter-thiel-cia-data-crime-police.

206 Spencer Woodman. "Palantir Provides the Engine for Donald Trump's Deportation Machine," The Intercept, March 2, 2017, theintercept.com/2017/03/02/palantir-provides-the-engine-for-donald-trumps-deportation-machine.

207 Biltgen and Ryan, Activity-Based Intelligence, 341.

The Computational Turn

Broadly, the claims of methodological knowledge production inherent in mil-com's epistemologies have been seen as feasible in the context of what has been termed a *computational turn*: "In a diversity of scientific and professional fields, a computational turn is unfolding that challenges 'traditional' scientific methodologies and long standing professional practices".[208] Here, we are interested in two uses of this term: as a societal phenomenon and as a methodological shift, with the emphasis on the latter. For the former, this is an "umbrella term to describe the recent avalanche of governmentalities, which act through machine learning and capta mining techniques".[209] Methodologically, this term is used to account for an increased use of "digital databases, algorithmically facilitated search and analysis and computer simulations".[210] The decision processes proper to geo-spatial and ABI doctrines contain a hidden promise in which these methodologies are understood to elide the prejudice and presuppositions that mar human judgement. With the use of capta and the application of algorithms to its processing, truth or knowledge are held to be immanent within an enclosed system.

I am establishing this here because later in this chapter and in the next, I will be making arguments that rely upon an understanding of how computational ontologies relate to actions and transformations that are not confined to physical boxes that contain processors and cables. As Kitchen and Dodge explain:

Software consists of lines of coded instructions and algorithms that, when combined and supplied with appropriate input, produce routines and programs capable of complex digital functions.
Although code in general is hidden, invisible inside the machine, it produces visible and tangible effects in the world.[211]

208 Mireille Hildebrandt and Katja De Vries, Privacy, Due Process and The Computational Turn: The Philosophy of Law Meets the Philosophy of Technology (New York: Routledge, Taylor & Francis Group, 2013), xiv.

209 Ibid., 15.

210 Ibid.

211 Rob Kitchin and Martin Dodge, Code / Space: Software and Everyday Life (Cambridge: MIT Press, 2014), 3–4.

As I show below and in subsequent chapters, the disjunction between an order of magnitude proper to the human being and that proper to the parts of the technical system performing machine-computational procedures is amplified. In the distinction between human intelligence (HUMINT) and technical methodologies outlined above, I suggest that the take up of machine learning and capta mining techniques have de-centred the human agent from the production of legitimated knowledge.

I have already described some of the ways in which the drone harvests capta from sensor phenomenologies. Where possible, data are enriched with metadata, which "literally means data about data".[212] A relational dataset is a trove of data enriched with metadata, with an interface for drawing out relations.[213] A meeting at a pizzeria might be registered by data, each described by metadata referring to location, time, and other associations. For metadata to be useful, it necessarily requires a formalised scheme by which data about data is entered and made meaningful.[214] Such schemes are referred to as *ontologies*.[215] This term is used in computation to describe schemes that give functional meaning to data. It is meant here to be understood as distinct from the term *Ontology*, familiar to philosophical inquiry.[216] I follow Yuk Hui's use of "Ontology with a capital O to refer to the latter and ontologies to refer to the conceptualisation used in information science".[217]

Within computational ontologies, entities undergo transformations that, following Simondon, Yuk Hui understands as *modulation*. The concept of modulation is part of Simondon's philosophy of individuation in which being is ontogenetic as opposed to phylogenetic or hylomorphic. As long as there are informatic flows between data within computational ontologies, the attributes assigned to entities

212 "An intuitive example is the library search: when a person looks for a book in the library catalog, she must submit different information, for example, the name of the author, the title of the book, or the ISBN number. This information, which is in addition to the content itself (data), is known as metadata. The formats within which these data are presented are called metadata schemes." Hui, On the Existence of Digital Objects, 16.

213 The best case of an existing email data trove open to the public and thus available for the study of social network techniques outside of corporations like Google or Yahoo or mil-com is the Enron Data. See: EnronData.org, "Home," accessed December 12, 2016, https://enrondata.readthedocs.io/en/latest/ accessed 12/12/16.

214 See also, Coté, "Bulk Surveillance."

215 See also, Adrien Mackenzie, "Simulate, Optimise, Partition: Algorithmic Diagrams of Pattern Recognition from 1953 Onwards," in Cold War Legacies: Systems, Theory, Aesthetics, ed. John Beck and Ryan Bishop (Edinburgh: Edinburgh University Press, 2016).

216 Hui, On the Existence of Digital Objects, 33.

217 Ibid., 33.

are continuously transforming. One consequence of the manner in which computational ontologies modulate entities is the "systemic ambiguity"[218] and fundamental instability of categories, revealed as a condition of technical systems that feature a proliferation of automated processes. Programs that offer true or false answers to relatively simple queries, when layered and linked in their thousands, may become illegible to human beings. As Matthew Fuller and Andrew Goffey note: "pattern recognition provides a comfortable resolution to the problems that systemic ambiguity poses".[219] In other words, the patterns that emerge from technical systems could be said to provide a palliative to conditions of generalised indeterminacy.

Celia Lury, Luciana Parisi, and Tiziana Terranova suggest that transformational processes, such as those that Hui describes with the term modulation, be understood as a *continuum*[220]; a term that captures the temporal contrast of computational processes to those proper to the circadian rhythm. While a human observer is mentally grasping an output from the continuum, be it screen- or paper-based, the entities stabilised in the data-visualisation have not ceased modulating. Modulation thus elides the static frames of pattern recognition.

Unsure of what to look for and unwilling, or unable, to commit agents on the ground – for mil-com – the strong signature has become an overwhelming noise. Knowledge is to be derived from weak signatures, oblique patterns, or networks formed of trace data. ABI is a practice – distinct from the earlier expeditionary structure of delegated sovereignty – that *aims to derive knowledge from a geo-location without committing agents as occupiers*. In ABI and, in particular, its reliance upon sensors that capture weak signatures, we find an epistemic frame that elides empirical verification.

I have contextualised the current practices of both ABI and GEOINT within what has been termed the *computational turn*. The promises of machine learning and data mining have shifted the grounds of what constitutes legitimate

218 Matthew Fuller and Andrew Goffey, Evil Media (Cambridge: MIT Press, 2012), 29.

219 Ibid., 32.

220 Lury and Parisi, "The Becoming Topological of Culture."

knowledge within institutions like mil-com. This is a kind of knowledge production based on a "type of computation not within the reach of the human mind".[221] The procedures of abstraction that I have described throughout this chapter are amplified in the shift to a topological register and to technical systems, within which data entities are removed from an external referent.

Algorithmic Governmentality and The Dividual

> The implicit belief accompanying the growth of "big data" is that, provided one has access to massive amounts of raw data (and the world is actually submersed by astronomical amounts of digital data), one might become able to anticipate most phenomena (including human behaviours) of the physical and the digital worlds, thanks to relatively simple algorithms allowing, on a purely inductive statistical basis, the building of models of behaviours or patterns without having to consider either causes or intentions.[222]

Antoinette Rouvroy argues that, when mobilised on a large scale, modes of knowledge production that incorporate capta mining and machine learning constitute an algorithmic governmentality, which she opposes to political governmentality. Here, I extend the previous discussion around machine processes to an order of magnitude proper to the object of dronology. I conclude the chapter by demonstrating the contribution of the dronology developed here to the current theorisation of drone warfare, by contesting Gregoire Chamayou's assertion that the object of drone epistemology is the individual human body.

With the harvesting and processing of large quantities of capta, knowledge is taken to be given, or immanent, within the technical system without recourse to "empirical experiment and deductive, causal logic"[223] – or, indeed, the messy uncertainties of human discourse. This is a form of rationality in which capta, information, and knowledge are taken to be the same thing. Moreover, this kind of

221 Hildebrandt and De Vries, Privacy, Due Process and The Computational Turn, xiv.

222 Rouvroy, "The End(s) of Critique," 143.

223 Ibid., 144.

truth-making does not record activity or transactions indexed to an individual subject. Algorithmic governmentality does not make any relation of subjects to moral agency (causes or intentions) in the activities or transactions harvested as capta. Rather than addressing an individual or mass of individuals, algorithmic governance is addressed to an "infra and supra-individual statistical body",[224] in which truth is always already present as a "memory of the future",[225] without recourse to the physical and temporal frame of the subject. Another way of understanding and discussing capta-bodies, or the infra- and supra-individual, is through the notion of the dividual.

In *Drone Theory*,[226] Gregoire Chamayou's analysis focuses upon the drone ensemble as a two-fold operation that: 1) Narrows the metrologically inscribed globe in a principle of specification and precision[227]; and 2) Extends this logic of targeting outside of geographically inscribed territories, such as sovereign states. These principles of intermittence and scalar modulation constitute what Chamayou understands as globalisation and homogenisation. This also seems to be the way that mil-com understands its own operations. Chamayou's drone theory is oriented towards the target and, in this sense, he is thinking *with* mil-com. The problem for Chamayou is that he is invested in an intellectual project that engages the same idealised version of precision targeting as mil-com, albeit in condemnation.[228]

In *Predator Empire Drone Warfare and Full Spectrum Dominance*, Ian Shaw concurs with Chamayou's thesis that, with the drone, the "scale of the target is narrowed", from the collective to the individual.[229] To support this assertion, Shaw relies upon the writing of Gabriella Blum, for seven years Senior Legal Advisor in the International Law Department of the Military Advocate General's Corps in the Israel Defense Forces, and after that, Strategy Advisor to the Israeli National Security Council for another year. Following Blum, Shaw writes: "If war and law

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224 Ibid., 157.

225 Ibid., 157.

226 Grégoire Chamayou, Drone Theory, trans. Janet Lloyd (London: Penguin, 2015).

227 Here, precision is in regards to the "Kill Box", a colloquialisation of GARS reference keypads, as mentioned above. "The zone of armed conflict, having been fragmented into miniaturisable kill boxes, tends ideally to be reduced to the body of the enemy or prey". Chamayou, Drone Theory, 56.

228 Ibid., 56–57.

229 Shaw, 2016, p. 113.

once operated at the level of a collective (as with states and their armies), then today they are predicated on the rights and behaviours of individuals - regardless of national affiliation or territorial boundaries".[230] Yet, is it true that war and law, in general, are now oriented towards the rights and behaviours of individuals? If this is so in some places and for some conflicts, it is certainly not the case that this is true *regardless of national affiliation or territorial boundaries*. As I show in Chapter 2, an important context for dronological power is the ability to impose dronology, an endeavour that requires conditions of relatively weak sovereignties. Indeed, in geo-spaces that feature relatively *strong* sovereignties, like Syria today (August, 2018), it is not possible for any one military organisation to impose dronological power. This is so, for the simple reason that unmanned aerial vehicles are not readily defended from military opponents who can shoot them down. In Syria the active combatants include the United States, Russian and Israeli armed forces. None of these powerful armed groups with advanced air power are going to permit another to impose blanket drone coverage over a city or region. Thus, instead of the ability to impose dronology over persons, regardless of national affiliation or territorial boundaries, the opposite is true. I will attend to Hannah Arendt's discussion of human rights and state sovereignty in Chapter 2. Suffice it to say that an Arendtian argument may be proposed for strong local sovereignties as a means of curbing the possibility of what Shaw elegantly refers to as "atmospheric totalitarianism".[231]

While the publicly available documents show a discursive, budgetary, and infrastructural orientation towards the production of the target, in practice, the drone ensemble is oriented mostly to persistent surveillance and analysis, punctuated by kinetic strikes. Only two percent of Combat Air Patrols (CAP) result in missile launches. This is not to diminish the significance of arbitrary and unilateral mil-com violence. This is also not something that Chamayou ignores, or fails to recognise. However, his analysis, following his body of work,[232] is continuously oriented towards maintaining the figure of the human target and the narrowing focus of precision in mil-com discourse that is plagued by internal

230 Ibid.

231 Ibid, p. 154.

232 See Grégoire Chamayou, Manhunts: A Philosophical History (Princeton: Princeton University Press, 2012).

contradiction. As I have shown, of the two percent of drone CAPs that result in missile launches, the great majority are signature strikes. As such, the drone epistemology derives general models from particular instances – a process of rationality that is known as inductive. In the case of the 2015 Wacha Dara strike, the destroyed compound conformed to such an inductively constructed model. Far from resulting in precision or certainty, the drone operationalises a probabilistic methodology. As Karl Popper put it, "any conclusion drawn in this way may always turn out to be false: no matter how many instances of white swans we may have observed, this does not justify the conclusion that all swans are white".[233] In this sense, Chamayou falls for the same trap as mil-com writers Patrick Biltgen and Stephen Ryan, who write in their textbook *Activity-Based Intelligence: Principles and Applications* that in ABI, the target is the output of a deductive analytic process.[234] The signature strike, in its essence as a strike upon a signature, shows that this statement is false.

Following on from the publication of *Theorie du Drone*, Chamayou has published a postscript of sorts that re-visits the question of pattern of life and ABI in ways that his 2013 book notably fails to address. In the 2016 essay "Patterns of Life: A Very Short History of Schematic Bodies", Chamayou recognises that drone epistemology does not actually map the human as an individual, but as a dividual.[235] Gerald Raunig finds the roots of this term in the Latin *dividuum*, the rendering divisible of something that had not been able to be divided previously.[236] For Raunig, the dividual is always a "raging middle", a formative instance of a non-linear process of continuous unfolding.[237] Chamayou draws from the work of painter Paul Klee to show how an individual is an entity that any subtraction of constituent parts would destabilise as such. On the other hand, the dividual is an entity which can withstand subtraction and maintain its stability.

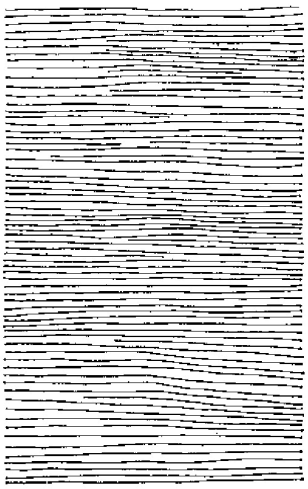
233 Karl R. Popper, The Logic of Scientific Discovery (London: Routledge, Taylor & Francis Group, 2010), 4.

234 Biltgen and Ryan, Activity-Based Intelligence.

235 Grégoire Chamayou, "Patterns of Life: A Very Short History of Schematic Bodies," The Funambulist Papers 57 (2014), Accessed June 2016, <https://thefunambulist.net/history/the-funambulist-papers-57-schematic-bodies-notes-on-a-patterns-genealogy-by-gregoire-chamayou.

236 Gerald Raunig, Dividuum: Machinic Capitalism and Molecular Revolution, trans. Aileen Derieg (Los Angeles: Semiotexte, 2016).

237 Ibid., 11.



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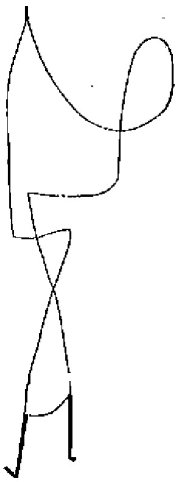

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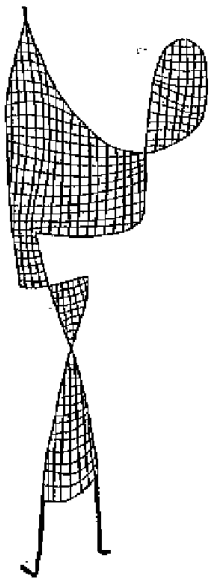
The individual is illustrated by a figure, recognisably human, which has been drawn with a single unbroken line; thus, to break the line would break the figure. The dividual, on the other hand, is composed of horizontal lines dispersed vertically along the page. Presumably, the removal of a single line or two would not destabilise the pattern. Chamayou writes that if, following Gilles Deleuze's *Postscript on Societies of Control*,[238] the individual shows the disciplinary figure and its relation to the mass, the dividual shows the new object of "machineries of power". Chamayou then inserts a third modified figure: the initial individual drawn with a single line but, this time, filled in by the dividual grid:

The corresponding object of power here is neither the individual taken as an element in a mass, nor the dividual appearing with a code in a databank, but something else: a patterned individuality that is woven out of statistical dividualities and cut out onto a thread of reticular activities, against which it progressively silhouettes in time as a distinctive perceptible unit in the eyes of the machine.[239]

238 Gilles Deleuze, "Postscript on the Societies of Control," October 59 (Winter 1992): 3–7.

239 Chamayou, "Patterns of Life: A Very Short History of Schematic Bodies," The Funambulist Papers 57 (2014), Accessed June 2016, <https://thefunambulist.net/history/the-funambulist-papers-57-schematic-bodies-notes-on-a-patterns-genealogy-by-gregoire-chamayou.



This seems to be an unnecessary move that only services Chamayou's manhunt theory in the face of evidence that drone epistemology is not aimed at a precisely targeted individual human. The reconstitution of the individual subject – where it does occur – is *a posteriori* to the dronology. This is something that I will address in greater detail in Chapter 3. In Chamayou's work, the body remains the normative target of drone power, or drone epistemology. In my view, this is not the case; the drone subverts the modern political configuration of sovereignty in which the body is the object of politics. The kinds of knowledge production that arise from inductive, capta-based frameworks shift "the target of 'power' from actuality, and from the present wilderness of facts"[240] to the potentiality that is held to be immanent in activity pattern making. Even were the probabilistic subject to possess some virtual corporality within the technical system (and there is no indication that it does), this would still not be an "actual, experiential, present and sentient subject".[241]

The persistence of drone-combat air patrols over FATA, at the time of the 2015 signature strike at Wacha Dara constitutes what Antoinette Rouvroy has termed *algorithmic governmentality*. Truth is understood as being immanent within a technical system, without the assistance of empirical verification or observation.

240 Rouvroy, "The End(s) of Critique," 152.

241 Ibid., 153.

Rather than orientating towards the individual or mass, the drone ensemble addresses an infra- or trans-individual order of magnitude that, following Deleuze, Chamayou terms the dividual. However, while Chamayou extends his previous work in the continued assertion that the object of drone epistemology remains the individual human being as a target, it is shown that this is not the case.

By appropriating Rouvroy's term algorithmic governmentality, I am suggesting that one way to consider the drone's persistent presence in territories such as the FATA is by understanding drone operations as a remotely controlled occupation. One question that arises is: can the drone ensemble be explored as a "body sovereign" and is there a "body politic" that is proper to the drone? This is the question that the next chapter begins to take up.

Chapter Two: Drone Politics

This chapter aims to establish the drone as a technical ensemble at the order of magnitude proper to that of state sovereignty and the system of interstate relations. I do not mean by this, that the drone is equivalent to state sovereignty. For example, there is no suggestion that the drone enjoys, or aspires to a monopoly on violence. Indeed, as I show, one of the conditions for the drone operations over the FATA is the existence of a multitude of near-sovereignties. Near-sovereignty is a neologism that I introduce as a way to account for the co-existence of relatively weak, layered and interacting entities such as the Pakistani state, humanitarian non-governmental organisations, militant groups, drone operations and tribal authorities.

Structurally, I have organised this middle chapter in a slightly different manner than Chapters 1 and 3. Here, the establishment of the drone ensemble in a political context is divided between a consideration of the drone's interior and exterior milieux. I have found it useful to place the discussion of the drone's historical etymology in the middle of the chapter, marking the point where I turn from the interior to the exterior. This is a strategic choice that impacts the organisation of this thesis as a whole. While Chapter 1 deals with the drone's technical context and condition, Chapter 3 takes up the relations of the drone ensemble to the manner in which life and the human being are objectified by power. The etymological discussion in this chapter aims to establish a historical relation, preceding its current form, of the drone to subjectivity. Thus, the etymology is positioned as a hinge between this chapter's discussion of a political interior and exterior but is also set as a pivot, joining the drone to the sovereign subject and thereby the concerns of the first chapter to the third.

I begin by extending the discussion at the end of the previous chapter. I explore the ways in which the drone ensemble, as it is visible in the 2015 signature strike at Wacha Dara in the FATA, constitutes an internally coherent space or "sovereign body." This is described as the drone's *internal milieu*. The discussion draws together the human participants to dronology with non-human actors to

demonstrate particular and contradictory ways in which actants exert a structuring force.

The French term *milieu* is sometimes translated as environment. The reason that I use milieu here is to designate a middle, or centre. Milieu is a specification of the general concept of environment. My reading of milieu is adopted from Simondon's writing, in which he translates the concept through the work of his doctoral supervisor, Georges Canguilhem. In Canguilhem's biological metaphor: "In order for there to be an environment, there must be a centre. It is the position of a living being, its relation to the experience it lives in as a totality, that gives the milieu meaning as conditions of existence".[242] The vitalism in this statement is recognised by Canguilhem, for whom the fault of the vitalist position is not that it is wrong; rather, it is historically overly modest: "The classical vitalist accepts the insertion of the living organism into a physical milieu to whose laws it constitutes an exception".[243] The problem for Canguilhem is that classical vitalism fails to recognise a universal ontogenetic vitality: "In the end, classical vitalism sins, paradoxically, only in its excessive modesty, in its reluctance to universalise its conception of experience".[244] Thus, the milieu does not pre-exist the entity inserted into it. Both drone and its milieu are produced simultaneously. This relation of recurrent causality is important. Michel Foucault, like Simondon – a student of Canguilhem, uses different terminology to describe what Simondon refers to as "recurrent causality." Within a milieu, Foucault writes: "a circular link is produced between effects and causes, since an effect from one point of view will be the cause of another."[245] Foucault extended the biological concept of milieu to spatial practices of governmentality.[246] Simondon mobilised the milieu concept within his theory of individuation both biological, psychological and technical. Simondon was able to reconcile the biological concept of milieu with the technical in part by asserting a naturalisation of the technical object, which is to say that for him, the mature technical object approximates a nature. *Approximates,* because unlike the

242 Canguilhem, Knowledge of Life, 70.

243 Ibid., 70.

244 Ibid., 70.

245 Foucault, 2002, p. 22.

246 "The space in which a series of uncertain elements unfold is, I think, roughly what one can call the milieu… It is therefore the medium of an action and the element in which it circulates." (Ibid, p. 23)

purely natural, the technical object will continue to possess a certain degree of artifice, defined as the necessity of a human hand in protecting its individuality from the forces of nature.[247] "The evolved technical object, (…) approximates that mode of existence of natural objects. It tends to internal coherence, and towards a closure of the system of causes and effects" - recurrent causality.[248] However, it is important to note that Simondon does not simply make an equivalence between technical and living systems. This was one of his main objections and criticisms of cybernetics and the work of Norbert Weiner.[249] The point to retain, is that for Simondon, technical systems approach the living when they have become mature enough to incorporate the dynamic of internal coherence that features circular operations of recurrent causality.

The Interior Milieu of the Drone

At the end of the previous chapter I borrowed Antoinette Rouvroy's term *algorithmic governmentality* to describe some of the ways in which the dronology is addressed at an order of magnitude proper to dividuals taken as capta by remote sensors.[250] I explained the distinction between *∂ata*, as that which is given, and the substitution of the term *capta*, following Johanna Drucker, in recognition that knowledge is constituted, not naturally given.[251] In this chapter, I attend to the drone ensemble as a near-sovereign, characterised by an internal coherence proper to a sovereign body.

I have demonstrated how, viewed through the signature strike at Wacha Dara, the drone ensemble evidences the drawing together of multiple technical ensembles: the unmanned aerial vehicle, the technical network, and remote sensing, for example. Following Bruno Latour, I have described the particular space of the technical network as local at all points, yet global, according to its connections. When contemplating an interior milieu for the drone, the initial question that

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247 "The concrete technical object, that is, the evolved technical object, (…) approximates that mode of existence of natural objects. It tends to internal coherence, and towards a closure of the system of causes and effects which operate in circular fashion within its boundaries. Further, it incorporates part of the natural world which intervenes as a condition of its functioning and, thus, becomes part of the system of causes and effects.
Simondon", 1958, p. 40.

248 Simondon", 1958, p. 40.

249 Simondon, 1989, 44 and 49.

250 Rouvroy, The End(s) of Critique."

251 Drucker, "Humanities Approaches to Graphical Display."

presents itself is how to know the space of the drone. I propose two ways of approaching this question, each entangled with the other. One is through an exploration of the ways in which software and space engage in relations of recurrent causality. The other is the manner in which technical networks both extend the possibilities of space and constrain the possibility of action for those actants, non-human and human, who through their activities and transactions, constitute networks.

First, I will re-engage the notion of computational ontologies introduced in the previous chapter. To reprise the concept: in computation, the term *ontologies* refers to schemas that structure data or capta in ways that permit programmability. This is so because with machine processes, ontologies are the frames in which code is capable of modelling the ideas to be reflected.

Soft-Space

In the introduction to this thesis I have noted that territory has been theorised, not simply as a two dimensional cartographic plane, but as a volume. Thus, as Eyal Weizman has recognised, "traditional international borders are political tools dividing the land on plans and maps; their geometric form, following principles of property laws, could be described as vertical planes extending from the centre of the earth to the height of the sky. The departure from a planar division of a territory to the creation of three-dimensional boundaries across sovereign bulks redefines the relationship between sovereignty and space."[252] Here, I extend the spatiality of control, or sovereignty to another kind of space which I refer to as soft-space. Soft-space refers to the manner in which computational ontologies, or software for simplicity, acts spatially in ways that are different from topographical demarcations.[253]

In *Code/Space: Software and Everyday Life*, Rob Kitchin and Martin Dodge "theorize space and spatialities as ontogenetic in nature – as constantly in a state of becoming. Through its technicity, software is able to do work in the world. It

252 Weizman 2002, 2 (this work is a series of eleven short pieces, the reference is to section number).

253 I have previously noted that in The Birth Of Territory (2013), Stuart Elden recognises that territory is not only historically constructed as a concept, but is also mutable in its form and location.

transduces space; that is, software enables space to unfold in multifarious ways".[254] With the term *technicity*, Kitchin and Dodge refer to the capacity of software to be an actant. For the authors, software has a high degree of technicity.[255] The drone ensemble is code/space in the sense that without the code assemblage, the drone would not retain its character.[256] From the perspective of software, space is not ontologically fixed but is rather conditioned by unfolding practices. Space, in this sense, is to be understood as a verb. As such, the drone is continuously *spacing* rather than fixed in a secure shape. Thus, one way in which the drone is conditioned is by the code that spaces it through the reach of its ontologies.

Because the drone is organised topologically over a technical network, Kitchin and Dodge's expression *coded infrastructure* is useful. Coded infrastructures are networks "that link coded objects together and infra-structures that are monitored and regulated, fully or in part, by software".[257] As a coded infrastructure, the drone is an assembly of multifarious coded objects that vary in their programmability. This ranges from hardcoded objects that, while relying on code to function, are not programmable, to the fully programmable coded systems that process massive quantities of capta, like the Distributed Common Ground System (DCGS) or Palantir.[258] Networked infrastructures however, are not static or immutable. Spacing is always ontogenetic, unfolding over time and through the interaction of multiple actors.

Since the drone is oriented towards capta, it is continuously re-forming its shape and reach towards dividual sources that might be captured. However, software ontologies as performative actants are also dynamically extending the internal milieu of the drone ensemble into its associated and external milieux. One way that this is comprehensible is through an understanding of how software

254 Kitchin and Dodge, Software and Everyday Life, x.

255 Ibid., 42.

256 Ibid., 18.

257 Ibid., 8.

258 There is a fascinating but anecdotal software battle playing out between Silicon Valley start-up Palantir (developed from Paypal's anti-fraud systems) and the defence giants like Lockheed Martin. Currently, Palantir has filed suit against the army claiming to have been locked out of the contract. See Jen Judson, "Army Will Hold Off On DCGS-A Award as Palantir Lawsuit Plays Out," Defense News, August 8, 2017, www.defensenews.com/home/2016/07/18/army-will-hold-off-on-dcgs-a-award-as-palantir-lawsuit-plays-out and Noah Shachtman, "Spy Chief Called Silicon Valley Stooge in Army Software Civil War" Wired, June 3, 2017, www.wired.com/2012/08/palantir.

ontologies impose "grammars of action" upon those whose dividuated activities are captured.

We have seen in Chapter 1 the way in which Phillip E. Agre distinguishes between surveillance and capture by the manner in which metaphors are mobilised.[259] If the surveillance model is premised upon visual metaphors – the watchful eye of Big Brother or Bentham's panopticon – the capture model mobilises linguistic metaphors such as "tracking". Tracking is metaphorical because "the entity in question traces a trajectory through a more abstract space which might have numerous 'dimensions'".[260] Because of the way that ontologies in computing are representation schemes, the formal representation of activity within a linguistic metaphorical frame means that "human activity is thus effectively treated as a kind of language itself, for which a good representation scheme provides an accurate grammar".[261] Agre refers to this as grammars of action.

The reason why grammars of action are salient to an exploration of the drone ensemble's spacing is because of the ways in which I understand the networked space as a tracing of action; an ontogenetic operation characterised by formal instability. The drone is never a stable form but is continuously transduced by the operators, analysts, and programmes that read the language of activity *and* for those upon whom the computational ontologies are imposed. These coded transductions are the drone's grammars of action.

What Agre suggests in this regard is that grammars of action take on a normative force.[262] Those whose activities are being dividuated into such schemes are "induced to organise their actions so that they are readily 'parsable' in terms of the grammar".[263] It is therefore necessary to reject an intuitive understanding of those being surveilled by the drone as external to its processes, or to its transduction as a "body-politic". Rather, following Jennifer Gabrys's theorisation of the relations of sensors to that which is subject to sensing, I propose that the milieux associated

259 Agre, "Surveillance and Capture."

260 Ibid., 104.

261 Ibid., 108.

262 Ibid., 110.

263 Ibid.

with the drone are both informed by the drone and at the same time in-form the drone, moving in and out of the drone's interior milieu in a dynamic spacing. In *Program Earth: Environmental Sensing Technology and the Making of a Computational Planet*, Gabrys addresses the relations of sensors to that which is subject to sensing. Gabrys refuses an understanding of sensors as merely passive devices capturing data, "as though there is a world of substantialist phenomena to be processed by a cognizing device".[264] In Gabrys's reading, sensors laced into an environment render it operational to computation and programmability that engenders new entities and milieux that are individuated by their participation".[265] In the context of the drone's remote control occupation over the FATA, interviews conducted by the authors of *Living Under Drones* reveal how the theory above translates to lived experience:

> If I am walking in the market, I have this fear that maybe the person walking next to me is going to be a target of the drone. If I'm shopping, I'm really careful and scared. If I'm standing on the road and there is a car parked next to me, I never know if that is going to be the target. Maybe they will target the car in front of me or behind me. Even in mosques, if we're praying, we're worried that maybe one person who is standing with us praying is wanted. So, wherever we are, we have this fear of drones.[266]

Between experience and rumour, the ways that the drone *knows* are imposed upon the mechanisms by which subjects accommodate its near-sovereign power. This is further complicated by the alleged existence of operatives who contribute to drone operations by marking targets. These are local people recruited for pay by mil-com

264 Gabrys, "Program Earth," 10.

265 Ibid., 11.

266 International Human Rights and Conflict Resolution Clinic (Stanford Law School) and Global Justice Clinic (NYU School of Law), "Living Under Drones: Death, Injury, and Trauma to Civilians from US Drone Practices in Pakistan," (September, 2012), 96. Interview with Safdar Dawar, President, Tribal Union of Journalists, in Islamabad, Pakistan (Feb. 29, 2012).

and directed to drop micro-sim chips – the kind that go into a mobile phone, for example – at a geo-location they designate as the site of militant activity.[267]

> Hayatullah Ayoub Khan[268] similarly explained that "drones [select] their targets with the help of chips which are dropped in homes or cars by informants." Many other residents of North Waziristan gave similar accounts. Policy analyst Samina Ahmed of the International Crisis Group also noted this widespread belief, explaining that many have told her that the Americans have "got people who throw parchiz [a local word for chips] into a car, or at the side of a house, and then the drone comes and it attacks that target".[269]

Accusations of score settling and general widespread abuse of the power to call in mil-com drone strikes on rivals are said to be rife in the FATA.[270] It is unknown to what extent these allegations are true and, if they are, to what degree the tossing of *parchiz* registers in the process of producing target signatures. What is revealed by this is the degree to which the drone's computational ontologies are insinuated into the lexicon of activity grammar for those subject to its algorithmic governmentality. With regard to the drone, the punctual kinetic action of drone strikes has the effect of coercing the residents of the FATA to incorporate within themselves the grammatical schema operationalised within the drone ensemble.

I have explored here the ways in which the drone is dynamically spaced by its software assemblages and their ontologies. In this sense, the limit of the drone ensemble, as a body of forces, can be said to coincide with the reach of its ontologies and their grammars of action. I have argued that one way an interiority of the drone can be rendered is through tracing the manner in which software spaces the drone ensemble both across its technical networks and extended-

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267 Those chips would most likely be RFID cards with unique identifiers that transmit to a capable sensor. See Martijn Van Otterlo, "Machine Learning View on Profiling," In Privacy, Due Process and the Computational Turn: The Philosophy of Law Meets the Philosophy of Technology, edited by Hildebrandt, Mireille, and Katja De Vries, 41-65. New York: Routledge, Taylor & Francis Group, 2013.

268 Anonymised name.

269 "Living Under Drones," 100.

270 "As one resident of a drone-affected community has explained: "People have internal enemies and conflicts with each other. [T]o get revenge [on] another party, they put chips on that house." Ibid., 100.

through grammars of action to its associated and exterior milieux. Soft-space operates dynamically and its grammars of action are articulated to the exterior milieux by the violent death and destruction that arrives with a unilateral missile strike.

What I attend to now is the manner in which the drone ensemble channels activity within its technical networks. I demonstrated above some of the ways in which the drone ensemble imposes grammars of action through the exertion of computational ontologies; below, I extend grammars of action and soft-space to account for the over-determination of a networked interior milieu. By "over-determination", I refer to functional constraints imposed upon the possibility of activity within the milieu, and with objects and systems that are relatively mature in their technical evolution. Simondon has written that "we might attempt to define the technical object in itself by a method of concretisation and of functional over-determination, proving that the technical object is the end-product of an evolution and that it is something which cannot be considered as a mere utensil".[271] The relations of presence to location are shown to produce an economy of activity and transaction within the drone ensemble.[272]

Karin Knorr-Cetina has extended the interaction-order work of Erving Goffman into situations irreducible to co-location and describes formal configurations similar to those of the drone as is being established here. For Knorr-Cetina, currency trading brings to interaction order what she refers to as the "synthetic situation" of labour mediated by "scopic-systems".[273] Scopic-system makes reference to scope, as in periscope or telescope, where the actor's access to the system is necessarily mediated by some sort of device or instrument where co-location is not possible. The drone operator, working out of a modular trailer at Creech Air Force base in Nevada, participating in a combat air patrol over the FATA, is in such a situation, as are her image-analyst colleagues in Qatar, a

271 Simondon, 1958, 15.

272 While my focus here is on the drone ensemble as a technical network, see also Peter Asaro's fascinating study of the drone operator as bureaucratised labour. Peter M. Asaro, "The Labor of Surveillance and Bureaucratized Killing: New Subjectivities of Military Drone Operators," Social Semiotics 23, no. 2 (2013): 196–224.

273 Karin Knorr-Cetina, "From Pipes to Scopes: The Flow Architecture of Financial Markets." Distinktion 7 (2003): 7–23, and "The Synthetic Situation: Interactionism for a Global World," Symbolic Interaction 32, no. 1 (2009): 61–87.

mission controller in Waddington RAF base in the UK or, arguably, a local thrower of *parchiz* in the FATA, who scopes into the world of the drone through a mobile-phone connection. Knorr-Cetina's term is differentiated from other uses of "scopic" such as scopic-regimes.[274]

The synthetic-situation is one in which scoped and physical elements are synthesised in a hybrid situation. Knorr-Cetina describes the experience of a person engaged with such systems:

> They exhibit a split in sensory attention that is institutionally required and organized – eyes fixed on the screen, ears picking up what goes on within aural range, behind the face-to-screen setting. In this sense even the most inclusive synthetic-situation is always something of a hybrid that joins a scoped reality with physical elements.[275]

The drone ensemble produces *synthetic-situations* because, while the operator might be involved in the action seen through the scopic regime of her screen, she is at the same time aware and influenced by the physical conditions around her. Drone operators attend to a set of screens and devices that are oriented towards their psycho-perceptual apparatus, enabling access into a system in which they are co-present yet not co-located. Mil-com drone operations are conducted through a multiplicity of scopic instruments including video feeds, audio, and, to a large degree, instant-message text chats.[276] The term synthetic-situation captures a mobile threshold between the interior and exterior milieux of the drone ensemble.

What Knorr-Cetina's formulation was never intended to capture is the manner in which soft-space extends grammars of action beyond technical networks and devices. I have argued above that those whose activity and transaction are subject to sensor capture and violent death are included in the drone's interior milieu. I

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274 The term "scopic regime" is attributed to Christian Metz (1977, trans. 1982), who uses the idea to differentiate cinematic performance and reception from the theatrical. The notion of scopic regimes has been further developed by, for example, Derek Gregory makes mention of scopic regimes in his essay "From a View to a Kill."

275 Knorr-Cetina, "The Synthetic Situation," 67.

276 Gregory, "From a View to a Kill."

suggest here that they participate in the synthetic-situation, albeit in a different way than those who are understood to be workers within the drone ensemble. While for those surveilled by the drone ensemble, the representation of the drone *world* does not appear on screens, that world is represented in both physical violence and mental imagery. As evidenced by the authors of *Living Under Drones*, the synthetic-situation experienced by residents of the FATA is reportedly pervasive. Excerpts from interviews conducted in 2012 demonstrate that, in the FATA, involvement within a synthetic-situation is not confined to those with access to screens:

> Not many people go to funerals because funerals have been struck by drones. Many people are scared. They don't go to funerals because of their fear.[277]
>
> When the drone is moving, people cannot sleep properly or can't rest properly. They are always scared of the drones.[278]
>
> God knows whether they'll strike us again or not. But they're always surveying us, they're always over us, and you never know when they're going to strike and attack.[279]

Participation in the scopic-system implies the co-presence of the worker within the system. Within a system characterised by remote-location and remote-presence, the co-presence of an actor can only be perceptible through a "response-presence". This expression refers to the propensity of an actor to respond within a reasonable amount of time. Examples of responses can be as prosaic as returning emails or chat messages, an acknowledgement that attention is being paid and that the participant is present on the network. The banality of this type of response belies the notion that without a proper response-presence, participation within a scopic-system is degraded or ceases to exist.

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277 "Living Under Drones," 94. Interview with Firoz Ali Khan (anonymised name), in Islamabad, Pakistan (Feb. 26, 2012).

278 Ibid., 84. Interview with Ahmed Jan, in Islamabad, Pakistan (Feb. 26, 2012).

279 Ibid., 81. Interview with Khalid Raheem (anonymised name), in Islamabad, Pakistan (Feb. 26, 2012).

With the necessity of maintaining a reasonable response-presence, Knorr-Cetina suggests that such systems produce an intensification of monitoring and a cohesion of the worker to their screens or other scopic interfaces. Response-presence binds participants into a technical network. The scopic element in the system is the interface between the participant and the network world; an anarthoscopic frame that permits the network to be "seen" and functions simultaneously as means of access and coercion.[280]

Knorr-Cetina refers to the overall design of such scopic-systems in globally oriented projects as *flow architecture*.[281] In a flow architecture, the direct piping of communication through a network is interrupted by scopic representations that feature most prominently in the large-scale screens of distributed command centres. Knorr-Cetina refers to these command centres as "zone specific bridgehead centre(s)".[282] These nodes are familiar in military-drone projects as Distributed Common Ground Systems (DCGS) and Combined Air Operations Centers (CAOC), where information flows are organised and made perceptible as a faux-totalising view:

> The point is that the screen reality discussed has none of this durability. It is more like a carpet of which small sections are rolled out in front of us. The carpet grounds experience; we can step on it, and change our positioning on it. But this carpet only composes itself as it is rolled out; the spatial illusions it affords hide the intrinsic temporality of the fact that its threads (the lines of text appearing on screen) are woven into the carpet only as we step on it and unravel again behind our back.[283]

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280 In Chapter 4 of his 1989 book War and Cinema: The Logistics of Perception, Paul Virilio writes of Anarthoscopic perception, a way that a partially viewed object is apprehended. The Anarthoscopic framing enables the comprehension of an entity's totality that is otherwise impossible to see. He writes of this in relation to the soldier looking through the tiny frame of a bunker opening. In the fog of war, the soldier runs into hiding so that he can properly see, through the crack. Virilio, Paul. War and Cinema: The Logistics of Perception. Translated by Patrick Camiller. New York: Verso, 1989.

281 Knorr-Cetina, "The Synthetic Situation."

282 Ibid., 9.

283 Ibid., 16.

Combined Air Operations Center (CAOC) at Al Udeid Air Base, Qatar[284]

Remote sensors are oriented towards the residents of those territories under remote-control occupation. But, as I have shown above, the input devices, trackpads, keyboards, and touch screens used by human operators are also sensors. The drone operator is constrained by grammars of action imposed by the soft-space of the drone in ways that are, of course, distinct from those under remote-control occupation. What is to be retained here is the manner in which the participation of a human being, an ostensible operator, is constrained by the over-determination of the technical network to dividuated activity and transaction.

In the rich argot of co-presence, remote-presence, remote and co-location, response-presence, synthetic-situations, scopic-systems and flow architectures, the over-determination of technical ensembles, like the drone, is succinctly expressed. Participation is both constrained and coerced. For the drone ensemble, participation is never expressed within the system as the participation of an individual subject. The scopic-system flows both ways and the human *operator* contributes to the project through sensors that input data no more and no less

284 Joshua Strang, "Combined Air Operations Center (CAOC) at Al Udeid Air Base, Qatar," Public Domain, https://www.dvidshub.net/image/2223204/combined-air-operations-center.

than those who are normally understood as the objects of surveillance. The subordination of the individual human subject is one consequence of the incompatibility between the order of magnitudes proper to the current drone ensemble and that of the individual subject. This is one way that the development of the drone, as I have described it – from a term denoting a human subject to one that now denotes a technical ensemble – can be articulated. In the historical and etymological context, this indifference and neglect is a novel relation of the drone vis-à-vis the human subject.

In the discussion of soft-space and flow architectures I have shown the manner in which the drone is both spacing and drawing in actors, human and non-human, into itself. The coercive pull of dronological power is well rendered in a paragraph from Air Force Lt. Colonel Timothy M. Cullen's dissertation "The MQ-9 Reaper Remotely Piloted Aircraft: Humans and Machines in Action".

> Reaper was (…) a place where engineers and operators that designed and employed the system confronted one another. It was where portals connected to physically dislocated people, machines, and organizations met, and where the interfaces to those portals, each with their own unique communication protocols, connected the elements of the system to each other. It was where the tensions among the operators and their physical bodies and imperfect cognitive abilities merged with computers and their volatile memories and brittle programs to impose unfamiliar demands and constraints on each other.[285]

If a single MQ-9 Reaper can be written about as a "place", consider a reticulated and amplified matrix of 14 networked MQ-9 Reaper combat air patrols, each attended to by several hundred human operators and several hundreds or thousands of FATA residents below. Soft-space accounts for the ways in which the drone is extended along network topologies that constitute flow-architectures of dynamic spacing.

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285 Cullen, 20011, p. 116.

Second Accounting For The Etymological Migration Of The Drone Term

I return now to the etymological migration of the term *∂rone* to establish the recurrent causality between the drone and the early modern development of the sovereign subject. By doing so, I wish to extend and develop an understanding of the drone's transformative relations to the individual subject, and the central position of the individual subject to the drone, even in the current conditions that I have established above in which the drone ensemble is shown to neglect the individual.

The first chapter begins with an account of the migration of the term *∂rone* from the human subject to the technical object in the early 20th century. One important theme of that discussion is the configuration of the drone to its source of volition. I explain that in the move from a human subject set within a technical framework to a remotely controlled technical object, the drone retains a recognisable configuration and scale. I then argue that this is not the case for the 2015 signature strike on Wacha Dara. The drone of 2015 is not equivalent to the drone of 1930.

In this section, I emphasise the configuration of the drone as it is found in the 18th-century political-economic theories of Bernard Mandeville, whose work was taken up by writers such as Adam Smith.[286] I show that the hive is the correlate of the "body politic". I then extend the discussion outside liberal political discourse to frame the drone in relations of recurrent causality, with new forms of subjectivity produced by early modern globalisations, such as those discussed in Chapter 1.

286 Bernard Mandeville. The Fable of the Bees, trans. Phillip Harth (London: Penguin, 1989).

The Conjunction Of Life With The Rule

> That boasted middle way, and the calm Virtues recommended in the Characteristicks, are good for nothing but to breed drones, and might qualify a Man for the stupid Enjoyments of a Monastick Life, or at best a Country Justice of Peace, but they would never fit him for Labour and Assiduity, or stir him up to great Atchievements and perilous Undertakings.[287]

Bernard Mandeville mobilised the metaphor of the hive as the framing device for *The Fable of the Bees or Private Vices, Publick Benefits*, first published in 1732. For Mandeville, the hive is itself an extension of the body politic, a metaphor for human collectivity that he took as received wisdom: "I hope the Reader knows that by Society I understand a Body Politick, in which Man either subdued by Superior Force, or by Persuasion drawn from his Savage State, is become a Disciplin'd Creature".[288] Both the hive and the body politic are presented as frames constituted by the activity of forceful bodies, sovereign subjects or bees and drones.[289] The contention of *Private Vices, Public Benefits* counters the political *∂oxa* of the time by asserting that the activities and transactions of individuals following their private interests – including those that were considered to be immoral vices – at the order of magnitude proper to the collective, nonetheless, resolve as a benefit to the body politic.

Millions endeavouring to supply
Each other's Lust and Vanity … (Fable i. 18).
Thus every Part was full of Vice,
Yet the whole Mass a Paradise … (i. 24).[290]

Led by her private vices and selfish interests, the bee ignores the rule and flies off in search of sweet honey, wherever it may be found. Being irreducible to scale, the

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287 Ibid.

288 Ibid.

289 "The constitution of political bodies can be thought physically, chemically, biologically or socially (in terms of the forces involved in their ordering of laws)." John Protevi, Political Physics: Deleuze, Derrida, and the Body Politic (London: Athlone Press, 2001), 3.

290 Mandeville, The Fable of the Bees.

result of the bee's selfishness, at the order of magnitude of the hive, is a well-organised and functioning collective. In contrast, the drone – who does not possess the capacity for private vice or interest, as he is automated to mate with the queen and then die – contributes nothing to the public benefit and does not participate in the busy dissonance of the bees. The drone is framed within a rigid technical organisation like a monk to the monastery and monastic order. What is important to note in this configuration is that the drone of the 18th century is organised symmetrically to the bee at the order of magnitude proper to an individual subject within a political body.

Mandeville recognises in monastic life a response to the rule that seems to require no independence on the part of the individual monk. The rule flows through the monk, whose motives and source of volition are rendered as transparent as possible. In monastic orders, such as the Benedictine, the monk was literally automated by a liturgic droning that was omnipresent in both the collective and solitary modes of the cenoby. Giorgio Agamben writes that liturgy emerged historically from St. Benedict's rule during the 4th-5th century.[291] It was the liturgy that provided the glue by which the rule was made consistent with life itself. Beginning with *lectio,* the ritual and constant reading aloud of texts, the liturgy transformed into *meditatio,* the murmuring of memorised texts by the individual: "As *meditatio* renders *lectio* potentially continuous, so every gesture of the monk, all the most humble manual activities become a spiritual work and acquire the liturgical status of an Opus Dei".[292] The significance of liturgical chanting will be advanced in the next chapter where I discuss the sonic register of the drone etymology.

The life of a monk is presented as "a condition of absolute and uninterrupted legibility … The perfect life coincides with the legibility of the world, sin with the impossibility of reading (with its becoming illegible)".[293] The cenoby, exemplified by the Benedictine order, established a technical system in which the rule was designed to coincide with life itself. This was achieved by rendering the life of the

291 Agamben, 2013a and 2013b

292 Ibid., 83, italics added.

293 Ibid., 27.

monk-drone transparent or legible. Eighteenth-century thinkers like Mandeville objected to the monk as a drone whose source of volition was seen to be transparent. The monk-drone performed a lazy and thus unproductive accord with the rule. The drone and the bee are an order of magnitude removed from that of the rule. What Mandeville did not recognise is that, framed within the brittle clarity of the Benedictine order, the life of the monk-drone as it intersects with the rule is not readily detached from it. In Agamben's description of the life of the monk, as cited above, the order of magnitude of monk and monastic order coincide.

The way in which Mandeville has co-opted the monk as being exemplary of the pejorative sense of the drone is a retrospective criticism of a medieval technical ensemble (monastery and monk) that had once served as a model of industry. With the publication in 1723 of the second edition of *Private Vices, Public Benefits,* Mandeville's book came under sustained attack both in the country of its publication, England, and the on the European continent. By making the drone a metonym for those subjects of the "body politic" that did not embrace vice and self-interest, Mandeville facilitated the migration of the drone from the medieval into the early modern and modern eras. What the general attack on the book suggests is that the theoretical basis upon which Mandeville had grounded his claims was not the *δοxα* of the time. The idea that an individual subject might follow her own private vices, and that the multiplication of such self-interested trajectories could result in the general production of public benefits, ran counter to the received knowledge of 18th-century London and Europe. In terms of orders of magnitude, Mandeville's argument demands the accelerated displacement of the individual from the order of magnitude proper to the collective, towards novel milieux and individuals in the general domain of human organisation.

As I show in the next section, at the time of Mandeville's writing and the controversies surrounding the public airing of these views, new forms of self-determined human subjectivity were already forming against the over-determined technical ensemble associated by Mandeville to the European monastic tradition. The globalising voyages discussed in Chapter 1 had, by the 18th century, produced the circumstances within which these developments occurred. These

conditions are elaborated later in this chapter. For now, I wish to establish the figure of the sovereign subject against that of the drone, within the geo-political transformations of the early modern era.

The Disinhibited Subject And The Drone

I state above that one of the ways that Mandeville's distinction between the bee and the drone is salient to this thesis is the manner in which each is figured in relation to a technical order. While the monk is constituted by and is constituent of the monastery, and transparently activated by its technical organisation, I suggest here that the counterpart to this figure is the Jesuit priest. In this section, I will move out of the etymological migration of the *∂rone* term and attend to this particular type of subject, described by Sloterdijk as "the first subjects of the modern age in the precise sense of the word".[294] It is important to establish here the relation of the human subject to reason and technical organisation, as groundwork for the argumentation that will follow in this chapter and the next. Describing the relation of the Jesuit priest to the Jesuit order – understood as a technical organisation – places the relations of the monk to the monastery in relief. It is not that these are opposite configurations, and there is no suggestion that the Jesuit is independent of his order while the monk is not. Roughly, Sloterdijk's Jesuit is programmed and programmable to the extent that his adherence to the rule is no longer transparent, as the monk's remains, but rather opaque, his volition seemingly derived from within himself. Self-motivation and self-discipline are what, for Sloterdijk makes the Jesuit, not the monk, the first subject of the modern age.

The Jesuit order was founded in the 16th century as a mobilised army of adventurer priests.[295] Sloterdijk finds in the Jesuit the ideal form of the internalisation of reason. With the construction of a systematic programme of self-discipline, the transformation of the individual into a vessel for the Pope's will was accomplished. Harro Höpfl writes in *Jesuit Political Thought* that "Ignatius grounded both the centrality of obedience and the idea of Jesuit superiors as

294 Sloterdijk, In the World of Capital, 59.

295 Thomas F. Banchoff and Casanova José, The Jesuits and Globalization: Historical Legacies and Contemporary Challenges (Washington, D.C.: Georgetown University Press, 2016).

standing *in loco Christi* in self-discipline, ascesis".[296] The technical leap forward in the Jesuit order was the making-passive of the individual for an active disinhibition, through the rigours and internalisation of suffering.

In Sloterdijk's lexicon, the term *disinhibition* locates the tipping point required for the subject to make an appearance.[297] Sloterdijk suggests that human action is fundamentally restrained by powerful inhibitions. In his succinct style, Sloterdijk explains: "The concept of disinhibition, without which no convincing theory of modernity is possible, gathers together the motives that drive us to intervene in the imperfect and disagreeable".[298] A primary disinhibition releases hesitancy and timidity. The subject is further defined by its dubiousness. One never knows what the subject is getting up to because the source of the subject's disinhibition is opaque. I show this as a way of distinguishing the Jesuit-subject from the monk-drone who, as I have shown above, is understood to be perfectly legible and transparent in relation to the source of volition.

These radically available activists could not, therefore, leave it at the *humilitas–castitas–paupertas* vow that had applied to Christian monastic life since the days of the great rule-makers. With their notorious fourth vow,[299] they placed themselves – in a rather modern way – under the pope's supreme command. They conceived themselves, one might say, as exquisitely weak-willed precision instruments that placed themselves entirely in the hands of their user.[300]

The Jesuit, not the monk, forms the model for the kind of subjection to a sovereign that can be mobilised as an active form of utility. The model of a programmatic internalisation of reason, and its expression through action, is a technical advance upon the monastic order. Programmability is central to the distinction between the monk-drone and Jesuit-subject. The Jesuit training (*examen*) was designed to produce something approaching an autonomous vehicle

296 Harro Höpfl, Jesuit Political Thought: The Society of Jesus and the State, c. 1540-1640, Cambridge: Cambridge University Press, 2008, 29.

297 Ibid., 57–58.

298 Sloterdijk, In the World Interior of Capital, 19.

299 "I further promise a special obedience to the sovereign pontiff in regard to the missions, according to the same Apostolic Letters and Constitutions." The Society of Jesus, Constitutions S.J., N°527.

300 Sloterdijk, In the World Interior of Capital, 60.

for the papal will. Indeed, one of the 28 basic characteristics of Jesuit formation explicitly requires the transformation of the individual into "an apostolic instrument".[301]

As Sloterdijk has argued, the Jesuit is the first subject in the precise sense of the word because, as an instrument for the will of the Pope, the Jesuit is physically disconnected from the rule and reason that he had internalised. Thus, those in the presence of such a construct, who are not themselves versed in the reason that this subject has internalised, may find the actions of the Jesuit veiled by the opaque source of volition. Here, a defining feature of the monk is the legibility of the rule that he obeys.

I have suggested that the Jesuit priest be understood to exemplify a precise prototype of the sovereign subject and as a technical advance over the monk. This is so because of the manner in which the Jesuit was programmed to internalise and capture papal reason. This internalisation, and the way that the Jesuit is understood to be bound to, yet detached from, the papal order, is distinct from the monk's inseparability from the monastic rule. In understanding both the monk and Jesuit priest as socio-technical constructs it is important to recognise that these constructions have been in relations of recurrent causality with their external and associated milieux. Writ large, the monk and monastery are constructs of the medieval era, while the Jesuit and the Society of Jesus are of the early modern era, European expansion, and the overseas mission.

The imbrication of the Jesuit order with the early modern European projects of expansion was not determined from the outset. Rather, in its initial formulation, the institute was proposed as a device in the service of the counter-reformation in Europe.[302] The original *Formula of the Institute*, submitted to Pope Paul III by Ignatius of Loyola in 1539, sketched a pedagogical program for "the advancement of souls in Christian life and doctrine and . . . the propagation of the Faith by the ministry of the Word, spiritual exercises and works of charity, specifically

301 John W. Padberg, ed., The Constitutions of the Society of Jesus and Their Complementary Norms: A Complete English Translation of the Official Latin Texts (Boston: Institute of Jesuit Studies, 1996), 9.

302 Sloterdijk, In the World Interior of Capital, 69.

(*nominatim*) by way of the instruction of boys and unlettered persons in Christianity".[303] As Sloterdijk argues, the Papacy had its own priorities and the Jesuit order was mobilised in the service of a globalised religious war against what was understood as a technically more advanced foe, the Protestants.[304] The reformation movement is seen here as an incubator for the development of techniques of internalisation, the transplanting of motivation from over-determined medieval models like the cenobitic to the individual subject unit, now endowed with a transplanted engine of motivation.

The Jesuit priest was an emissary of the Pope within the projects of long-distance control such as those discussed in Chapter 1. If the development of the Carrack ships for the voyages from Lisbon to Goa had necessitated a program in which navigational techniques and technical objects were internalised into *envelopes of durable mobility*,[305] the Jesuit order had discovered the means to internalise moral and religious bearing into a human being such that this being itself became an envelope of durable mobility, capable of resisting the threat of psychic transduction in hostile and alien environments.

Like the Carrack ships and flotillas, the Jesuit subject is contextualised within early modern projects of control-at-a-distance. As a remote delegate, the Jesuit facilitated a reticulation of Papal power to the New World and other overseas missions. I have shown in Chapter 1 that the delegation of agency to the point of action is unnecessary in the operational projection of distance control across distributed technical networks. Local entanglements, such as missionary work, becomes less compelling in light of the extension of soft-space developed above.

Here, and in Chapter 1, I have identified relations between the remote control occupation that is enacted by the drone ensemble in the FATA and the early modern projects of long distance control. Chapter 1 centred on the technical means by which long distance control has been made feasible; in this chapter, I attend to the ways in which these projects have been facilitated by transformative

303 Höpfl, Jesuit Political Thought, 8.

304 Sloterdijk, In the World Interior of Capital, 129.

305 Law, "On the Methods of Long-Distance Control," 18.

processes of political and juridical legitimisation. Doing so will develop the theoretical basis for analysing the empirical conditions within which the drone ensemble is operational in the FATA, and distinguish the current drone from early modern projects of control-at-a-distance.

The Exterior Milieu of the Drone

> No rational US leader is going to take the solemn international law admonition of the "sovereign equality of states" too seriously in these matters – and the United States has never regarded a refusal to do so as contrary to international law but instead as something built into international law as a qualification on the reach of the "sovereign equality" of states. There will not be "Predators over Paris, France", anymore than there will be "Predators over Paris, Texas", but Pakistan, Yemen, Somalia, and points beyond are a different story.[306]

This section attends to the exterior milieux of the drone and establishes the political conditions within which this technical ensemble is able to exert dronological power. I argue that the imposition of dronological power – demonstrated with the 2015 signature strike at Wacha Dara – is made possible by the relative weakness of state sovereignty in the FATA and an interstate condition characterised by a generalised distribution of sovereignty among not only state sovereigns like Pakistan, but also tribal sovereignties, armed groups, the drone ensemble, and supra-state institutions. The 2015 signature strike in the FATA region of Pakistan brings into relief a set of geo-political conditions that I suggest have facilitated the development of the drone ensemble and its remotely controlled occupation. Because of the relatively weak sovereignties of the FATA, the drone ensemble is "able to intervene in the national air space of another state on a persistent basis – a form of permanent incursion".[307] I attend to the specific conditions of the FATA later in this section. I first establish the theoretical framework within which those conditions can be analysed.

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306 Kenneth Anderson, "Efficiency in Bello and ad Bellum: Targeted Killing Through Drone Warfare," SSRN Electronic Journal (2011), https://doi:10.2139/ssrn.1812124, 10.

307 C. A. O Munro, "Mapping the Vertical Battlespace: Towards a Legal Cartography of Aerial Sovereignty." London Review of International Law 2, no. 2 (January 2014): 233–261, https://doi:10.1093/lril/lru008,

In his essay, "Dirty Dancing and Spaces of Exception in Pakistan", Derek Gregory does not mince words about the suitability of the FATA as an experimental laboratory for the imposition of drone power: "The Federally Administered Tribal Areas were constituted as a space of exception; and its air strikes depended on the co-production of the FATA as a data-field to be mined and transformed into a space of execution".[308] The expression *spaces of exception*, in the title of the article, derives from Carl Schmitt's theorisation of a global order. In *The Nomos of the Earth in the International Law of the Jus Publicum Europaeum,* first published in 1950, Schmitt was concerned with what he saw as an international order that had departed from a substantial spatial orientation, grounded in the concrete reality produced by land appropriation.[309] In his account, Schmitt surveys the modern era, in part as a mixed history of more or less successful accords between human collectives that manage to organise conflict within a larger frame. For Schmitt, the successful examples hew closely to unapologetic land appropriation and the stratification and centralisation of power that this implies. The weaker and, for Schmitt, more fragile examples stray from the concrete order into abstractions, such as humanity and freedom. Chapter 1 above argued that the drone is an expeditionary architecture unconcerned with the appropriation of land or its occupation in the classical sense which, for Schmitt, is trifold: land appropriation, apportionment, and exploitation.[310] As such, it would appear that the very possibility of the drone ensemble, as I have established it thus far, exemplifies the dangers that Carl Schmitt worked to articulate.

The global lines and permissiveness of land appropriation in the New World were the model for what Carl Schmitt referred to as *states of exception*, the legally organised suspension of law that has, as its corollary, not only the 19th century twang of free sea, but the more recognisable jargon of free trade, free-world economy, and free competition. At stake was the regulation of violence, in the sense of controlling the extent and spread of war and civil conflict. What concrete reality offered to international law was a ground, free of abstraction, upon which

308 Gregory, 2017, 243.

309 Carl Schmitt, The Nomos of the Earth in the International Law of the Jus Publicum Europaeum, trans. G. L. Ulmen (New York: Telos Press, 2006).

310 Ibid., 345.

juridical structures could be built up in order to regulate who may or may not be killed.

A Global Interior

Schmitt argues that the period from the 16th to 20th centuries was characterised by a stable world order, grounded by a Eurocentric spatial orientation.[311] By the time of the First World War, that spatial order had come to be displaced by abstract universalist concepts such as freedom and humanity, throwing the old Eurocentric world order into nihilistic imbalance.

Schmitt's concept of *nomos* relates to that of sovereignty in the sense that, for him, the sovereign, while at the same time above and within the norm, stands in relation to other sovereigns under the sign of a *nomos* that binds them in a political relation – in the sense of a relation of equals being grounded in an agreed spatial understanding.

At stake in Schmitt's *Nomos of the Earth* is the question of the world, defined as a spatial order recovered from nature; that is to say, domesticated by human beings to the extent that the domestic space constitutes a global interior. Not every *nomos* is equal and Schmitt's suggested model, while not perfect, delivers the goods of stability and orientation. This exemplary *nomos* of the earth is the singular accomplishment of a European interstate system, concretised during the early modern period of European expansion.[312]

It is not that every land appropriation constitutes a new *nomos*, but that every *nomos* is constituted by the appropriation of land. "The odium of colonialism today concerns the European nations. At its core, it is nothing other than the odium of appropriation".[313] While Schmitt does not seek to legitimise colonialism – or at least that is not a stated goal – his assertion is that the de-legitimisation of land appropriation and colonialism lacks a fundamental spatial orientation and is therefore suspect. It is a case, then, of the wrong basis for odium.

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311 Ibid., 11.

312 Schmitt acknowledges that terrestrial boundaries and territories had pre-existed this, however, there had not previously been a spatial understanding that took the entire earth into account.

313 Ibid., 346.

Exception: The New World

For Schmitt, the development to maturity of an American sphere of influence, instantiated in the global line of a Western hemisphere, is concomitant with the final dissolution of the *Jus Publicum Europaeum*. I show here how Schmitt's theorisation of an American foreign policy, which he characterised as *effective presence and official absence*, establishes the optimal conditions – a generalised distribution in the FATA of relatively weak and indeterminate sovereignty – for the drone's external milieu.

The European *nomos* displaced wars of annihilation from the European centre to the periphery of a new world, in which violent acts of appropriation were permissible and massacre sanctioned by the urgency of the Christian Mission. Thus, while the *Jus Publicum Europaeum* had required the secularisation of sovereignty in the personification of the sovereign state, Christianity was still required as a coagulant, uniting Europe as a family or community.[314]

Within the European zone, there remained a memory of the *Respublica Christiana,* yet outside of the truce zone, agents of a sovereign state were free to side with buccaneers, pirates, or heretics to attack and pillage. In this way, global lines both enclosed the old Europe and established a principle of freedom in the New World's spaces[315]: "This was a tremendous exoneration of the internal European problematic. The significance in international law of the famous and notorious expres-sion *beyond the line* lies precisely in this exoneration".[316]

Schmitt writes that the final global line to appear is the Western Hemisphere. This linear cut marks a shift in global power from the Eurocentric *nomos* of the earth to a new order; no longer oriented around the concrete spatial reality of the European landmass, but now incorporating the full weight of an American continent, unbound by old Europe. For Schmitt, the Western Hemisphere is thick

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314 Later on, Schmitt will decry the abandonment of this family: "That a family or community of European states and nations suddenly opened the doors of its house to the whole world was no mere quantitative expansion and enlargement, but rather a transition to a new planet. At first of course, it was a headlong leap into the nothingness of a universality lacking any grounding in space or on land." Ibid., 237.

315 "The new world appears as such in contrast to the Old enemies in Asia and North Africa. Unlike the old enemy lands, this new world is exposed to qualitatively decisive European military superiority and, thus, simply open for naked appropriation. It is in this sense that Locke might claim: 'Thus in the beginning all the World was America". John Locke, Second Treatise of Civil Government (Indianapolis: Hackett, 1980), 5:49.

316 Schmitt, Nomos of the Earth, 94 (emphasis added).

with the promise of a multi-polar *nomos*, developing from the *Jus Publicum Europaeum*. The subsequent characteristics of American policy caused Schmitt to discard his hopes of a new *nomos* grounded in a concrete spatial orientation: "By recognising the Monroe Doctrine, the League [of Nations] had subjected itself to ideas of spatial order emanating from the Western Hemisphere. These ideas (…) lacked any power to create internal order in Europe, because the United States put a high value on remaining politically absent, and held officially to the isolation line of the Western Hemisphere".[317] Schmitt refers to this policy of ambiguity as *effective presence and official absence*.[318] I attend to this expression below.

The retreat of a concrete spatial order, grounded in land appropriation, impacted upon more than political demarcation. Schmitt argues that the United States ultimately chose a global, universalist-humanitarian intervention model over isolationism. He writes that this mode of intervention amounted to "an empty normativism of allegedly recognised rules, which, for a few decades, obscured consciousness of the fact that a concrete order of previously recognised powers had been destroyed and that a new one had not yet been found".[319]

The problem of effective presence and official absence that I have introduced above stems from the liberal maxim of an economic sphere, free of the state's interference, that is to say a *state of exception*. Thus, for Schmitt, official absence is political absence while effective presence pertains to effective economic presence that is built into treaties and only translated into political control, should the need arise.[320] Returning to the signature strike at Wacha Dara of 2015, the manner in which the mil-com drone has been inserted as a permanent presence in the FATA regions of Pakistan can be characterised as effective presence and official absence within a state of exception, or what Derek Gregory has termed a *space* of exception.[321] As I have shown throughout this chapter, the drone is effectively present and operational in the FATA. Currently, however, at the order of magnitude proper to the interstate system and state sovereignty, the drone's

317 Ibid., 258.

318 Ibid., 255.

319 Schmitt, Nomos of the Earth, 227.

320 Ibid., 255.

321 Gregory, 2017, 243.

remote control occupation requires the official recognition of sovereign bounds and the stability of the interstate system, precisely in order to subvert those necessary fictions, which are fictional in regards to the equality of sovereignty enjoyed by states. As Ryan Bishop has shown, one of the ways in which remote-sensing systems project specifically state power is in the way that they can "render the invisible visible in order for the action of agency to occur, thus reinforcing the logic and power of the nomos".[322]

Official absence is signalled by public statements of the United States and the Pakistani governments that, while evasive and contradictory concerning consent, and perhaps demand, for drone strikes are unambiguous in the official recognition of Pakistani state sovereignty.[323] There is some evidence that this indeterminate public position vis-à-vis the drone ensemble is a strategic choice. I address this below when describing the current discourse around the framing of drone strikes in international human rights and humanitarian law.

Dronological Afterglow Of The Sovereign Subject

The January 15, 2015 signature strike at Wacha Dara is significant to this study because of what it reveals about current dronological power. The reason that this event is capable of revealing anything at all is, paradoxically, the fact that a U.S. citizen was killed, albeit in a strike that was not aimed at a human target but at a signature. *The New York Times* reported a meeting between the Assistant to the President for Homeland Security and Counterterrorism Lisa Monaco and the family of Warren Weinstein – the U.S. citizen and USAID worker killed.[324] The meeting took place prior to the signature strike in which Weinstein would die. Indeed, the purpose of this meeting was to explain the processes of targeting in an attempt to reassure the family that Weinstein would not be killed in one of the many drone strikes occurring in the FATA at the time that he was a hostage.

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322 Bishop, "Felo de se," 16.

323 "Living Under Drones," 139. See Also Steven J. Barela, Legitimacy and Drones: Investigating the Legality, Morality and Efficacy of UCAVs (New York: Routledge, Taylor & Francis Group, 2016), 35.

324 At the time of his capture, Weinstein had overseen a programme for the United States Agency for International Development (USAID) in the FATA. The former rabbinical student had worked on behalf of the United States government in a programme to develop the entrepreneurial skills of FATA artisans and farmers. Weinstein's efforts had the "goal of generating good will in a country where according to Pew Research Center polling two-thirds of the population views the United States as an enemy." Daniel Bergner, "The Killing of Warren Weinstein" The New York Times, February 11, 2016, https://www.nytimes.com/2016/02/14/magazine/the-killing-of-warren-weinstein.html.

According to notes taken by Weinstein's daughter Jen, "Monaco said that the government would have a near certainty about both the target and that no civilians would be injured or killed in a strike".[325]

The phrase "near-certainty" is misleading. As I have argued, the approach to signature strikes moves away from the kinds of certainty attached to empirical observation and into the probabilistic territory of inference and induction. "The attacks involve American drone operators firing missiles at a target based on the movements of military-aged males observed in suspicious activities on the ground below".[326] The production of such a statement is the result of persistent acquisition of capta over lengthy periods of time.

The signature can be understood as one of the ways in which soft-space is extended. Mil-com officials told the family that "hundreds of hours of surveillance had failed to detect that the hostages were hidden at the compound".[327] The statement is deceiving. Hundreds of hours of persistent dividuation and taking of capta had extended the soft-space of the drone. Within the drone ensemble, the abstract representations of this geo-location and the life within it were structurally transduced according to criteria that had never included a coded reflection of the concept "hostage", and certainly not a unique instance of Warren Weinstein, subject of the sovereign United States of America.

It was only months after the strike had occurred that incongruities began to emerge. "Observation after the strike noted more bodies than expected being pulled from the rubble. The officials didn't specify whether they had been able to see with any clarity that the dead might have included Weinstein".[328] Despite the mil-com claims, it is unclear that the number of dead bodies pulled from the ruined structure catalysed the suspicion that the sovereign subject of an American citizen was involved. Considerations of subjectivity seem to have been initiated by the militants ostensibly targeted by the drone. First, the drone ensemble captured a

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325 Bergner, "The Killing of Warren Weinstein".

326 Rohde, David, "What the United States Owes Warren Weinstein," The Atlantic, April 28, 2015, https://www.theatlantic.com/international/archive/2015/04/warren-weinstein-drones/391655/.2015.

327 Bergner, "The Killing of Warren Weinstein".

328 Ibid.

fragmentation of mobile phone "chatter" that the "Jewish" hostage had been killed. Yet, it appears that real confirmation of Weinstein's death only emerged when militants in the FATA announced on an Urdu Twitter feed "that Weinstein had converted and was a 'hard-working student of Islam', that he was treated as a 'beloved elder' by the Mujahedeen and that his corpse emitted a 'mysterious but pleasant fragrance that mesmerized everyone.' Along with the text Al-Qaeda included a photograph of Weinstein seemingly prepared for a Muslim burial, his bearded face ensconced in a white shroud".[329]

What emerges in the post-strike narration is an unusually detailed accounting of the kinds of subjectivity that had now been attributed to a corpse. It is as if the complete indifference and neglect by the drone ensemble for the order of magnitude proper to the individual subject had been compensated for by Weinstein's captors. Read through the signature strike at Wacha Dara, the afterglow of the sovereign subject is, for the current drone, an *a posteriori* alert to its formal persistence in the face of a systematic indifference and neglect for this construct. I analyse the consequences of this *a posteriori* recognition in the next chapter. Although Weinstein's work for USAID seems anecdotal to this account, the presence of such institutions within the FATA is not.

State Of Exception

One way that it is possible to recognise the consequences of what Schmitt disparaged as *states of exception* is in the development and persistence of what Michel Agier refers to as the "humanitarian world".[330] Agier asserts that the humanitarian world is a globalised supra-state administrative apparatus, in which a universalised *humanity* is managed and understood in the generalised terms of *victim* or *culprit*.[331] This is important to the drone's external milieu because of the manner in which the humanitarian world, and Agier's theories of humanitarian governmentality, concretise Schmitt's warnings of a world order grounded in universal thinking.

329 Ibid.

330 Agier, "Humanity."

331 Ibid., 30.

Beginning with the Soviet invasion of Afghanistan in 1979, the neighbouring FATA region of Pakistan had, by 2015, become a territory littered with refugee camps, governed by multiple human-rights institutions and non-governmental organisations. In 2016, the United Nations High Commissioner for Refugees (UNHCR) wrote, "Pakistan currently hosts some 1.6 million registered Afghans, the largest protracted refugee situation globally".[332]

In and among the Pakistani state, tribal *malik*, *jirgas*, mil-com drones and armed militants of the FATA, the humanitarian world has been taking up space as a near-sovereign actor. For Agier, there are two facets to the humanitarian world: one is a conception of the subject "based upon the fiction of humanity as an identity and conflates universalism and globalization",[333] and the other is infrastructural. Agier defines the latter:

> A globalised apparatus: a set of organisations, networks, agents, and financial means distributed across different countries and criss-crossing the world as they herald a universal cause, the only and exclusive raison d'être of humanitarian projects. Here and there, the fiction becomes real for a limited period of time and takes the form of a "moving sovereignty" implemented by various organisations and agents –people who often happen to be "committed," trained in the disciplines of human rights, social and political science, or in the professions of health or humanitarian logistics.[334]

The humanitarian world operates in multiple zones of conflict and intervention that, although seemingly disconnected from each other, are, at the same time, contained in the same common space. The "fantasised representation"[335] of humanity consists of a suffering unity of victim-culprit from which any alterity is absent. The possibility of political life is evacuated from the space of humanity by

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332 United Nations High Commissioner for Refugees, "UNHCR Global Appeal 2014-2015 – Pakistan," UNHCR, www.unhcr.org/528a0a300.html.

333 Agier, "Humanity," 32.

334 Ibid.

335 Ibid., 30.

this universal equality that negates the possibility of inequality and thus of politics: "An organizational globalism thus mirrors the universal message of humanity as an identity defined by 'equality' – an equality whose opposite is not inequality (and even less so contested inequality) but the suffering of silent victims, whom the humanitarian world designates as its true beneficiaries or, to put it in terms of economic strategy, its targets".[336]

Agier relies upon both Giorgio Agamben and Hannah Arendt in making the argument that what is possible in the humanitarian world is not politics, but absolute power. Following Agamben, he understands *humanity* as consisting of an absolute or naked life that is differentiated from the political life.[337] As noted above, the generalised equivalency of humanity as a unitary economy of suffering does not translate into the community of equals, defining a *polis* or political community. From Hannah Arendt, Agier draws a parallel to the Greek conception of the household (*oikos*) as a space devoid of political possibility, as there are no relations of equals, only those as in a kinship system of submission – younger brothers – or circulation – females.[338] It is only outside of the household and, yet, within the city, that the community of equals or citizens can constitute the possibility of the political life.

The general theory described above is specified by the political conditions of the FATA that may be characterised as a generalised distribution of relatively weak sovereignty. No sovereign actor operating within the FATA territory enjoys a monopoly on sovereign power. Indeed, the general instability of sovereign conditions might be understood as useful to actors, like the drone ensemble, who do desire strong sovereignty, and the concomitant care that this requires. The persistent remote control occupation of the drone ensemble is facilitated by these indeterminate and weak sovereign conditions.

According to the Bureau of Investigative Journalism, 421 strikes were carried out in Pakistan between January 2008 and January 2016, in which 2,488–3,989

336 Ibid., 32.

337 Michael Agier, "Penser le sujet, observer la frontière," L'Homme 203–204 (2012): 7.

338 Agier, "Humanitu," 32.

people are known to have been killed.[339] The Bureau's website features a map of the strikes, in which it is shown that the vast majority have been located in the North and South Waziristan regions of the FATA.[340] In 2009, the drone operations in the FATA were organised into 14 combat air patrols (CAP) covering the territory.[341] Recall that a CAP has multiple unmanned aerial vehicles and is therefore capable of around-the-clock persistent coverage.

The Federally Administered Tribal Area (FATA) sits along the Pakistani side of the Af-Pak border as a plump buffer zone between central and south Asia designed to absorb and contain Pashtun tribal power.[342] The geo-locality corresponds to the historical demarcation between part of British India – currently the sovereign state of Pakistan – and Afghanistan by the Durand line.[343] The FATA is a legacy of the British imperial project, more generally, and the colonial occupation of India, specifically. Indeed, Madiha Tahir notes that the policing of this extra-territorial zone came to rely heavily on aerial bombardment by the British as early as 1917.[344]

The territory is composed of 13 separate agencies and regions.[345] One of the complications of the FATA is that the regions and agencies are under the direct authority of the president of Pakistan, entirely circumventing parliamentary processes.[346] Inside the territories, there is a mixed form of governance, particularly in regards to criminal and local disputes. Within the FATA, the enforcement of law falls under the Frontier Crimes Regulation (FCR) of 1901, another legacy of British colonial occupation.[347] The FCR is a legal mechanism

339 The Bureau of Investigative Journalism, "Drone Warfare," The Bureau of Investigative Journalism, accessed September 4, 2017, http://www.thebureauinvestigates.com/projects/drone-war

340 These are presumed to have been carried out by unmanned aerial vehicles, yet this cannot be confirmed.

341 Kristina Benson, "Kill 'em and Sort It Out Later: Signature Drone Strikes and International Humanitarian Law," Pacific McGeorge Global Business & Development Law Journal 27, no. 1 (2014): 32.

342 According to Pakistan Bureau of Statistics, the Pashtun language is spoken by 99 percent of the FATA's population. Pakistan Bureau of Statistics, "Pakistan Bureau of Statistics," accessed March 14, 2017, http://www.pbs.gov.pk.

343 Shaheen Sardar Ali and Javaid Rehman, Indigenous Peoples and Ethnic Minorities of Pakistan: Constitutional and Legal Perspectives (Richmond: Curzon, 2001), 12.

344 Madiha Tahir, "The Containment Zone," In Life in The Age of Drone Warfare, eds. Lisa Parks and Caren Kaplan, 220-241 (Durham: Duke University Press, 2017).

345 "Living Under Drones," 20.

346 Ibid., 23.

347 Sardar and Rehman, Indigenous Peoples and Ethnic Minorities of Pakistan, 53.

that allows local tribal leaders to convene traditional councils or *Jirga,*[348] and pass judgement upon disputes or other legal matters. The funding of the regions and agencies is tied to the estimated good performance of tribal leaders known as *maliki*: "The political agent in each FATA agency has funding and broad powers to 'secure the loyalty of influential elements in the area', i.e. by providing the *Malik* with 'hospitality' allowances in exchange for furthering the government's agendas".[349]

The tribal life of Pashtuns is framed by an ethical code or set of principles known as *pashtunwali*.[350] The primary principle of *pashtunwali* is hospitality and protection of strangers. In addition to non-combatant refugees, the mil-com invasion of Afghanistan in 2001 pushed both the remnants of Al-Qaeda and the Taliban into the FATA. *Pashtunwali* and the *maliki* governance system of *jirgas* became a complicating factor because, while the *maliki* rely upon the graces of Pakistani political officers for funding, the principle of *pashtunwali* made it impossible to refuse hospitality to incoming fighters or refugees, many of whom were themselves Pashtun.

That *Pashtunwali*, as an ethical code governing a people or nation, the Pashtun, is practiced on both sides of the Durant line, is indicative of the situation of the Pashtun of the FATA as a stateless people, living under laws of exception codified by treaties.[351] The precarious situation of stateless people is visible in the FATA and the susceptibility of the Pashtuns to the remote control occupation of the Drone. I will attend to this in more detail below.

348 "Living Under Drones," 24.

349 Ibid.

350 Ibid., 22.

351 See Arendt, 1958, p. 268 – 269.

The Framing Of Drone Strikes In International Law

Whether violent death is organised by non-state or state actors, it is a phenomenon subject to legal codification within both the sovereign state and the interstate system. The questions of legitimacy surrounding drone strikes probe whether the practice can be folded within recognised international jurisprudence. This is not a matter in which any consensus has been reached. However, the avenues by which the question is addressed are revealing of the current situation vis-à-vis sovereignty and the interstate system. Documents such as a leaked Department of Justice white paper on targeted killings – thought to have been written in 2010[352] – demonstrate that jurisprudence is, in any case, built into the protocols that determine targeting decisions.[353] Law is both internalised within the internal milieu of the drone, and conditions its external milieux.

The legality of drone strikes within international law is a question that has generated an enormous amount of scholarship. I will be unable to exhaustively account for the range and breadth of this debate. In this section I have constrained the discussion to the arguments and discourses that directly impact the problems and questions of this dissertation. I have included a selected bibliography of source material on this debate as an appendix to this thesis.[354]

One of the difficulties is spatial and relates to the discussion above. The existing legal framework is oriented around a territorially bounded battlefield and is thus incapable of gaining significant traction on the kinds of soft-space that I have associated with the drone. Frédéric Mégret suggests that the spatiality of the battlefield has historically been mutable, popping up temporarily when forces have engaged or agreed upon in advance. It is even suggested as an imaginary space: "But it is space nonetheless, one that has a core and a periphery and whose existence is premised on the ability to distinguish between what occurs within it and what is beyond it".[355] The battlefield constitutes a "normative exceptionality"

352 Benson, "Kill 'em and Sort It Out Later," 29.

353 Michael Isikoff, "Justice Department Memo Reveals Legal Case for Drone Strikes on Americans," NBCNews.com, February 4, 2013, investigations.nbcnews.com/_news/2013/02/04/16843014-justice-department-memo-reveals-legal-case-for-drone-strikes-on-americans?lite.

354 See Appendix 1.

355 Frederic Megret, "War and the Vanishing Battlefield," Loyola University Chicago International Law Review 9, no. 1 (2011): 132.

within which activity that is usually proscribed may take place between participants that recognise this exception as such.[356]

Against the horizontally oriented battlefield, Campbell Munro directs the spatiality of drone operations vertically: "The vertical battle-space has profound implications for the relationship between war and territorial sovereignty – a relationship conventionally articulated under the rubric of *jus ad bellum*".[357] In "Vertical Mediation and the U.S. Drone War in the Horn of Africa", Lisa Parks suggests that the drone is a "technology of vertical mediation", in the sense that drone power cannot be reduced to remote hunting and killing, but operates to "reform and remediate life on Earth in a most material way".[358] Under the terms of Article Two of the United Nations Charter,[359] the legitimacy of violent action is granted by the Pakistani government's official consent to the strikes,[360] or by establishing that these strikes are acts of self-defence in response to an attack or imminent threat.[361] As it stands, and as I have mentioned above, there is no clear answer to this, as neither the state of Pakistan nor the United States satisfactorily engages these questions. Reports[362] of Pakistani acquiescence and support for the strikes are circulated, as are conflicting official statements denouncing such operations.[363] As the authors of the report "Living Under drones" put it: "The US has largely refused to answer basic questions about the drone program posed in litigation or by civil society, journalists, or public officials".[364]

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356 Ibid., 135.

357 "Mapping the Vertical Battlespace," 238.

358 Lisa Parks, "Vertical Mediation and the U.S. Drone War in the Horn of Africa," in Life in the Age of Drone Warfare, ed. Lisa Parks and Caren Kaplan, 134–161 (Durham: Duke University Press, 2017), 136.

359 "All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations." United Nationa, "Chapter I," United Nations, accessed March 16, 2017, http://www.un.org/en/sections/un-charter/chapter-i/index.html.

360 Ibid.

361 As per Article 51 of the UN charter.

362 Wikileaks released a U.S. diplomatic cable referring to a meeting between Admiral Mullen (US) and General Kayani (Pak) in which Kayani is noted requesting more Predator drone coverage. This is cited as some proof of unofficial Pakistani support for drone operations. WikiLeaks, "Admiral Fallon Discusses Security Cooperation with General Kayani," Public Library of U.S. Diplomacy, accessed March 16, 2017, https://wikileaks.org/plusd/cables/08ISLAMABAD609_a.html.

363 See "President Zadari Asks U.S. to End Drone Strikes, Remove Mistrust," Dawn.com, September 15, 2012, accessed March 15, 2017, https://www.dawn.com/news/749582/president-zardari-urges-us-to-immediately-cease-drone-strikes.

364 "Living Under Drones," 104.

Munro argues that the drone ensemble "disregards territorial sovereignty and expedites the projection of force anywhere at any time".[365] However, it seems more precise to recognise that the drone ensemble's remote control occupation is contingent upon the conception of sovereign bounds and horizontal territorial stability, and persists precisely thanks to its disregard and neglect of the epistemic frame in which sovereignty is legally recognised. By both identifying and subverting established spatial frames of reference, mil-com practices are recognisable in Schmitt's expression discussed above: "effective presence and official absence".[366] The drone is effectively operational in the FATA, yet it is not officially recognised by either Pakistan or the United States. This is a necessary condition for the drone ensemble's exterior milieux, as I quote above: "There will not be 'Predators over Paris, France', anymore than there will be 'Predators over Paris, Texas', but Pakistan, Yemen, Somalia and points beyond are a different story".[367] Deployment of the drone as a near-sovereign currently requires conditions of relatively weak and indeterminate sovereignty. Yet, in exploiting fragmented sovereign space, declarations of sovereign inviolability are a necessary fiction. Here, I describe the main points of dispute around the legitimacy of drone strikes.

Drone-strike proponents often respond to criticism of these operations with the claim that they are conducted in self-defence, as a response to the 9-11 attacks. Folded into the self-defence argument are two additional precepts: *associated forces* and *imminent threat*. The claim around associated forces is made as a way of justifying attacks against militants, of whom an association to Al-Qaeda can be constructed. The imminent-threat claim is made to legitimise pre-emptive deadly violence against associated forces who have yet to act against the United States. The definition of what constitutes an imminent threat can be tenuous. The self-defence claim is based upon Article 51 of the UN Charter: "Nothing in the present Charter shall impair the inherent right of individual or collective self-defence if an armed attack occurs against a Member of the United Nations".[368] The imminent-

365 Munro, "Mapping the Vertical Battlespace," 237–238.

366 Schmitt, The Nomos of the Earth, 255.

367 Anderson, "Efficiency in Bello and ad Bellum," 10.

368 United Nations.

threat claim rests upon a much older bit of International Customary Law, a precedent known as *The Caroline Test.*[369]

Harold Koh served as the chief legal advisor to the State Department under the Obama regime. He has stated that:

> The Caroline requirement may also reasonably be read to permit direct strikes as a last resort against groups or individuals who pose a continuing and imminent threat by virtue of: (1) engaging in 'a concerted pattern of continuing armed activity' directed against the U.S. – i.e., demonstrating a willingness to attack the U.S. if given the opportunity; (2) past successful attacks; and (3) 'actively planning, threatening, or perpetrating future armed attacks' against America.[370]

The targeting of individuals is legally framed according to the determined quality of armed conflict. Under the conditions of an armed conflict, International Humanitarian Law (IHL) and International Human Rights Law (IHRL) bind the combatants; if no armed conflict exists, International Human Rights Law governs.[371] As noted above, for the case of self-defence, the argument for armed conflict usually invokes the attacks of 9-11, the necessity of self-defence, and the extension of associated forces. Within the legal condition of an armed conflict, the main sticking points are the principles of *distinction* and *proportionality*.[372]

The principle of distinction requires the legally bound party to distinguish between a combatant and a civilian, while that of proportionality requires a balancing between the military advantage of an attack and the damage that is

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369 In the winter of 1837, an insurrection against British rule was being raised in Canada with the unofficial assistance of United States citizens. This became known as the Upper Canada Rebellion. The Caroline was a United States merchant ship used in support of the insurrection. Having fled to an island in the Niagara river, the vessel was raided by British colonial forces, set alight, and sent over the Niagara Falls. During the intervention, a United States citizen was killed. The diplomatic crisis between the United States and Great Britain was resolved in negotiations resulting in the Webster-Ashburton treaty of 1840. Since then "the resort to violence in self-defence would be judged by whether it was motivated by a necessity that was 'instant, overwhelming, and leaving no choice of means, and no moment for deliberation". This became known in international law as the "Caroline Test". Thomas M. Nichols, Eve of Destruction the Coming Age of Preventive War (Philadelphia: University of Pennsylvania Press, 2013), 2. See also Anthony Clark Arend, "International Law and the Preemptive Use of Military Force," The Washington Quarterly 26, no. 2 (2003): 90.

370 Harold Hongju Koh, "Authorization for Use of Military Force After Iraq and Afghanistan," statement by Harold Hongju Koh Sterling Professor of International Law –The Yale Law School – before the Senate Foreign Relations Committee, https://www.foreign.senate.gov/imo/media/doc/Koh_Testimony.pdf.

371 Benson, "Kill 'em and Sort It Out Later," 27.

372 Ibid., 24.

caused. Thus, both distinction and proportionality are aimed at constraining the violence against non-combatants.[373]

Within the United States, it is the executive branch that has the legal sanction to pursue drone operations globally, thanks to the passing of the Authorisation For Use Of Military Force (AUMF) legislation. The AUMF of 2002 followed the 9-11 attack and granted war powers to the executive branch without the oversight of Congress. More recently, as the Obama government departed for the incoming Trump regime, the AUMF of 2016 was passed to include the Islamic State (ISIS or ISIL) and enhance the executive's ability to conduct military operations without oversight.[374]

It is evident that the legal code meant to govern the interstate order does not hinder the perpetuation of the drone's remote control occupation in territories like the FATA. Rather, this code contributes in important ways to the conditions that make up the interior and exterior milieux of the drone ensemble. This argument is in contravention to the term *lawfare* that is "often used as a label to criticise those who use international law and legal proceedings to make claims against the state, especially in areas related to national security".[375] While proponents of state violence argue that international law is being abused by critics or weaponised by non-state armed groups, writers like Eyal Weizman argue that lawfare is already weaponised by the state. State lawfare "is exemplified in the way that, for example, military lawyers in the midst of a campaign 'legally [condition] the battlefield' by poring over target-maps and informing soldiers in what way they are entitled to kill civilians. IHL then becomes the ethical vocabulary for marking legitimate power and justifiable death".[376]

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373 International Committee of the Red Cross (ICRC), "Protocol I of the Geneva Conventions," ICRC: Treaties, State Parties and Commentaries, https://ihl-databases.icrc.org/ihl/INTRO/470.

374 U.S. Congress, H.J.Res.89 - 115th Congress (2017-2018): Authorization for Use of Military Force Against al-Qaeda, the Taliban, and the Islamic State of Iraq and Syria," www.congress.gov, accessed October 2017, https://www.congress.gov/bill/115th-congress/house-joint-resolution/89/text.

375 Wouter G. Werner, "The Curious Career of Lawfare," Case Western Reserve Journal of International Law 61, no. 3 (2010), 32, http://scholarlycommons.law.case.edu/jil/vol43/iss1.

376 Eyal Weizman, "Legislative Attack," Theory, Culture & Society 27, no. 6 (2010): 32, https://doi:10.1177/026327641038093713.

While ostensibly constraining deadly violence, the complex of international jurisprudence governing its deployment currently constitutes what Weizman has referred to as a "necro-economy".[377] This seems particularly salient in the context of activities, like the drone occupation of the FATA, that are claimed to calibrate violence, scientifically likening its informatic qualities to the injection of kinetic energy into a complex system. The measurement of violence against thresholds of International Humanitarian and Human Rights law does not simply reduce the capacities of military action, but also refines and organises them, enabling those possessing sophisticated mechanisms of control to impart death more efficiently. Indeed, "this power is grounded in the very ability to calculate, count, measure, balance and act on these calculations".[378]

Weizman's argument is that the capacity to control the threshold of violence enables the actor producing deadly violence to conform to a principle that he terms "the lesser evil".[379] Conformity to the principle of lesser evil binds the institutions of international law in a partnership with advanced military power. Weizman cites, for example, the Field Manual for Counterinsurgency, produced in 2006 under the guidance of General David Petraeus with the active supervision of the director of Harvard University's Carr Center for Human Rights.[380] The perversity of this necro-economy is such that the same legal apparatus that has been constructed to ostensibly reduce civilian casualties has become a tool enabling mil-com to inflict civilian death, while remaining beneath the threshold constituting a breach of international human rights or humanitarian law.[381]

In this sense, the legal codifications that I have described above are built into the soft-space of the drone. The signatures and thresholds described in Chapter 1 are constructed according to IHL, and not in contravention to it. What this demonstrates is the dynamic manner in which the interior milieu of the drone ensemble is responsive to its relation of recurrent causality with its external milieux. The interior milieu of the drone is transduced by the exterior milieu –

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377 Eyal Weizman, The Least of All Possible Evils: Humanitarian Violence from Arendt to Gaza (London: Verso Books, 2011), 8.

378 Ibid., 17.

379 Ibid.

380 Ibid.

381 Ibid., 19.

and, as we have seen in the extension of soft-space to residents of the FATA, this is a relation of mutual reciprocity. However, institutional formations like the organs of international jurisprudence are inadequate to relations of recurrent causality and reverse into their deadly contrary. While this suggests their possible redundancy, that is not the subject of this present work.

More immediate to my argument, mil-com's capacity to conduct what might be considered a campaign of lawfare reveals a smudge in the international order, if only because the laws of war were never meant to facilitate war but, in Carl Schmitt's terminology, to "bracket war".[382] The proposal is that international law and treaties that have codified jurisprudence at this order of magnitude are built into the drone ensemble as means of facilitating, calibrating, and making economical the perpetuation of unilateral violence and remote control occupation.

Striking with One Hand and Healing With the Other

The simultaneous operations in the FATA of a mil-com drone and USAID reveal the workings of what Agier refers to as "striking with one hand and healing with the other".[383] Indeed, USAID operates in every territory in which there are currently drone operations, including the FATA, Yemen, Somalia, Afghanistan and Iraq.[384] The humanitarian doctrine described above represents an advanced stage of what Carl Schmitt understands as the vanishing of the political into the economic-organisational.[385]

It is the reduction of concrete reality to abstract economic equivalence that Carl Schmitt finds concerning in liberal doctrine. Despite the commitment of actors in the humanitarian world, the subsumption of life into a generalised economy is what Schmitt labels a nihilism, because its substantive basis is not grounded in a true moral principle but in a universalism that could never sustain one. The moral principles that Schmitt discusses are, for example, the epistemological grounds established within the *Jus Publicum Europaeum,* by which European land

382 Schmitt, The Nomos of the Earth, 309.

383 Agier, "Humanity," 29.

384 U.S. Agency for International Development, "USAID Extreme Possibilities Map, (USAID, 2017)," accessed January 6, 2016, https://stories.usaid.gov/usaidmap.

385 Carl Schmitt, "The Liberal Rule of Law," in Weimar: A Jurisprudence of Crisis, eds. Arthur Jacobson and Bernhard Schlink (Berkeley: University of California Press, 2000), 65.

appropriation in the New World was rendered legitimate. The vanishing of the political into the economic-organisational is a consequence of an order grounded in the abstract universal. The political is only possible among entities confronting one another as equals, be this at the order of magnitude proper to the subject or state.

In *The Origins Of Totalitarianism* Hannah Arendt has problematised humanitarianism and human rights doctrines.[386] I will develop Arendt's core critique here as an additional optic through which it is possible to understand the relation between humanitarianism, human rights, and political or economic organisation of persons.[387] Human rights and humanitarianism emerged as doctrines of the enlightenment, concretising as declarations of the French and American revolutions.[388] Declarations and debates around what constituted human rights differed. For example, life, liberty, and the pursuit of happiness, according to the American formula[389], or equality before the law, liberty, protection of property, and national sovereignty, according to the French.[390] These formulations had been promoted as self-evident truths and inalienable rights, but for Arendt are only safeguarded within the context of citizenship and the nation-state. In Arendt's account, a fundamental hypocrisy of human rights was revealed in the advent of mass denationalisations from the late 19th to mid 20th centuries, in which large groups of Europeans became stateless persons, flung in their thousands by totalitarian regimes at the borders of so called enlightened and democratic nations, as a weaponised non-polity.[391] This problem of statelessness is, of course, not confined to a historical European context. In Pakistan's FATA, residents do not have the constitutional rights enjoyed by Pakistani citizens. Although there is, at the time of writing (October, 2018), a process of "mainstreaming" the FATA, this is not a substantial process and approximately five million residents are to some degree stateless.[392]

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386 Arendt, 1958.

387 There is a body of work concerned with the relations between Schmitt and Arendt's conceptions of the political and of human rights. See for example: Keedus, 2011, Mancheno, 2016 and Ibrahimy, 2016.

388 Ibid, p. 291.

389 United States, Declaration of Independence - 1776

390 Declaration of the Rights of Man - 1789

391 Arendt, 1958, p. 268-269.

392 See for example: https://www.usip.org/sites/default/files/2018-03/sr-421-mainstreaming-pakistan-federally-administered-tribal-areas.pdf

However, the problem of statelessness and human rights surfaced dramatically in the European pre-war context. The act of *making stateless* and sending those unidentifiable stateless across borders into democratic states was like the injection of a hostile serum into a body politic. It required an adept and dextrous reaction from states which were not up to the challenge. Prior to this, the enlightenment notions bound up in human rights had hardly been tested. Stateless persons had been dealt with by governments able to manage the limited cases that did occur. With mass flows of stateless persons it was discovered that, contrary to the enlightenment declarations, human rights did not seem to flow from human nature, but from the legal order, or nomos, of the interstate system. Indeed, this system had been organised to account for the movement of various citizens and protect their human rights while abroad, but not at all for the existence of large groups of non-citizens. Arendt notes that for the stateless person, committing a crime became a wise and rational move because, at least then, the stateless person might fall into some regime of legal protection from arbitrary police power.[393] Better to be a criminal than nothing.

Arendt's main point is that stateless persons are pushed out of the polity and become persons without access to a context in which their voice might be counted. In other words, without access to classically defined political space, "only the loss of a polity itself expels him from humanity."[394] The danger of forcing people outside of a common world, depriving them of a polity, is that they are thrown back on their natural givenness in the midst of a civilised world and its relation to artifice. Thus, these stateless persons outside of a polity are at the same time outside of a relation to the artifice of civilisation. They now belong to human-kind in the same way that an animal belongs to a species.[395] The definitions of human rights may be up for debate: life, liberty, and the pursuit of happiness, according to the American formula, or as equality before the law, liberty, protection of property, and national sovereignty, according to the French, but all of these are

393 Arendt, 1958, p. 286.

394 Ibid, p. 297. I will develop Arendt's notion of the political in Chapter 3.

395 Ibid, p. 302.

rights within a political community. They say nothing about the fundamental rights to a political life.

Michel Agier's critique of humanitarianism recognises the non-politics of the stateless condition. Displaced persons camps and territories governed as *states of exception*, like the FATA, are characterised by the negation of the possibility of appearance that partly defines political life. As such, the FATA and other geo-spatialities of exception are not oriented around speech and political appearance, but around the rational economic organisation of abstract universal units of *humanity*. Both the humanitarian world and dronology generalise life within a frame that privileges the economical and operational, while evacuating the possibility of the political. This is so for different reasons.

For the humanitarian world, the victim-culprit forms the underlying commodity or economic target. While universalised, this underlying value is qualified as abstractly human. The order of magnitude proper to the humanitarian world's mode of address is the individual body. For the drone, units of value, such as activity and transaction, are unpegged from a human standard. Dronology is addressed at the order of magnitude proper to the dividual and capta. Despite its universal qualification of humanity, the humanitarian world must concern itself with care at the order of magnitude proper to the individual body. This is a world of doctors and nutrition scientists. If the drone can be said to care, the caring is addressed to the necro-economical order of legal and software code. In terms of substance, the drone's economic frame seems a technical advance upon the humanitarian world, in that its underlying unit is closer to a concrete substantiation.[396]

However, I do not suggest that dronological power, as an advance over humanitarian governance, renders the latter immediately redundant. As I show below in Chapter 3, while the sovereign subject is not the object of dronological power, it lingers as an *a-posteriori* afterglow. This is demonstrated with the example of the signature strike at Wacha Dara.

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396 Hui, On the Existence of Digital Objects.

Chapter Three: Dronological Power

This chapter develops the political consequences of the drone in light of the structural and epistemological claims of Chapter 1 and the geo-strategic topologies discussed in Chapter 2. It is shown that the specific agentic qualities of the drone – as a technical ensemble mobilising techniques of long-distance control – troubles established theories of sovereignty and biopolitical subjectivity. By the end of the chapter, I will have established that the drone transforms politics as the sphere of human action.[397]

In the previous chapter, I make the case for the drone being a body politic and a near-sovereign in the context of a general distribution of sovereignty, conditioning zones of exception such as the FATA. This chapter begins by addressing the established theoretical binding of politics to sovereignty over life, with a qualifying attribute of *logos* (often understood as reason or speech) to political organisation. I will establish that there has never been anything exclusively human to the qualified relations of the individual to the plurality; rather, it is a particular kind of *logos* that has distinguished those relations. The human being is understood as being non-exclusively endowed with the capacity of putting *logos* into action.

I will describe the *logos*, or rationality, that the drone mobilises. We will see how throughout its historical migrations as a term, the drone has always been distinguished by its particular relation to *logos*.

Finally, I show how dronology (the specific mode of power and knowledge proper to the drone) is distinct from the biopolitical mode. For the drone, the human body, understood in the figure of *habeas corpus*, is not meaningful. Instead, the drone is organised around the dividual, while the body becomes *a posteriori*, a gesture to the meaning of the sovereign subject, and a corollary to the signature. The body is not that of a subject or an object, but hypo-ject:[398] a posited premise

397 Arendt, Hannah. The Human Condition. Chicago: University of Chicago Press, 2012

398 Malik Suhail, personal conversation with author, 13,06, 2017.

for the politics and action of the drone, a substrate hypothesised by the logic of dividuated operation.

The Barely Qualified Life

A problem that has haunted this thesis from the beginning, and one which I have co-opted as a methodology, is the order of magnitude of the drone. The initial designation of the remotely controlled technical object as a drone in the 1930s made a seamless migration from the order of magnitude proper to the individual human being to that of the remotely controlled vehicle. As we have seen in Chapter 1, this was initially the electric dog, a small cart laden with vacuum tubes, with which the techniques of remote control were tested before any attempt was made on more complicated and expensive airplanes. In the case of a minimal drone, composed of the remotely controlled vehicle and its operator, this is a configuration that can be comprehended as an assembly of two entities at roughly the same scale as the human body and the radio waves between them. This was also the case for the operational uses of drones through the Vietnam War and the first Gulf War of 1991. The remotely controlled vehicle and its operator make a tidy assemblage that is simple to grasp, as its order of magnitude is the same as a human observer. To extend this minimal configuration to the present military context that I have described would be deceiving; what has transpired is an amplification of the drone in the network condition.

Today, when we look at an image of an MQ-1 or MQ-9 UAV, we gaze into a network topology that is impossible to grasp at the order of magnitude proper to the UAV. Unlike the historical example of the monk who is set within the technical system of a monastic order, the UAV is set within a technical system that amplifies the original drone configuration to greater orders of magnitude. This reticulation of the drone into an open and extensible configuration is only constrained by the limits of the network. As we have seen in both Chapters 1 and 2, one way of finding the limit of the drone is by tracing its ontologies. Recall that computational ontologies within technical networks have been understood as framing devices with which functional meaning is assigned to capta. The drone

extends as far as the ontologies that it mobilises, and is bound by them as the basis of its meaning-making.

In technical organisations, like the monastic order, monastery, or, indeed, the early modern expeditionary projects, the shape of the organisation is discernible by an insertion at the order of magnitude proper to administration or an agent of sovereignty, be that the captain of a ship, the dean, prior, abbot, deacon, or bishop of the monastic. In those organisations, agency is fixed in a modern-administrative or feudal order that is organised around the individual-human scale. Agency in the drone network is distributed, mutable, mobile, and intensive in its concentration. It is not organised around the individual human. The upshot is that it is not possible to look at the drone in the same way as the monastic order or colonial expedition may be looked at. The non-appearance of a discernible agent is another echo of an elementary feature of the drone, as it was configured for the signature strike at Wacha Dara: the indifference of the drone to the human body and, perhaps more importantly, to the order of magnitude proper to the individual human being.

Concord of Discords

> And they are neither few, nor of the weakest Sort of Men, that have thought the Concord of Discords a firm Basis for Government to be built upon. The Business is to Tune them well, and that must be the Skill of the Musician.[399]

In the next section, I will account for the term *ðrone* that, for millennia, has denoted a specific kind of actor qualified within a political enclosure like the *polis* or sovereign state. This is a term that has migrated historically, transforming in meaning, yet always retaining important qualities even when, in the 20th century, it has folded like a Möbius strip to now denote a remotely controlled technical object. It is the transformative capacity of *logos* which unites the changing assignations of the drone to describe qualified forms of political life, in relation to the reason and rationality that transparently animate them.

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399 Frederick B. Tolles and William Penn, "William Penn on Public and Private Affairs, 1686: An Important New Letter," The Pennsylvania Magazine of History and Biography 80, no. 2 (April 1956), 236–247.

This section provides the third etymological tracing of the term *∂rone*; it focuses upon the ways in which it pertains to qualities of membership within a polity and the manner in which the relation of an individual to the rule is conditioned. I trace the broad thematic moves across orders of magnitude proper to the individual, the plurality, and the relation to reason and rationality that distinguishes the drone from other forms of qualified life. While the drone term has been mobilised in various ways for millennia, the focal point of this section is the early modern and modern usage of the term in political-economic discourse, and the drone or *bour∂on* in music.

The kind of life qualified in the term *∂rone*, as it was apprehended in the modern period, is that life caught within conditions of relatively determined technicity, in which industry and self-motivation are valorised over self-satisfaction and the pursuit of sensual fulfilment. As such, the term denotes a drone subject contrasted by the self-motivated and industrious bee-subject. Historically, the drone has been understood in a pejorative manner. The drone is a drag upon the collectivity and its resources – apprehended as an economy – thus, a kind of life that, while presupposing qualification for political participation, has not maintained the attributes that are meant to have merited such a qualification.

Jacques Attali has suggested that music and political economy have a reciprocal relation.[400] Attali goes so far as to claim that: "If it is true that the political organization of the twentieth century is rooted in the political thought of the nineteenth, the latter is almost entirely present in embryonic form in the music of the eighteenth century".[401] In this sense, Attali sees music as the herald of a political economy to come: "Change is inscribed in noise faster than it transforms society".[402]

In the musical register, *bour∂on* – the French word for drone – is predominant. *Bour∂on* is both bumblebee and drone-bee. The French term is more expansive

400 Attali, Noise: The Political Economy of Music.

401 Ibid., 5.

402 Ibid., 6.

than the English and has a more direct relation to Christianity. *Bourdon* can refer to a pilgrim's staff or anything that points to the ground and serves as a support.[403] *Bourdon* is "the indispensable regulator which maintains the identity of a specific melodic character, or mode, as opposed to the splitting forces of progressive ornamentation".[404] *Bourdon* equally refers to the refrain, a recurring motif in a musical work. In the western musical tradition, the *bourdon* is a technique, the pillar around which independent voices might gather, departing in flight but returning to its fold.[405] "It is the prototype of a combination of simultaneous sounds".[406]

The liturgical voices of Gregorian chant use the *bourdon* technique, as do bagpipe music, Indian ragas, early American blues music, Inuit and Mongolian throat singing, Sonic Youth, John Cage, and La Monte Young, to name just a few examples. In each of these cases, the drone might be inserted as a single voice, but its qualities are revealed in conjunction with other voices.

In the sense given to the term by liberal political and economic discourse, the drone is denigrated and independent voices valorised. But, what is lost in the translation from the musical register to that of political economy is the necessity of the drone to the promise and possibility of independence. The liberal figure of an independent actor ignores the existent figure of the drone, hidden in plain sight because it is so familiar.

I have shown previously that in Bernard Mandeville's *The Fable of the Bees or Private Vices, Publick Benefits*[407] the human drone is figured as the consequence of ill-fated attempts to repress private interests or passions for the benefit of the general good: "Charity, where it is too extensive, seldom fails of promoting Sloth and Idleness,

403 Collins, 2010

404 Edith Gerson-Kiwi, "Drone and Dyaphonia Basilica," Yearbook of the International Folk Music Council 4 (1972): 10.

405 Kevin N. Moll, "Towards a Comprehensive View of Compositional Priorities," In Counterpoint and Compositional Process in the Time of Dufay: Perspectives from German Musicology, ed. Kevin N. Moll, 1–62 (New York: Carland Publishing, 1997): 27.

406 Gerson-Kiwi, "Drone and Dyaphonia Basilica," 9. See also Weber, 2002, 649.

407 Mandeville, The Fable of the Bees, 1989.

and is good for little in the Commonwealth but to breed Drones and destroy Industry".[408]

The fault of the drone is not only that he is slothful or a burden but, more significantly, that he performs a lazy concord; he stages a harmoniousness that, while somewhat attractive and easy, is nevertheless destructive and a danger to the greater good of the collective. Drones are seen to be automated by the regime of care, thus losing autonomy, or being prevented from developing it in the first place. The biological drone is automated by the rule of his nature. This is the case in two ways: the drone's transmission of untarnished genetic material, as described in Chapter 1 (under conditions of haploid genetic transmission, the drone makes no addition or alteration to the rule); and, his minimal response to the organising principle, performing the nominal duties required and nothing else. In contrast, the female bees are seen to internalise the rule, making it their own, autonomous rather than automated.

Automation implies that the entity in question responds directly to an external rule, without which it would become inert. Autonomy implies that volition is internalised to the extent that the entity can remain active without a direct link to the external rule. When applied to the hive, I am not suggesting that either bees or drones are truly autonomous or automated; I am suggesting that this is how they are distinguished within the discursive mobilisation of the hive, as a model for the human political sphere. Another distinction, that we have already seen in Chapter 2, refers to the perceived source of volition and links autonomy to opacity and automation to transparency.

What remains to be worked out within this discursive tradition is the relation of the drone to the technical organisation to which it is surrendered. That is precisely the issue to be discussed in this chapter.

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408 Ibid., 223.

Politics as the Sphere of Human Action

We have already established how the drone is differentiated from other instances of control-at-a-distance; not least, in the distinct structuring of agency within a technical network. With the drone, politics is no longer a sphere reserved for uniquely human action or agency. Indeed, within a technical network, agency now features mobility of location and mutability of intensity. Hannah Arendt has suggested that politics is the sphere of human action and a space of appearance for the human agent. One of the arguments of this chapter is that if this were true for the modern era, it is no longer the case with the drone.

The first task will be to trace Arendt's conception in which human action and speech inform the orders of magnitude proper to both the individual and the plurality in a mutually constitutive relation, structuring what Arendt termed the *political sphere*, the space of equals enjoyed by citizens of the ancient Greek *polis*: "To be political, to live in a polis, meant that everything was decided through words and persuasion and not through force and violence".[409] Thus, when Arendt writes of the political, it is differentiated from the social: a sphere that includes the household (*oikos*) in which violence and force against animals, slaves, women, and children is permitted in the Greek context.

Human action has been inextricably linked by Arendt with *the human condition*; that is to say, a way of being that is particular to human beings. The salience to this thesis of Arendt's contribution is in the way that she links the individual human capacity for speech and action to the order of magnitude proper to the plurality. I describe and discuss her position below. Arendt's model for the political asserts the primacy of plurality, "specifically the condition – not only the *conditio sine qua non*, but the *conditio per quam* – of all political life".[410] That is to say, plurality is not only indispensable to political life, but is the cause for political life. To live is to be among men, while to die is to cease being among men.[411]

409 Hannah Arendt, The Human Condition (Chicago: University of Chicago Press, 2012), 26.

410 Ibid., 7.

411 Ibid., 7.

Plurality: Equality And Distinction In The Revelation Of Agency

The political sphere features a plurality, possessing the paradoxical characteristics of equality and distinction: equality, because human beings can understand each other through speech; distinction, because if human beings were not distinct from one another, there would not be the need for speech, as animal-like signs and gestures would be sufficient.[412] Arendt writes that: "Plurality is the condition of human action because we are all the same, that is, human, in such a way that nobody is ever the same as anyone else who ever lived, lives, or will live".[413]

This abstract configuration of the political sphere in Arendt is that of a space of appearance in which action is a primordial revelation of both plurality and distinction. There is no distinction without plurality, which can never be a simple multiplication of the distinct. The political privileges freedom, understood as the possibility of beginning, of initiative. Every instance of action demonstrates the freedom that is inherent in the political sphere, the possibility of new and unpredictable initiatives from the plurality. Thus, this human sphere of plurality is indeterminate as each initiative could always be improbable and potentially unexpected.

Speech and action together form the structuring initiatives that distinguish individual humanity *qua* humans. Humans appear to each other as human and in distinction to physical objects, which merely exist. This appearance is the function of a beginning, or initiative. Action is twinned with speech in the performance of an improbable appearance. This is so because "the primordial and specifically human act must at the same time contain the answer to the question asked of every newcomer: 'Who are you?'"[414] Action, here, is understood in the abstract sense of simply initiating something. It is the activation of natality: a second birth in which the human becomes distinct and plural. Action is an "initiative from which no human being can refrain and still be human".[415] The initiative of action

412 Ibid.,175–176.

413 Ibid., 8.

414 Ibid., 178.

415 Ibid., 176.

twinned with speech is a revelation of the human as agent. Agency in the political sphere is securely located at the address proper to an individual human body.

In terms of orders of magnitude, Arendt's approach to plurality necessitates consideration of the unique human distinction of the individual and vice-versa. We can note that at the order of magnitude proper to the singular unit – the human body bracketed from the plurality – the higher attribute is not speech and action but *nous*: contemplation or inner reflection, which cannot be translated into speech.[416] It is only at the order of magnitude proper to a plurality that the body is qualified by speech and the human is revealed *qua* human, as already always both plural and distinct. However, the political sphere as a *space of appearance* does suggest that the appearance of the individual is the unique and improbable event by which the *polis* is animated, and this appearance is always the announcement of a subject-body – the response to "Who are you?"

The political sphere, as it is conceived by Hannah Arendt, features relations of recurrent causality between the plurality and the individual. Plurality is configured as a space of appearance in which the paradoxical characteristics of equality and distinction are revealed in the improbable initiative of action. Action is thus a revelation of distinction, as it necessitates the speech required to identify the actor. Because of the improbable and thus unpredictable possibility of initiative, all humans are equally capable of action. The double transformative qualities of speech and action are what, for Arendt, specifies the human *qua* human and are what bestow agency.

The Biopolitical and Biopower

Another way that the political configuration has been theorised is through the notion of legal qualification; that is, to pose the problem of what is juridically qualified for inclusion within a given *polis*. Arendt's formulation does not attempt to account for the many ways in which human beings have been excluded from specific political spheres. Within a generalised and abstracted human condition, there are more or less enclosed sub-conditions of politics, as we have explored in

416 Ibid., 27.

Chapter 2. Every demarcation of sovereignty is an enclosure of political space. It is never hermetically sealed, but non-abstract political spheres are zones in which exclusion and inclusion are two sides of a threshold condition.[417]

In the previous chapter we have seen how *humanitarianism*, as formulated by Michel Agier, is split into a notion of the universal subject of *humanity* and the infrastructural sovereignty of the *humanitarian world*. The humanitarian world governs humanity in the FATA, as a supra-national near-sovereignty, alongside the drone, within an inter-state context conditioned by a general distribution of sovereignty. Here, I dig deeper into the grounds for Agier's formulation, which is in the conception of the biopolitical and biopower established by Michel Foucault and extended by Giorgio Agamben. Agier's humanitarian world is a post-war variant of the biopolitical mode of power, particularly in the regulatory order of magnitude proper to a biological understanding of species management. I have suggested in the previous chapter that the drone is a technical advance upon the humanitarian mode of governance; here, I describe the biopolitical and biopower as the established theory of power. I then show in the remaining sections how this mode of power is subverted and surpassed by the drone.

In his lectures at the Collège de France in 1976, Michel Foucault announced his theory of a modern transformation in the techniques of power, from the classical mode to that which he termed the "disciplinary" and "regulatory" modes of a "biopolitical" model.

In its classical form, power operates around a model of subtraction: "a right to appropriate a portion of the wealth, a tax of products, goods and services, labor and blood, levied on the subjects".[418] The sovereign's power is assured by his right to kill: "to take life or let live".[419] This model, which Foucault refers to as *sovereign*

417 Georgio Agamben, Homo Sacer: Sovereign Power and Bare Life (Stanford, CA: Stanford University Press, 1998)m, and Carl Schmitt, Political Theology: Four Chapters on the Concept of Sovereignty, trans. George Schwab (Chicago: University of Chicago Press, 2005).

418 Foucault, Michel. Security, Territory, Population: Lectures at the Collège de France, 1977 - 1978. Edited by Arnold Davidson. London: Palgrave UK, 2002., 136.

419 The phrase appears in Michael Foucault, Society Must Be Defended: Lectures at the Collège de France, 1975-76, trans. David Macey (New York: Picador, 2003), 241, and Foucault, Michel. Security, Territory, Population: Lectures at the Collège de France, 1977 - 1978. Edited by Arnold Davidson. London: Palgrave UK, 2002.,, 136.

power (distinct from biopower), links the assured life of the sovereign as an individual to that of the sovereign subject as an individual. This is to say, the relations, in terms of orders of magnitude, are between a life and other lives. This is a right-to-life paradox, as Foucault has it, in which, at least at the order of life and death, there is some symmetry between sovereign and subject. The relation of sovereign to subject in this configuration is only symmetrical insofar as the question of life and death, from sovereign to subject, is modelled as a centralised network at the order of magnitude proper to a unitary life. Each subject is in direct relation to the sovereign as one individual to another. That symmetrical shape ends once power is taken into consideration. The theoretical paradox that Foucault announces is that the sovereign does not care if the subject is alive or dead; this does not matter. The sovereign does not care about a life; it is not responsible for keeping the subject alive. The subject has the right to be dead or alive, according to the will of the sovereign, who is neutral on the matter. The power symmetry is heavily weighted towards the right to kill.[420] Why do I insist on that point? Only to show that the model which follows, the biopolitical, is quite different in terms of its orders of magnitude and of life as a power currency. The direct connection between sovereign life and subject life is removed; apparatuses of state are erected that channel and determine the relations to institutions and technologies, through which agency is allocated to the experts and professionals of governance and care.

Foucault argues that, by the late 18th century, layered upon the right to *take life or let live*, the biopolitical form of power appropriated a new set of rights to *make live or let die*.[421] This is seen at two orders of magnitude that correspond to the individualising and the massifying: the disciplined body and the regulated population. Foucault shows that the sovereign's right to take life was – by the time that it was formalised – "not an absolute privilege: it was conditioned by the defence of the sovereign, and his own survival";[422] but, with the shift to the biopolitical mode, this sovereign right to take life is further reduced.[423]

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420 Foucault, Society Must Be Defended, 240.

421 Ibid., 241.

422 Foucault, Michel. Security, Territory, Population: Lectures at the Collège de France, 1977 - 1978. Edited by Arnold Davidson. London: Palgrave UK, 2002.,135.

423 Ibid., 138.

The first entry that Foucault traces is the disciplinary mode of power that takes control of the biological organism proper to the human body. This is the order of magnitude of an individualising power that enters the body as a machine.[424] Disciplinary power optimises capabilities, extracts and mobilises the body's force, and regulates the individual with the aim of amplifying docility and usefulness. The site of disciplinary power is familiar in the modern architecture of prisons, schools, hospitals, factories, and military barracks. Foucault calls this an *anatomo-politics* of the human body.[425] In terms of orders of magnitude, the subject now enters into relations with an institutional stratum. If, in the sovereign model, the subject and the sovereign are bound by the currency of a life to a life (however asymmetrical this relation might be), now the subject not only enters into institutions of disciplinary control but becomes a part of those institutions, is penetrated by and inhabits and constructs those institutions. If the anatomo-politics individualise at the order of magnitude proper to a body, it is at the same time erecting the architecture of its own institutions that are backed up by the anatomical scaffolding of the docile and useful bodies that inhabit them. Between the sovereign and the subject, institutional power matured – it did not come out of nothing – to the extent that it began to constitute relatively concretised forms.

The second pole of biopolitics is at the order of magnitude proper to a population; now understood in the biological register as a species. The measurements and forecasting techniques, such as birth rate, mortality rate, fertility, sexuality, and longevity are also techniques of regulation. These technologies of power are, at once, massifying and molecular. The development of fertility treatments, water sanitation and other biopolitical technologies both regulate populations and specify biological functioning at a cellular level; as in the equality that Hannah Arendt writes about – that which is shared by each and every human being – which, in Foucault, is found with principles of bio-regulation that "invests life through and through".[426]

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424 Ibid., 139.

425 Ibid.

426 Ibid.

Agamben has written that Foucault's framing of biopower begins to account for a historical turn, in which "natural life came to be included in the mechanisms and calculations of state power".[427] This precision, the inclusion of *natural life* into the machinery of state power, signals Agamben's intention to revise and extend Foucault's account of biopower. For Agamben, the biopolitical mode announces a revision of what he understands as the classical differentiation between life that is qualified for political participation and that (natural) life that is excluded.

Agamben's contribution is important to establish here because what we are trying to trace is a sequence of transformations through which the established models of both sovereignty and biopolitics are subverted and undermined by the entry of a technical object (the drone) into the sphere of relations, understood by writers such as Arendt and Foucault as being reserved for specifically human actors. In order to show that the drone is not just a hardening of the kind of disciplinary and regulatory structures that Foucault describes, but something markedly different, it is vital to establish and differentiate the relations of power to life, and life to political life, that which is salient within a plurality.

If the classical understanding is that political man is a living animal endowed with additional attributes that qualify political existence, then modern biopolitical man is an animal whose universalised existence as a species being becomes the object of sovereign power. This chapter seeks to account for the new formations of sovereign power and the living after the appearance of the drone in the political sphere.

427 Agamben, Homo Sacer, 3.

Life and The Living: How to Qualify for the Political

> The Greeks had no single term to express what we mean by the word "life". They used two terms that, although traceable to a common etymological root, are semantically and morphologically distinct: zoë, which expressed the simple fact of living common to all living beings (animals, men, or gods), and bios, which indicated the form or way of living proper to an individual or a group.[428]

In this section, I describe and discuss Agamben's construction of a binary between qualified and unqualified life. I attend to his theoretical contribution while directing the discussion through the methodologies and concerns of this thesis. One such concern is to refute the figuring of a clean delineation between the modes of power that Agamben addresses. After a descriptive section, I critically discuss the material. This critique includes that of Jacques Derrida in his lectures that have been published as the *Beast and the Sovereign*.[429] Derrida's initial scepticism is precisely the problem of clear delineation: the certitude with which Agamben claims a differentiation of terminology and epochs. Nevertheless, Derrida does not refute Agamben's theories wholesale. Both the substance of Agamben's argument and the way that Derrida extends the discussion are important to this thesis.

In *Homo Sacer*, Agamben aims to erect a barrier between the qualified *bios* and *zoë,* understood as bare-life, so that he might ground the claim that modernity is distinguished by the intrusion of bare-life into the political arena. In this endeavour, Agamben is eager to "correct and complete"[430] the work that Foucault had, towards the end of his life, begun to concern himself with: the biopolitical or biopower.

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428 Agamben, Homo Sacer, 9.

429 Jacques Derrida, The Beast & the Sovereign, ed. Michel Lisse, Marie-Louise Mallet, and Ginette Michaud (Chicago: University of Chicago Press, 2011).

430 Ibid., 12.

That which had been excluded by the ancients as a form of life, insufficient for the *polis*, had "at the threshold of the modern era"[431] come to be included in the political power of the state. Thus, the construction of the sovereign state depended, in part, upon the exclusion of bare-life from the *polis*. The theoretical scaffold that Agamben sets up with the *zoë/bios* binary is that of a threshold between the exterior of the *polis* – that which is excluded – and its interior. If human beings, as living beings, are understood to universally possess *zoë*, what Agamben reads as the bare-life to be excluded (which he is at pains to say does not come in a plural form), that moment of exclusion is the recognition in which bare-life is simultaneously included in the *polis*. This is so, not as a qualifying attribute for political salience, but as that life that may be taken (killed) but not sacrificed: "In this sense, the production of bare life is the originary activity of sovereignty".[432]

This gambit of the threshold between inclusion and exclusion is extended from Carl Schmitt, who writes that "sovereign is he who decides on the exception".[433] With this phrase, Schmitt understands sovereignty as a borderline concept: a threshold pertaining to the outermost sphere of a sovereign space. As a borderline concept, the exception is, for Schmitt, a strategy of finding the concrete with which to ground the juridical order. The question can always be asked: who then, at the outer limits of the norm, will be the one to decide the exception, to press pause on the norm?[434]

Agamben's rendering of the *zoë/bios* binary follows Arendt in the strategic claim that, for the ancient Greeks, the distinction between the life that is proper to the *polis* and that which is better off in the household (*oikos*) or expelled to the wilderness, was crystal clear and cleanly delineated. The intrusion of bare-life into the *polis* at the advent of modernity is, then, to be understood as a muddying, or making opaque, of the political: "Once their fundamental referent becomes bare-life, traditional political distinctions (such as those between Right and Left,

431 Ibid., 3.

432 Agamben, Homo Sacer, 53.

433 Schmitt, Political Theology, 5.

434 Ibid., 6–7.

liberalism and totalitarianism, private and public) lose their clarity and intelligibility and enter into a zone of indistinction".[435] Here, Agamben departs from Arendt and moves closer to the indeterminacy that will characterise Michel Agier's position. In a condition of political indistinction, participation is no longer contingent upon a form of qualified life (*bios*) that bans the unqualified (*zoë*); rather, there is a generalised precarity of qualification shared by forms of life that possess human bodies but are equally subject to relegation to the camps – or zones like FATA – as *humanity*.

In Agamben's hands, the threshold of inclusion/exclusion pertains to the outermost limit of what may be included as a salient actor within a *polis*. There is no easy symmetry between an ancient Greek city-state and a modern sovereign state. Thus, it is important to note that, when Agamben writes of the ancients and the threshold of inclusion/exclusion, he is describing a pre-globalised political condition in which there is no interstate *order*, in the sense that the modern system of interstate sovereignty and the *nomos* of the earth give to the term. Each pre-global *polis* or city-state is a world of its own, an enclosure against chaos, wasteland, and perpetual war.[436] Beyond the threshold of one city, the excluded bare-life is not subject to the border controls of another *polis*, but rather fades off into the political wasteland.[437] Each enclosure, then, was a cosmos of its own, an orb of protection.[438] This is not to say that each pre-global *polis* understood itself as isolated and alone without knowledge of other enclosures: "The idea of a coexistence of true empires, of independent *Grossraum* literally, large spaces; figuratively, large spatial spheres in a common space, lacked any ordering power, because it lacked the idea of a common spatial order encompassing the whole earth".[439]

435 Agamben, Homo Sacer, 73.

436 Ibid., 52.

437 See also Stuart Elden's elaboration of the Roman pomerium concept. In Elden, Birth of Territory, 2013, p. 73-74.

438 Ibid.

439 Ibid., 55.

Putting Speech Into Action

> What is unfortunate is that this distinction [*zoë*/*bios*] is never so clear and secure, and that Agamben himself has to admit that there are exceptions, for example in the case of God, who, says Aristotle's Metaphysics, has a *zoë ariste kai aidios*, a noble and eternal life. Such an insecure semantic distinction cannot serve to determine a historical periodization.[440]

In his *Beast and the Sovereign* seminar series, Derrida launches a critique of Agamben's political topology, fashioned from the binary poles of *zoë* and *bios*.[441] Derrida expresses his doubt that the distinction between *bios* and *zoë* is tenable.[442] He also re-focuses the discussion upon the element of Aristotle's configuration that qualifies life as political or human: that which depends upon the term *logos*. While normatively understood as reason or speech, Derrida wishes to drive into theoretical terrain, prior to the late-Greek understanding of *logos*. In this section, I will examine Derrida's critique in a manner and depth that is sufficient and necessary for the arguments and claims that I am making. The pertinence of this discussion to the drone is the following: inclusion in the *polis* has been understood, after Aristotle, as contingent upon the capacity for reason or speech. Following Derrida, I show how the interpretation of *logos* need not be confined to the received notion of reason or speech but may be understood more broadly, for example, as rationality, or the technological rationality that I will discuss later in the chapter.

In his introduction, Agamben recognises the importance of language in the threshold separating *zoë* and *bios*. Animals have voice, but do not have language. *Zoë* is capable voice, that is, the expression of bare-life's capacity to feel pain and pleasure. *Bios* is life with language, the capacity to deal with justice and injustice, good and evil:[443] "There is politics because man is the living being who, in language, separates and opposes himself to his own bare life and, at the same time,

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440 Derrida, The Beast & the Sovereign, 316.

441 Agamben, Homo Sacer, 42.

442 Derrida, The Beast & the Sovereign, 315.

443 Ibid., 8.

maintains himself in relation to that bare life in an inclusive exclusion".[444] Recall Arendt's discussion in which the *polis* is that sphere in which speech and argument are mobilised to resolve disputes, rather than violence.[445] Here, the question of *logos*, voice, and language is funnelled into argumentation, supporting the theoretical scaffold of a threshold between inclusion and exclusion.

Inquiries along this line have had to contend with a phrase from Aristotle: *zôon logon ekhon*; man is the living being endowed with *logos*. Foucault translates this phrase to understand that man is "a living animal with the additional capacity for a political existence; modern man is an animal whose politics places his existence as a living being in question".[446] Here, he makes the distinction between the classical understanding of man, as a living animal with capacity for the political, and the modern, as a political condition in which the living is managed.

Contextualised within Aristotle's texts, the phrase *zôon logon ekhon*[447] expands as he attempts to "divide off the life that consists in nutrition and growth".[448] Mere perception is something shared by horses and cows and cannot be reserved for the human; therefore, "what remains is some sort of life that puts into action that in us that has articulate speech; of this capacity one aspect is what is able to be persuaded by reason, while the other is what has reason and thinks things through. And since this is still meant in two ways, one must set it down as a life that is in a state of being-at-work [*energeia*], since this seems to be the more governing meaning".[449] I have extended the quote in order to bring into theoretical circulation the interpretation of *logos* as a constructive capacity. At least for this thesis, the investigation of what is exclusive to the human will remain inconclusive.

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444 Ibid.

445 Arendt, The Human Condition, 26.

446 Foucault, Michel. Security, Territory, Population: Lectures at the Collège de France, 1977 - 1978. Edited by Arnold Davidson. London: Palgrave UK, 2002, 143.

447 This phrase zôon logon ekhon is repeated in several forms in Ethics and Politics. See Aristotle, Nicomachean Ethics: Translation, Glossary, and Introductory Essay, trans. Joe Sachs (Bemidji, MN: Focus Publishing, 2002), and Politics: A New Translation (Indianapolis: Hackett, 2017), 53.2-3 and 79a19.

448 Aristotle, Ethics, 1098a.

449 Ibid.

We can distinguish, here, between speech, a sort of life, and some mechanism that is able to hold or parse speech. Therefore, rather than simply stating that *the human is a form of life that has speech*, Aristotle seems to be saying that *the human is a form of life that has in it something that is able to put speech into action*. From this observation, I argue that in Aristotle, there is not necessarily anything particular to the human *qua* human, but rather the human contains a capability responsive to speech. What I wish to retain, then, is the notion of a capacity to translate *logos* into action, which seems to be the substantial attribute that qualifies political salience.

I have described Foucault's theorisation of biopower and the biopolitical. The sovereign's right to take life and let live has been shown to be a model of subtraction, configured at an order of magnitude in which the sovereign is compatible (although not symmetrical) with the individual subject. The modern biopolitical model establishes disciplinary and regulatory institutions at novel orders of magnitude, mediating the relation of the sovereign and the individual. It is shown that this anatomo-politics individualises at the same time as it massifies. The regulatory mode of biopower has been shown to divert power at the molecular or cellular scales and at the scale of a species.

We have seen how Giorgio Agamben has aimed to correct and complete Foucault's work on the biopolitical. In order to do so, Agamben asserts a binary distinction between that life qualified for political participation (*bios*) and the bare-life that is not (*zoë*). Agamben has suggested that, with the construction of *bios*, the exclusion of *zoë* is, at the same time, an inclusion. Following Schmitt, he figures this limit as a threshold. One of Agamben's claims that concerns this thesis is that with the advent of biopolitical power, modernity has been marked by the muddying of distinction between *bios* and *zoë*, creating a zone of indistinction characterised by a generalised precarity of qualification.

Theorisations along the lines established above have been shown to rely upon a phrase attributed to Aristotle: *zôon logon ekhon,* the established reading of which figures the human as the animal endowed with *logos*. Following this reading of Aristotle, it has been assumed by Agamben that the qualification for *bios*, as the

life fit for political participation, is *logos*: read as the capacity for reason or speech. In a heterodox reading, I have argued that the interpretation of Aristotle's qualification of the human need not be confined to speech or reason but may be understood, more broadly, as the capacity to transform *logos* into action. There is nothing necessarily human about *logos*; humans contain within them a capacity to hold *logos* and to translate it into action.

Network Living

In this section, I describe the drone assemblage as a plurality featuring mobile and mutable agency that extends the project of scientific rationality into automated technical networks. If Agamben has described the recognition of bare-life in its exclusion, the project of scientific rationality finds its exemplary moment in the exclusion of the body and human sensory apparatus from the processes of knowledge production. Drone reason extends scientific rationality with the abstracting processes of dividuation.

First, I will sketch a description of the drone as it may be found on January 15, 2015, the date of the signature strike on Wacha Dara. From this description of a concrete drone ensemble, I will trace the way in which agency and *logos*/rationality are circulated.

The FATA Drone: January 2015

The project of deploying the drone over a given geo-location requires what is referred to by mil-com as a combat air patrol (CAP). Each CAP consists of four aircraft, ensuring a seamless presence over the targeted geo-location.[450] As one vehicle is returned, another is already operational over the area of interest. Four vehicles per CAP ensures that excess capacity is available, should repairs to one or more UAVs be necessary. The MQ-1 Predator has a range of around 400 nautical miles (740 kilometres), while the MQ-9 Reaper has double that.[451] Thus, the 27,000 square kilometres of FATA require multiple CAPs to deliver a persistent drone coverage. 14 combat air patrols were deployed over the FATA in January 2015.[452]

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450 David Deptula, "Airforce ISR in a Changing World," Surveillance and Reconnaissance 30, March 2010, 2010.

451 National Research Council, 2005, 100.

452 Benson, "Kill 'em and Sort It Out Later," 32.

An Air Force document from 2010 shows that 168 personnel are necessary for each CAP; therefore, the minimal personnel required for the drone operations over FATA in 2015 is greater than 2,500.[453] Along with human personnel, there are multifarious discrete items of hardware and software that will not hold still for itemisation, but that should be added to the overall image that I am attempting to draw. These include: digital objects, such as software code and capta-base objects; and hardware, like the vehicles, sensor pods, ground stations, satellite links, capta terminals, the kilometres of fibre-optic cabling, and batteries.

Specifically, the document from 2010 shows the following personnel for each CAP:

- **For launch and recovery:** three pilots, three sensor operators, and 53 maintenance workers;
- **For mission control:** seven pilots, seven sensor operators, eight maintenance crew, five mission coordinators, two commanding officers, and 14 personnel assigned as administrative or overhead labour; *and*
- On the back-end of the operation, significant personnel are needed for **processing, exploitation, and dissemination (PED)** of the capta: 34 full motion video analysts, and 18 signals analysts.[454]

The launch and recovery occur within operational distance of the target area. For the FATA, this would imply three or four bases in Afghanistan and, perhaps, a base in Pakistan.[455] Both the mission control and PED can be distributed globally, as can the capta processing and storage centres that the operations service. This network assemblage is situated within the Global Information Grid and its constituent parts.[456]

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453 Deptula, "Airforce ISR in a Changing World." There are caveats to these numbers; for example, they do not include "backshop" personnel, and multiple CAPs do not require a multiplication of administrative personnel.

454 Ibid.

455 Giraldi, Philip, "The End of Drone War?" The American Conservative, March 4, 2014, accessed July 17, 2017, http://www.theamericanconservative.com/articles/the-end-of-drone-war/.

456 See Chapter 1 of this dissertation.

As we have seen in Chapter 2, both the ostensible operators of the drone – those human beings that lend their labour to the drone for payment or other reward – and the victims of the drone – those down below – must be included in an account of the drone. Yet the proviso is that those roles exist as components of a drone ensemble, not as individual persons, but as a reserve source for the production of dividuality, divided from the activity and transaction performed.

The drone does not care directly for the individual subject that it might, indeed, be tracking. As we have seen in Chapter 1, the drone brackets out the individual and subjective being in favour and hope of an apprehension of the world, which would bear forms of knowledge unsullied by the presuppositions that subjective individualities can impose. Thus, along with about 2,500 human operators, we must include between 3–5 million residents,[457] understood here as a stock of latent dividuals that does not require tending; that is, it is tended by other forms of sovereignty that are layered and distributed alongside the drone.

For the individual human being to qualify for dividuation into the drone, there is no requirement to possess *logos*, as it is normatively understood in the political conditions of state sovereignty. The human being is divisible, as per the requirements and standards of the drone network platform, with little consideration or presupposition of substantial unity. The only qualification is activity or transaction that elicits a relation when datafied.

The dividual is drawn into the network as a constructive element within the dronology. The dividual – as incorporated into the drone – evidences an intersection of *zoë* and *logos*. There is no requirement that this form of *logos* derives from living organic beings; death and being dead are attributes that can qualify as activity and transaction, as do electronic transactions, electrical consumption, library-book withdrawals, and the movements of vehicles.[458]

457 The latest Pakistani census of 2017 puts the FATA population at 5 million; the preceding census of 1998 registered 3.5 million residents. "Pakistan Statistics."
458 The FATA strike in 2015 can be used as an example here.

Like Hobbes's portrayal of the sovereign as Leviathan, the drone is an "animal monster", or "prosthtate"; that is to say, an ensemble of forms of life, greater than the sum of its parts. But, unlike the Leviathan, it is not composed of substantially unified individual human beings and cannot obviously be an "artificial man".[459] What all of these divided parts share is their capacity to be amenable and useful to the form of rationality that is the operational structure of the drone. If the drone is endowed with the capacity for a type of reason particular to it, the dividual is an entity proper to the functioning of that reason.

Drone Reason

In her article "The Technological Rationality of the Drone Strike",[460] Katharine Hall Kindervater asserts that the drone constitutes the "weaponisation of a modern technological rationality that is based on an already-weaponised scientific project".[461] Kindervater's *technological rationality* is an extension of scientific methodology into technical systems that amplify rational procedures with automation and abstraction,[462] and finds a point of departure in two aspects of Descartes's thought: the imperfection of the human being as a producer of knowledge, and the necessity for knowledge to be useful and acted upon.

Because of the blurring of reason by sensorial perception, the human being is prone to error. Descartes writes, "The exigencies of action often oblige us to make up our minds before having leisure to examine matters carefully, we must confess that the life of man is very frequently subject to error in respect to individual objects, and we must in the end acknowledge the infirmity of our nature".[463] The development of a scientific method emerged from this suspicion of the sensorial, and was an attempt to separate reason from the human body. The body is a part of nature, while rational thought distinguishes the human being from the non-human animal. The body/sensorial pollutes the purity of intellect that the mind is capable of.

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459 Thomas Hobbes and C. B. Macpherson, Leviathan (London: Penguin, 2003), 81.

460 Katharine Hall Kindervater, "The Technological Rationality of the Drone Strike," Critical Studies on Security 5, no. 1 (February 2017): 28–44.

461 Ibid., 2.

462 Here, I use the phrase technological rationality only in relation to Kindervater's essay.

463 René Descartes, Meditations on First Philosophy, trans. Stanley Tweyman (London: Routledge, Taylor & Francis Group, 1993), 100.

As Kindervater shows, rationalism, as an epistemological method, attempts to escape the body and its sensorium in order to isolate the intellectual capacities hosted by the mind. The extension of a scientific method into the automation of the drone is visible in the development of Activity Based Intelligence (ABI) doctrines that I have described in Chapter 1. The thrust of ABI is to bracket off the human perceptual apparatus and its predispositions. In this sense, an important feature of the drone is the automation and displacement of intellect as far as possible from the human agent.

Kindervater resists the discourse around automation in which the merger of knowledge production and killing is a consequence of "the turnover of war to machines".[464] Kindervater intriguingly suggests that the drone's networked knowledge production is an "epistemological violence of human thought over and against the body".[465] While the question of human thought over and against the body is not pursued further in her essay, it is useful to consider both the humanity of the drone network[466] and its epistemological violence over the human body *as the object of politics*. This does not seem to be Kindervater's intention, but it is one of the arguments of this thesis that the drone, as a political configuration, procedurally neglects the human body, as the object of politics.

The drone ensemble is understood as an apparatus of knowledge production that extends and weaponises the scientific project of rationality, removing the human body from its procedures. At the same time, this process divides and harvests the dividuals that will populate the drone, providing the appropriate source material for its form of rationality.

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464 Kindervater, "The Technological Rationality of the Drone Strike," 9.

465 Ibid., 9.

466 In the sense that Bernard Stiegler, following Leroi-Gourhan, gives to technical objects as tertiary retention of collective knowledge.

The Arbitrary Sovereign Decision And The Distribution Of Agency

I will now address how sovereignty comes together with *logos* in the drone as a constructive, or creative, political body. Internally – as plurality – the drone is a technical system that continuously structures and produces an ordering and hierarchy. Yet, it is important to note that none of this happens autonomously. The internal rationality that the drone is organised around does not provide the initial decision; rather, sovereign decisions are taken arbitrarily, and the drone is an automated technical ensemble that transparently operationalises those decisions. This is to distinguish between the setting of a rule, or threshold parameter, and the automated procedures that result from that inductive inference.

While the drone operationalises a mode of technical rationality, the signature strike shows how the appointed threshold parameters are introduced arbitrarily, as inductive inference or intuitive discoveries that the drone is bound by its automation to follow. If this were not the case, the drone would not be a drone. What makes a drone a drone will be shown in the next section. But first I will examine this configuration of power that I have described in abstract terms with an example of the kinds of threshold parameters that are used in signature strikes, like that at Wacha Dara.

A statement such as: *all males between the ages of 20 and 40 are military aged and therefore terrorists* is an intuitive and arbitrary inference that, while possibly derived from an empirical observation of an individual person, is abstracted from the empirical observation as a discovery statement. Inputted as a threshold parameter, the discovery is abstracted to form a profile from an aggregate probability.[467] A correlate statement may then be made for that profile: *all males between the ages of 20 and 40 are military aged and therefore terrorists and may be legitimately killed within a given geo-spatial territory.* This, again, is a decision moment; there are no automated processes that decide upon the threshold parameters necessary for the attribution of target. This leads to the problem of identifying these military aged males. The next statement might be: *all non-bald males with beards are MAMs*. Therefore: *all non-*

467 Hildebrandt and De Vries, Privacy, Due Process and The Computational Turn, 43–44.

bald males with beards may be legitimately killed within a given geo-spatial territory. Yet, a single hellfire missile, at around $100,000,[468] is much too expensive to justify an order to kill every non-bald bearded men that might be sensed. Therefore, the next step is to set another threshold parameter; this could be a specific quantity of MAMs/bearded non-bald persons, 30 or six, marked as a threshold parameter, beyond which the grouping of MAMs is attributed as a target.

It is in this way that agency is distributed, mutable, and mobile in the drone. The agentic and sovereign decisions are made outside of the automated procedures. These decisions are examples of the inductive reasoning that stems from initial inferences that are intuitive, arbitrary, and, in the scientific method of Karl Popper, for example, would require a rigorous system of deductive verification to corroborate (albeit temporarily). For Popper, "Every discovery contains 'an irrational element', or 'a creative intuition',"[469] and, as such, the introduction of an inference is an unpredictable and arbitrary initiative. There is no logical act of discovery, be that for poetry, maths, or any other initiating concept.

The initial hypothesis defining military-aged men is a generalisation derived from a particular empirical statement, as are the other hypotheses that follow from the MAM identification. None of these hypotheses are certainties; each of them derives from the inductive logic of probability. The point here is not so much a critique upon killing, grounded in probable cause (although such a critique is welcome and important); it is to clarify and sharpen the difference between automation and autonomy.

Carl Schmitt writes, "Sovereign is he who decides on the exception".[470] As we have seen in Chapter 2, the exception is a lifting of the rule. In the rational frame, the prerequisite can be the only scientifically available object, while the exception is outside of what can be readily handled. Schmitt continues, "The exception confounds the unity and order of the rationalist scheme".[471] The location of the

468 "In FY 2015, the average unit cost of Hellfire missiles (All-Up Round) purchased by the Army and Air Force is $99,600 (per All-Up Round)." AeroWeb,"AGM-114 Hellfire Missile," AeroWeb: About the Hellfire Missile, accessed July 28, 2017, http://www.fi-aeroweb.com/Defense/AGM-114-Hellfire-Missile-System.html.

469 Popper, The Logic of Scientific Discovery, 8.

470 Schmitt, Political Theology, 8.

471 Ibid., 14.

decision is the location of agency and, with the drone, agency is distributed across the network topology. That is to say, the precise location of agency within the drone is best understood in terms of intensities and mutability. Agency and sovereign exception are mobile, thickening, and diffusing, according to modulations of the network operation.

The technological rationality that structures dronology is shown to be premised upon the notion, derived from Descartes, that reason may be liberated from the kinds of judgement that are blunted by the human perceptive apparatus. It is demonstrated that, in the case of the signature strike, such epistemological fidelity is limited in automated procedures, which require inductive inference as a point of departure. While the drone may be shot through with technological rationality, the initial decision, or point of agency, is shown to be necessarily arbitrary. As I have demonstrated throughout this thesis, and in particular the section at the beginning of this chapter on the etymology of the drone term, what makes the drone a drone is the transparency of its external source of volition. If the drone ensemble were to be autonomous from the agency that is automated through its rational procedures, it would not be a drone.

Dronology: After Biopower

> If I had to choose between living in a country with habeas corpus but without free elections, or a country with free elections but without habeas corpus, I would choose habeas corpus every time.[472]

In this chapter, I describe the biopolitical subject as it has been articulated, first by Michel Foucault and then by Giorgio Agamben. Hannah Arendt's notion of the political as sphere of human action has initially established the mutual reciprocity of the plurality with the individual human through the attribution of speech and action. I have shown how the drone, as a plurality – a network assemblage of heterogeneous actors featuring a distribution of agentic location and intensity – is characterised by a specific configuration of rationality. This rationality grounds

472 U.S. Congress. "145 Congressional Record 924: Statement of Senator Moynihan," congress.gov, 1999.

the drone's epistemology or dronology, the *logos* of the drone. In this final section, I show how the drone evinces a departure from the biopolitical model of modern politics through an examination of the writ of *habeas corpus*. The term *habeas corpus* literally means to have the body.

Habeas Corpus

The writ of *habeas corpus* is the core component of the Habeas Corpus Act of 1679 in England. This document inscribed into law the obligation for the authorities to "bring or cause to be brought the body of the party so committed or restrained, unto or before"[473] a court of law. It is a foundational principle of liberal democracy that the sovereign or its agent must produce the body of the imprisoned to a court of law and provide a valid explanation for the subject's detention.

For Agamben, this is both an originary moment of modern democracy and that of the biopolitical mode of power: "If it is true that law needs a body in order to be in force, and if one can speak, in this sense, of 'law's desire to have a body', democracy responds to this desire by compelling law to assume the care of this body".[474] In his brief exposition on the subject, Agamben traces the shaping of modernity, by way of the formation of the legal structures of *habeas corpus*, from its origins in the 13th-century Magna Carta. If, in Article 29 of the Magna Carta, the body in question is definitively that of *homo liber* (the free man), by the 17th century, the body that must be supplied to a court of law is reduced to the pure *corpus*. *Habeas corpus* does not request the subject – feudal or citizen – but, quite simply, the body: "You will have to have a body to show".[475] In this struggle to contain absolutism, the entity whose presence is required for the law to go into force is not *bios* (qualified life), but *zoë* (bare life), in the form of the biological body.

Thus, *zoë* enters the political sphere as a body (*corpus*), slipping past the varieties of qualified life (*bios*). We note that, in Agamben's schema, bare-life/*zoë* enters into

473 The Founders' Constitution, "Article 1, Section 9, Clause 2: Habeas Corpus Act," http://press-pubs.uchicago.edu/founders/print_documents/a1_9_2s2.html.

474 Agamben, Homo Sacer, 73.

475 Ibid.

the *polis*; but this cannot be the same *zoë* as that of slugs, cows, or dandelions; it is an understanding of *zoë* qualified by the presence of a human body.

From the previous discussions, it is clear that the drone does not require a body for its particular jurisprudence to go into force. The appropriate entity for the drone is the dividual *qua* signature. This does not imply that the drone has no relation to the body, or to the subject; it does, and I will develop that point shortly. The key argument is that, unlike the biopolitical mode of power, the drone does not require the body as a *prerequisite* for the force of law. If we examine, once again, the January 15, 2015 signature strike, which has been our emblematic example of the drone, we will be able to account for the configuration of the drone in relation to the subject-body.

The Neglected Body and the Hypo-Ject

On April 23, 2015, President Barack Obama announced the deaths of Warren Weinstein and Giovanni Lo Porto, U.S. and Italian citizens, respectively.[476] The president, as executive and sovereign, produced the bodies, not as a pre-requisite to the force of law, but as an *a posteriori* gesture to the meaning of the sovereign subject.

To recapitulate the preceding discussions: the signature strike at the Wacha Dara area of Liddah Tehsil near the Pak-Afghan border between Makeen and Shawal in South Waziristan[477] was a kinetic event within an expeditionary project, in which persistent surveillance yields capta indexed to a geo-spatial and temporal register. Against this spatio-temporal index, models are imported or formulated and continuously modulated according to the harvested dividuals that form the substantial basis of the operation. Kinetic events, like that at Wacha Dara, regularly punctuate the continuum of the drone expedition. The distinction between targeted killing – sometimes referred to as personality – and signature strikes, like that at Wacha Dara, is clarified in the procedures of profiling, and the distinction between individual or personal capta and aggregate or profile capta.

476 This is also qualified. The same strike is said to have killed Ahmed Farouq, said to be both a leader of Al Quaida in the Indian Subcontinent and an American citizen, although his citizenship is unverified. Igor Bobic, "Americans Held by and Working with Al Qaeda Killed in Botched U.S. Operation," The Huffington Post, April 23, 2015, accessed August 12, 2017, https://www.huffingtonpost.com/entry/us-operation-killed-al-qa_n_7126208.html.

477 Pir Zubair Shah, "My Drone War," Foreign Policy, February 27, 2012, accessed December 4, 2015, http://www.foreignpolicy.com/2012/02/27/my-drone-war.

Individual capta is that which pertains to an individual body. This can be multiple bits of capta relating to activities and transactions, locked to the identity of a specific person. Such individual capta is observed; that is to say, it is empirical capta relating to a specific human body. Targeted killings result from such individual capta. These targeted strikes do not necessarily rely upon machine learning or capta mining, although any capta gleaned from empirical observations might be useful for those procedures. In targeted strikes, the capta harvested are always married to the referent of the specific subject-body; it is not divided from the body and dividuated because the whole is always retained and the human form is respected. These procedures have been documented, for example, by The Intercept website's analysis of leaked documents, pertaining to the manner in which targeted killings are approved.[478] While the law of *habeas corpus* is not respected – there is no trial in which the body is brought before a court of law – the subject-body is required procedurally for the sovereign decision to be made.

From sources including multiple empirically observed bodies, aggregate capta are correlated and formed into profiles: "Profiling amounts to building (statistical) models from large amounts of capta from many individuals".[479] This is, for example, the manner in which the pattern-of-life (POL) models are constructed. It is also the manner in which profiles such as military aged male (MAM) are constructed. As we have seen, models such as POL or MAM form an important background for the production of targets in the Activity-Based Intelligence framework. What I wish to emphasise here in this discussion is the way in which aggregate capta and profiling do not involve a direct observation of an individual human body. Observations of activity and transaction are indirect and do not refer to the subject-body. They are divided from the unified figure of the subject-body that is neglected.

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478 "The Drone Papers" are an analysis of the "kill chain" procedures for targeting individual and known persons. See Spencer Woodman, "Palantir Provides the Engine for Donald Trump's Deportation Machine." The Intercept, March 2, 2017. theintercept.com/2017/03/02/palantir-provides-the-engine-for-donald-trumps-deportation-machine/.

479 Otterlo, "Machine Learning View on Profiling," 43–44.

The orders of magnitude at play in this configuration procedurally elides that which is proper to the human body. On one hand, the capta are at an order of magnitude that is proper to a transaction or an activity. This is not only a different scale but also a different temporal frame, as there is no necessity to engage with that temporality proper to an individual human life. Indeed, ABI does not distinguish between human activity and transaction and non-human activity and transaction. These dividuals are impartially registered harvested. On the other hand, the drone profiles along an order of magnitude proper to a geo-spatial demarcation: the cartographic demarcation of the compound, for example. Moving between these poles, the drone not only elides but wilfully neglects the body *qua* subject.

This is the first principle of ABI, of which drone epistemology is a hard fork. The original problem that we discussed in Chapter 1 is how to derive targets from a population in which the combatant and the non-combatant are indistinguishable. The resulting epistemology – the method of knowing what the target should be – is an oblique strategy in which the known must be neglected in order that the unknown-unknown be recovered.[480] Thus, perversely, in order to find the correct body to kill, the first requirement is to neglect the bodies that may be perceived. In keeping with the tenets of what Kindervater terms "technological rationality",[481] the drone must follow on from the fundamental distrust of the human perceptual apparatus inherent in the scientific methodologies.

As in Descartes, for ABI, the human perceptual apparatus is deceptive. The subject-body is a veil behind which truth-bearing activities and transactions are concealed. Only by the impartial unpicking of dividuation might the perceptual bias of the human be overcome and the true essence of the world be produced. That is, to repeat, the drone is not oriented and organised around the human body, but rather the dividual, the object and operational condition of drone reason. As stated by Rouveroy: "Algorithmic governmentality is without subject: it operates

480 See Chapter 1.

481 Kindervater, "The Technological Rationality of the Drone Strike."

with infra-individual capta and supra-individual patterns without, at any moment, calling the subject to account for himself".[482]

At the same time, however, the frame of the body – its shape or silhouette – is always also present; not as a subject-body, such as *habeas corpus*, but as a hypothetical object of future-oriented speculation, a hypo-ject. It is present as a stick figure in a PowerPoint presentation, and as the corollary of the signature. As such, it is not a real body but an explanatory basis for the object of drone reason. The hypo-ject follows on from the signature; it is an anticipated outcome and operational premise in a future-oriented, probabilistic framework. As we have seen with the signature strike at Wacha Dara, the procedural practices of the drone include post-strike analysis, during which the subject-body is re-created from the dividual objects of drone reason. It is during this *a posteriori* moment that the dotted-line silhouette of the aggregate profile is filled in by the (re)emergent subject-body to form the hypo-ject. This is not so much a payoff as a grimly procedural registration of more capta for the drone's capta-grids.

The drone is a near-sovereign that biopolitical theories of power struggle to explain. The mode of power in which the body presupposes the force of law is insufficient for the drone; a form of sovereign power for which the meaning of the subject-body recedes. The body lingers on as the hypo-ject that follows on from the signature. The strike at Wacha Dara brings to the surface the current disjunctions of this near-sovereignty. In this case, the hypo-jects that emerged procedurally were qualified as subject-bodies belonging to Italy and the United States, more powerful sovereigns than the drone. Thus, the United States' chief executive was forced into a performative re-enactment of a mode of sovereign power that is alien to the drone ensemble.

482 Rouveroy, "The End(s) of Critique," 144–145.

Conclusion

As this thesis has argued, at the time of the 2015 signature strike at Wacha Dara, the persistent presence of drone-combat air patrols over the Pakistani FATA territory had constituted a remotely controlled occupation informed by techniques of *algorithmic governmentality*. Within this *∂ronology*, truth is held to be immanent within the technical system. Obligations or requirements of empirical verification and observation are suspended or ignored. The drone ensemble addresses its governmentalities to the order of magnitude proper to the infra- or trans-individual. The individual human subject is no longer indivisible, but dispersed into *∂ivi∂ual* parts – activities and transactions – that may be harvested as capta for the drone ensemble's epistemology.

In the case of the signature strike at Wacha Dara, the drone's exterior milieu (in this instance the FATA regions of Pakistan) has been conditioned by the generalised distribution of relatively weak sovereignties; it is within this geo-political context that the drone has been inserted as a political actor and near-sovereign. The development of the political conditions noted above has been traced historically through a reading of Carl Schmitt. For Schmitt, the reduction of concrete reality to abstract economic equivalence has rendered the inter-state juridical order vulnerable to a destructive universalism that he finds in liberal political doctrine. The vanishing of the political into the economic-organisational is a consequence of an inter-state order grounded in abstract universal tenets that have replaced the substantive juridical grounds of early modern European land appropriation.

In light of the techno-epistemological qualities of the drone, and the geo-political conditions noted above, the agentic qualities of dronological power – the mobility and mutability of the location and concentration of agency – have been shown to subvert modern political theories of biopower and subjectivity. The subordination of the individual human subject is one consequence of an epistemology that privileges captured dividual pieces of activity and transaction as its objects of knowledge-production and power. However, the body remains important as a

correlate to the signature, the hypo-ject, an explanatory basis for the object of dronology, or drone reason.

As a remotely controlled occupation, the drone ensemble exerts power both within its interior milieu and to its exterior and associated milieux. As such the drone may be understood as a body-sovereign. However, the drone is distinguished as a near-sovereign by the manner in which it is constituted and extended upon a spatiality proper to computational ontologies and their grammars of action, which I have called its topological space.

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As these final comments propose, the conclusions drawn from the thesis can be extended elsewhere. Because this inquiry has aimed to describe and explain current modalities of power, I have approached dronological near-sovereignty *through* the epistemologies of mil-com. I have arrived at dronology through an examination of the ways in which this near-sovereign produces knowledge. The paradoxical construction of the hypo-ject has been revealed by tracing the ontogenetic development of the drone ensemble by way of its historical, etymological, and technical individuations. A further inquiry might build and extend this work by taking up the hypo-ject and, so to speak, reverse engineer the technical ensemble which requires this construction as an explanatory basis for its operational reason.

I wish to clarify a potential misunderstanding in relation to the proposed construct of the hypo-ject. The hypo-ject is not intended to be in opposition to, or an inversion of the subject. As I have mentioned above, the relation of the subject and hypo-ject to the operational reason of certain technical ensembles is a configuration that I intend to pursue moving forward into bifurcations of this research project. The proposition that the hypo-ject is the hypothetical object of drone power does not presume that the subject is a concrete truth, free of abstraction.

The conception of the hypo-ject came about when, after explicating what the procedures of drone reason may be, it occurred to me that while procedurally neglecting the sovereign subject, dronological power nonetheless re-surfaces a

subject body *a-posteriori*. The notion of the hypo-ject does not suggest that the subject disappears as the object of power, in general. I have already proposed that dronological power is operational simultaneously to other modes of power and near-sovereigns, it does not replace them.[483]

According to Jacques Derrida, the subject is interpellated by its *being-interpellated*.[484] The subject is that which is thrown under the law.[485] Yet under *Habeas Corpus* the law must deliver up this subject for it to go into force. Thus, there is a double interpellation. The subject as self is interrupted by the law under which it is cast. At the same time, under *Habeas Corpus*, power must pause for the subject body to make an appearance before the law can go into force. As I have unpacked at length in this dissertation, dronology procedurally elides the subject as that which might interrupt the operation and execution of mil-com power. However, it does so in a different way than say, sovereign power as it is described by Foucault. The neglect of the subject is wilful in dronology. Behind the technical reason of the drone is a deep suspicion of human judgement as a producer of knowledge. As such, the subject is seen as a construct that might interrupt the currency of technical reason. By currency I mean to say that technological reason is unleashed in dronological power as a flow, or what Celia Lury, Luciana Parisi and Tiziana Terranova have termed a "continuum".[486] This continuum is contained within the operation of computational ontologies, but has material effects beyond the black box. As Lury, Parisi and Terranova write: "a distributed, dynamic configuration of practices is organizing the forms of social life in ways that supplement and extend those of Euclidean geometry."[487] The authors are writing about the becoming topological of culture within integral reality, yet dronological power extends the modulating procedures of the continuum into geo-locations, like the FATA of Pakistan, that are arguably not fully within the sphere of an integrated reality.

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483 A point suggested to the author by Antoine Bousquet in conversation, June, 2018.

484 Derrida Jacques in Cadava, E. Connor, P. Nancy, J.L. *Who Comes After the Subject?,* Routledge, 1991, p. 97. See also, Marion, Jean-Luc in the same volume, p. 243.

485 "The subject is literally "thrown under" (sub:under; -ject: thrown)". Bishop, 2017, p. 6.

486 Lury, Parisi and Terranova, 2012, p. 6.

487 Ibid. p. 5.

This hypothetical thesis on dronology's hypo-ject begins by suggesting that the drone is not unique in its appropriation of techniques of algorithmic governmentality. The development of the hypo-ject has occurred in relations of recurrent causality with both algorithmic governmentality, and residual forms of governmentality for which the subject remains central. The construction of integrated capture systems, for example in "smart cities",[488] features the deployment of networked sensors and computational capabilities for the ubiquitous collection of capta, including so-called "walk-back technologies".[489]

> Walk-back is a recombinant technology that works primarily with advanced facial recognition software and biometrics in combination with data-tracking to identify and plot the movement trajectories of multiple entities within differentiated spaces over time, their points of crossover, convergence and dispersion in order to play back and schematise a set of actions in relation to a chain of events.[490]

Another way of understanding these systems may be to approach them as technical ensembles for which the re-production of the hypo-ject *a-posteriori* is an important or desirable feature. What the system of distributed control (the smart city, for example) procedurally neglects is desired to re-appear on demand, as a kind of "just-in-time production" of re-subjectivity.[491] This avenue of inquiry takes up the manner in which such configurations are susceptible to agonistic dissimulation and the appropriation of agency. While smart city projects like that of Singapore are either very new, or still under development at the time of writing (January 2018), there are some precedents for which temporal distance facilitates an inquiry: for example, the events surrounding the killing in Dubai of Mahmoud Al-Mabhouh.

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488 Gabrys, 2014. See also the current project in Singapore: The Smart Nation and Digital Government Group, "Many Smart Ideas One Smart Nation," accessed December 11, 2017, https://www.smartnation.sg/.

489 Schuppli, "Walk-Back Technology."

490 Ibid., 1.

491 In 2002, Ryan Bishop and John Phillips had already recognised relations of recurrent causality between the drone and the proto-smart city: "The technotopian urban space of the virtual village implies its being policed and under surveillance by the UCAVs circling above it. The technology of the former stems from the latter, and they cannot fail but to coexist interdependently". Ryan Bishop and John Phillips, "Unmanning the Homeland," International Journal of Urban and Regional Research 26, no. 3 (2002): 621.

On January 20, 2010 the body of Mahmoud Al-Mabhouh was found in room 230 of the Rotana hotel in Dubai. Weeks later, the Dubai police unveiled a video assembled from CCTV footage taken across the city. The video purports to reproduce events leading up to Mabhou's killing by a hit team. It claims to depict the tracking, via CCTV cameras and facial recognition techniques, of members of the alleged hit team moving about the corridors, lobbies, airports, and parking lots of Dubai. Along with the video, passport images scanned at the border and aliases of 26 agents were released. As of January 2018, none of these aliases or images have been matched to verified identities, perhaps remarkable given the proliferation of social networks such as Facebook.

Shortly after the video's release in 2010, academic and journalistic accounts of the depicted event and its aftermath proliferated. Susan Schuppli's 2013 article "Walk-Back Technology: Dusting for Fingerprints and Tracking Digital Footprints", cited above, takes this case as its point of departure. It has been suggested that the Al-Mabhouh film represents a watershed event in understanding the city as a visual system of "intelligent" architecture.[492] The connective folds between built-space become camera positions and editing points.[493] Dubai is presented as the shimmering apotheosis of contemporary city-states that deploy integrated systems of image capture with machine-learning and data-mining in the hopes of facilitating the ability of rulers to control narrative, even *a posteriori*, after other forms of control may have been subverted.

However, with the benefit of hindsight and research it is now possible to shed more light on this story. It is unlikely that the Dubai authorities were able to harness advanced facial recognition and tracking techniques in 2010 given both the state of the art in those systems and the technical and infrastructural conditions of Dubai at that time. Firstly, in 2010, facial recognition in an uncontrolled setting ("the wild") was not deemed to be sufficiently operational by

492 Coline Milliard, "Jane & Louise Wilson on Dubai, Surveillance, and Intelligent Architecture," Artinfo, September 12, 2013, accessed December 18, 2017, http://www.uk.blouinartinfo.com/news/story/956865/jane-louise-wilson-on-dubai-surveillance-and-intelligent.

493 Weizman, The Least of All Possible Evils.

leading experts in the field.[494] Secondly, even if it were possible in 2010 for a facial recognition apparatus to make a correlation between two images taken in uncontrolled conditions, the specific conditions in which CCTV footage in Dubai were recorded and stored makes it very unlikely that the video files available to investigators were of sufficient resolution to permit machine recognition in the first place. This is possible to surmise because Dubai Law 24 of 2008 has set out precise regulations on CCTV equipment to be installed across the kingdom (by the property owners and at their expense). Thus, there are several view classifications corresponding to locations like hotel lobby desks, parking lots, ATM machines, airports, and shopping and entertainment centres. The law makes a distinction between live video-feed data rates and digitally recorded video. For the live feed, 25 frames per second is required, yet the digitally stored video files are only required at three frames per second. In addition, the file size is squeezed in storage to a format known as 2CIF (704 by 240 pixels), a format which requires un-squeezing (a remapping of pixels) to be properly viewed, at a further cost in overall resolution.

What this suggests first is not that the Dubai police and contracted experts were unable to mobilise computer-assisted facial recognition techniques. Rather, it is more likely that a group of human beings were made to watch hundreds of hours of CCTV footage and make correlations the old-fashioned way. While the images would not have been meaningful to machines, they would have been recognisable to human brains. A second mystery is that that while 26 passport images have been released publicly and widely viewed (various versions of the Dubai police video have been viewed millions of times on Youtube), not a single agent has been identified eight years on. One way that this may be speculatively explained is that the passport images had been created using composite techniques: for example, a single image composed of five or six images of people with similar features and gender, made in the same lighting conditions. Such a composite image may be constructed to be recognisable to a human viewer, while remaining meaningless to

494 See, for example, Jie Ni and Rama Chellappa, "Evaluation of State-of-the-art Algorithms for Remote Face Recognition," paper presented at the IEEE International Conference on Image Processing, Hong Kong, China, September 24–29, 2010; and more currently, Jacob Scharcanski, Hugo Proença, and Eliza Du, eds., Signal and Image Processing for Biometrics (Berlin: Springer, 2014). The problem of facial recognition "in the wild" persists.

a machine ensemble programmed to make algorithmic decisions that, for example, calculate distances between nostrils, edge of mouth, corners of the eye, etc.

This hypothesis elicits the description of a technical ensemble designed to capture dividual traces, in this case capta pertaining to the biometric, temporal, and geo-spatial registers, the constituent elements of which prevented its operation when a "walk-back" narration was required. Entering into the details of persistent capture and tracking, we note the distinction between the real-time harvesting of imagery (at full resolution) and its storage, a future-oriented practice which defers the resource-heavy extraction of capta from the raw material of CCTV footage at the cost of pre-emptively nullifying the speculative operation. Here is a risk calculation in which the hypo-ject is perhaps even further removed from the underlying subject than in dronological power, which at least constructs a correlate – the signature.

In relation to the relative immaturity of this apparatus as a technical ensemble, it is possible to discern the entry into this system of agonistic actors – the assassins. The investigation has begun to inquire into the possible harnessing of Dubai's capture and tracking apparatus – a relatively immature technical ensemble made up of mismatched and uncoordinated elements – by agents who have comprehended the nature and technicity of the system, appropriated the technical ensemble and completed its missing functionality. The suggestion is that the hypo-ject has been pre-emptively constructed *a priori* by agents mobilising the agentic qualities of distributed capta systems for their own ends.

If, as this thesis has argued, the drone has transformed during the 20th century from a configuration centred around a particular form of politically qualified human-subject to one that now denotes a technical ensemble since this migration has occurred, it has in the process been further reticulated and amplified by the technical objects and ensembles that have been drawn into its interior milieu. One consequence of this is that the drone of 2015 is not easily reducible to that of the 1930s. As the case of the Dubai investigation demonstrates, this form of "intelligent architecture" is now in relations of recurrent causality with other technical ensembles such as real estate development and privatisation. The

extension of dronology to the Dubai investigation aims to extend the work of this thesis by approaching another form of algorithmic governmentality from the direction of its hypo-ject, re-tracing the agentic features of this technical ensemble from the bottom up.

Bibliography

AeroWeb. "AGM-114 Hellfire Missile." AeroWeb: About the Hellfire Missle. Accessed July 28, 2017. http://www.fi-aeroweb.com/Defense/AGM-114-Hellfire-MissileSystem.html.

Agamben, Giorgio. *Homo Sacer: Sovereign Power and Bare Life*. Stanford, CA: Stanford University Press, 1998.

Agier, Michel. "Humanity as an Identity and Its Political Effects (A Note on Camps and Humanitarian Government)." *Humanity: An International Journal of Human Rights, Humanitarianism, and Development* 1, no. 1 (2010): 29–45.

Agier, Michel. "Penser le sujet, observer la frontière." *L'Homme* 203–204 (2012): 51–75.

Agnew, John A. *Globalization and Sovereignty: beyond the Territorial Trap*. Lanham, Maryland: Rowan & Littlefield, 2018.

Agre, Philip E. "Surveillance and Capture: Two Models of Privacy." *The Information Society* 10, no. 2 (1994): 101–127. http://doi:10.1080/01972243.1994.9960162.

Alberts, David S., and Richard Hayes. *Power to the Edge: Command and Control in the Information Age*. Washington, D.C.: Command and Control Research Program, 2005.

Ali, Shaheen Sardar, and Javaid Rehman. Indigenous Peoples and Ethnic Minorities of Pakistan: Constitutional and Legal Perspectives. Richmond: Curzon, 2001.

Amazon Web Services, Inc. "DoD SRG Compliance." Amazon Web Services (AWS). Accessed September 30, 2017. https://aws.amazon.com/compliance/dod/.

Anderson, Kenneth. "Efficiency in Bello and ad Bellum: Targeted Killing Through Drone Warfare." *SSRN Electronic Journal* (2011).

Arend, Anthony Clark. "International Law and the Preemptive Use of Military Force." *The Washington Quarterly* 26, no. 2 (2003): 89–103.

Arendt, Hannah. *The Human Condition*. Chicago: University of Chicago Press, 2012.

Arendt, Hannah. *The Origins of Totalitarianism*. Cleveland: Meridian Books, 1958.

Aristotle. *Nicomachean Ethics: Translation, Glossary, and Introductory Essay*. Translated by Joe Sachs. Bemidji, MN: Focus Publishing, 2002.
Aristotle. *Politics: A New Translation*. Introduction and notes by C.D.C. Reeve. Indianapolis: Hackett, 2017.
Asaro, Peter M. "The Labor of Surveillance and Bureaucratized Killing: New Subjectivities of Military Drone Operators." *Social Semiotics* 23, no. 2 (2013): 196–224. https://doi:10.1080/10350330.2013.777591.
Attali, Jacques. *Noise: The Political Economy of Music*. Translated by Brian Massumi. Minneapolis: University of Minnesota Press, 1985.
Bachelard, Gaston. *The Formation of the Scientific Mind: A Contribution to a Psychoanalysis of Objective Knowledge*. Translated by Mary McAllester Jones. Manchester: Climamen, 2002.
Banchoff, Thomas F., and Casanova José. *The Jesuits and Globalization: Historical Legacies and Contemporary Challenges*. Washington, D.C.: Georgetown University Press, 2016.
Baran, Paul. "On Distributed Communications: 1. Introduction to distributed communications networks. Memorandum RM-3420-PR." Santa Monica: RAND Corporation, 1964.
Barber, Keith L. "NSG Expeditionary Architecture: Harnessing Big Data." *Pathfinder* 10, no. 5 (September/October 2012): 10.
Barela, Steven J. "Legitimacy and Drones: Investigating the Legality, Morality and Efficacy of UCAVs. New York: Routledge, Taylor & Francis Group, 2016.
Barry, Andrew. "Technological Zones." *European Journal of Social Theory* 9, no. 2 (2006): 239–53.
Barthes, Roland. "The Death of the Author." *Aspen* no. 5-6. Translated by Richard Howard. Accessed March 29, 2017. http://www.tbook.constantvzw.org/wp-content/death_authorbarthes.pdf.
Batschelet, W. Allen. "Effects-based Operations: A New Operational Model?" USAWC Strategy Research Project, U.S. Army War College. Carlisle Barrack, Pennsylvania (2001). http://www.iwar.org.uk/military/resources/effect-based-ops/ebo.pdf
Baudrillard, J., & Turner, Chris. *The Intelligence of Evil or the Lucidity Pact*. Oxford: Berg, 2005.

Beck, John, and Ryan Bishop. eds. *Cold War Legacies: Systems, Theory, Aesthetics*. Edinburgh: Edinburgh University Press, 2016.
Benjamin, Medea. *Drone Warfare: Killing by Remote Control*. London: Verso, 2013.
Benson, Kristina. "Kill 'em and Sort It Out Later: Signature Drone Strikes and International Humanitarian Law." *Pacific McGeorge Global Business & Development Law Journal* 27, no. 1 (2014).
Benvenisti, Eyal. "The Origins of the Concept of Belligerent Occupation." Law and History Review, vol. 26, no. 03, 2008, pp. 621–648.
Bergner, Daniel. "The Killing of Warren Weinstein." *The New York Times*, February 11, 2016. https://www.nytimes.com/2016/02/14/magazine/the-killing-of-warren-weinstein.html.
Biltgen, Patrick, and Stephen Ryan. *Activity-Based Intelligence: Principals and Applications*. London: Artech House, 2015.
Bimfort, Martin T. "A Definition of Intelligence." *Centre for the Studies of Intelligence: Study Archive Indexes* 2, no. 4 (1994). https://www.cia.gov/library/center-for-the-study-of-intelligence/kent-csi/vol2no4/html/v02i4a08p_0001.html.
Bishop, Ryan, and John Phillips. "Unmanning the Homeland." *International Journal of Urban and Regional Research* 26, no. 3 (2002): 620–625.
Bishop, Ryan. "Felo de se: The munus of remote sensing," *boundary* 2 (2017).
Bishop, Ryan. "Smart Dust and Remote Sensing: The Political Subject in Autonomous Systems." In *Cold War legacies: Systems, theory, aesthetics*, edited by Beck, John, and Ryan Bishop, (page numbers). Edinburgh: Edinburgh University Press, 2016.
Black, Jeremy. *Maps and Politics (Picturing History)*. London: Reaktion Books Ltd., 2000.
Blumenberg, Hans. *The Genesis of the Copernican World*. Cambridge: MIT Press, 2000.
Bobic, Igor. "Americans Held by and Working with Al Qaeda Killed in Botched U.S. Operation." *The Huffington Post*, April 23, 2015. Accessed August 12, 2017. https://www.huffingtonpost.com/entry/us-operation-killed-al-qa_n_7126208.html.
Bousquet, Antoine J. *The Scientific Way of Warfare Order and Chaos on the Battlefields of Modernity*. New York: Columbia University Press, 2009.
Bratton, Benjamin H. *The Stack: On Software and Sovereignty*. Massachusetts: MIT Press, 2016.

British Communications plc. "Reprieve: Complaint to the UK National Contact Point under the Specific Instance Procedure of the OECD Guidelines for Multinational Enterprises." British Telecommunications plc, 2014. https://www.oecdwatch.org/cases/Case_341/1507/at_download/file.
Cadava, E. Connor, P. Nancy, J.L. *Who Comes After the Subject?*, Routledge, 1991
Canguilhem, Georges, and Marrati-Guénoun Paola. *Knowledge of Life*. New York: Fordham University Press, 2008.
Cebrowski, Arthur K., and John J. Garstka. "Network-Centric Warfare: Its Origin and Future." *Proceedings* 124, no. 1 (January 1998): 139.
Chamayou, Grégoire, and Janet Lloyd. *Drone theory*. London: Penguin , 2015. Print.
Chamayou, Grégoire. "Patterns of Life: A Very Short History of Schematic Bodies." *The Funambulist Papers* 57 (2014). Accessed June 2016. https://thefunambulist.net/history/the-funambulist-papers-57-schematic-bodies-notes-on-a-patterns-genealogy-by-gregoire-chamayou.
Chamayou, Grégoire. *Manhunts: A Philosophical History*. Princeton: Princeton University Press, 2012.
Clapper, James R. *Memorandum for Principal Deputy Director of National Intelligence*. Maryland: National Geospatial Intelligence Agency, October 17, 2005. http://www.gwg.nga.mil/ntb/related/GEOINT_Definitions-Amplification_Memosigned.pdf.
Combes, Muriel. *Gilbert Simondon and the Philosophy of the Transindividual*. Cambridge: MIT Press, 2013.
Congressional Research Service. "Defence Primer: DOD Contractors." *In Focus*, February 10, 2017. https://fas.org/sgp/crs/natsec/IF10600.pdf.
Convention (IV) relative to the Protection of Civilian Persons in Time of War. Geneva, 12 August 1949.
Cordesman, Anthony H. *Peace and War: The Arab-Israeli Military Balance Enters the 21st Century*. Westport: Praeger, 2002.
Coté, Mark. "Bulk Surveillance, or the Elegant Technicalities of Metadata." In *Cold War Legacies: Systems, Theory, Aesthetics*. Edited by Beck, John, and Ryan Bishop, (page numbers). Edinburgh: Edinburgh University Press, 2016.
Cuadra, Alberto, and Craig Whitlock. "How Drones Are Controlled." *The Washington Post*, June 20, 2014. Accessed September 20, 2017.

Cullen T.M., "The MQ-9 Reaper remotely piloted aircraft: Humans and machines in action". PhD Dissertation, Engineering Systems: Technology, Management, Policy". Massachusetts Institute of Technology, 2011.
Dal Lago, Alessandro, and Salvatore Palidda. *Conflict, Security and the Reshaping of Society*. London: Routledge, Taylor & Francis Group, 2010.
Declaration of the Rights of Man – 1789, Accessed October 13, 2018 http://avalon.law.yale.edu/18th_century/rightsof.asp
Defense and National Interest. "John Boyd Compendium." Defense and National Interest, December 6, 2017. www.dnipogo.org/john-r-boyd.
Defense Information Systems Agency. "Department of Defense Fiscal Year (FY) 2017 President's Budget Submission." Missile Defense Agency. http://comptroller.defense.gov/Portals/45/Documents/defbudget/FY2017/budget_justification/pdfs/03_RDT_and_E/MDA_RDTE_MasterJustificationBook_Missile_Defense_Agency_PB_2017_1.pdf.
Deleuze, Gilles, and Félix Guattari. *A Thousand Plateaus: Capitalism and Schizophrenia*. Minneapolis: University of Minnesota Press, 1987.
Deleuze, Gilles. "Postscript on the Societies of Control." *October* 59 (Winter 1992): 3–7.
DeLong, Matt. "Co-Traveler: Inside the NSA's Cell-Phone-Tracking Program." *Washington Post,* 2013. www.documentcloud.org/documents/888734-cotraveler-tracking-redacted.html.
Deptula, David. "Airforce ISR in a Changing World." *Surveillance and Reconnaissance* 30 (March 2010).
Derrida, Jacques. *The Beast & the Sovereign*. Edited by Michel Lisse, Marie-Louise Mallet, and Ginette Michaud. Chicago: University of Chicago Press, 2011.
Descartes, Rene. *Meditations on First Philosophy.* Translated by Stanley Tweyman. London: Routledge, Taylor & Francis Group, 1993.
Drucker, Johanna. "Humanities Approaches to Graphical Display." *Digital Humanities Quarterly* 5, no. 1 (2005). https://www.digitalhumanities.org/dhq/vol/5/1/000091/000091.html.
Easterling, Keller. *Extrastatecraft: The Power of Infrastructure Space*. London: Verso, 2016.
Elden, Stuart. "Secure the Volume: Vertical Geopolitics and the Depth of Power." *Political Geography*, vol. 34, 2013, pp. 35–51.

Stuart Elden, *The Birth Of Territory*, University Of Chicago Press, 2013.
Elden, Stuart. *Terror and territory: The spatial extent of sovereignty.* Minneapolis, MN: University of Minnesota Press. 2009.
Endsley, R. Mica. "Measurement of situation awareness in dynamic systems." *Human Factors 37*, no 1, 1995, pp. 65- 84.
Enron Data. "Home." EnronData.org. Accessed December 12, 2016. https://enrondata.readthedocs.io/en/latest/.
Foucault, Michel. Security, Territory, Population: Lectures at the Collège de France, 1977 - 1978. Edited by Arnold Davidson. London: Palgrave UK, 2002.
Foucault, Michel. *Society Must Be Defended: Lectures at the Collège de France, 1975-76*. Translated by David Macey. New York: Picador, 2003.
Foucault, Michel. *The History of Sexuality: Volume 1: An Introduction.* Translated by Robert Hurley. New York: Pantheon, 1978.
Fuller, Matthew, and Andrew Goffey. *Evil Media*. Cambridge: MIT Press, 2012.
Gabrys, Jennifer. "Programming Environments: Environmentality and Citizen Sensing in the Smart City." *Environment and Planning D: Society and Space* 32, no. 1 (2014): 30–48.
Gabrys, Jennifer. *Program Earth: Environmental Sensing Technology and the Making of a Computational Planet*. Minneapolis: University of Minnesota Press, 2016.
Galloway, Alexander R. *Protocol: How Control Exists after Decentralization*. Cambridge: MIT Press, 2006.
Gauthier, David. "A New Strategic Mindset." Presented to United States Geospatial Intelligence Foundation Working Group, December 17, 2015. http://usgif.org/system/uploads/4163/original/A_New_Strategic_Mindset_Presentation_By_NGA_s_David_Gauthier.pdf.
Gawer, Annabelle, and Michael A. Cusumano. "Industry Platforms and Ecosystem Innovation." *Journal of Product Innovation Management* 31, no. 3 (September 4, 2013): 417–433.
Gellman, Barton, and Ashkan Soltani. "NSA Tracking Cellphone Locations Worldwide." *The Washington Post*, December 4, 2013. www.washingtonpost.com/world/national-security/nsa-tracking-cellphone-locations-worldwide-snowden-documents-show/2013/12/04/5492873a-5cf2-11e3-bc56-c6ca94801fac_story.html?utm_term=.7ca86672bdec.

Gerson-Kiwi, Edith. "Drone and Dyaphonia Basilica." *Yearbook of the International Folk Music Council* 4 (1972): 9–22.
Giraldi, Philip. "The End of Drone War?" *The American Conservative*, March 4, 2014. Accessed July 17, 2017. http://www.theamericanconservative.com/articles/the-end-of-drone-war/.
Graham, Stephen. *Vertical: the City from Satellites to Bunkers*. London: Verso, 2018.
Gray, Colin S. *Modern Strategy*. Oxford: Oxford University Press, 1999.
Gregory, Derek. "Dirty Dancing: Drones and Death in the Borderlands." In *Life in The Age of Drone Warfare*. Edited by Lisa Parks and Caren Kaplan, 25-56. Durham: Duke University Press, 2017.
Gregory, Derek. "From a View to a Kill." *Theory, Culture & Society* 28, no. 7-8 (2011): 188–215. https://doi:10.1177/0263276411423027.
Gross, Michael L. "Assassination and Targeted Killing: Law Enforcement, Execution or Self-Defence?" *Journal of Applied Philosophy* 23, no. 3 (2006): 323–335.
Haberman, Clyde. "Israelis Kill Chief of Pro-Iran Shiites in South Lebanon." *The New York Times*, February 16, 1992. Accessed January 09, 2015. http://www.nytimes.com/1992/02/17/world/israelis-kill-chief-of-pro-iran-shiites-in-south-lebanon.html.
Heller, Kevin Jon. "One Hell of a Killing Machine: Signature Strikes and International Law." *Journal of International Criminal Justice* 11, no. 1 (2013): 89–119.
Hennigan, William J. "Air Force Hires Civilian Drone Pilots for Combat Patrols; Critics Question Legality." *Los Angeles Times*, November 27, 2015. Accessed May 12, 2016. <http://www.latimes.com/nation/la-fg-drone-contractor-20151127-story.html>.
Hildebrandt, Mireille, and Katja De Vries. *Privacy, Due Process and The Computational Turn: The Philosophy of Law Meets the Philosophy of Technology.* New York: Routledge, Taylor & Francis Group, 2013.
Hobbes, Thomas, and C. B. Macpherson. *Leviathan*. London: Penguin, 2003.
Höpfl, Harro. *Jesuit Political Thought: The Society of Jesus and the State, c. 1540-1640*. Cambridge: Cambridge University Press, 2008.
Hui, Yuk. *On the Existence of Digital Objects*. Minneapolis: University of Minnesota Press, 2016.

Intelligence Community Directive (ICD). #304, Human Intelligence. March 6, 2008. Amended July 9, 2009.
International Committee of the Red Cross (ICRC). "Protocol I of the Geneva Conventions." ICRC: Treaties, State Parties and Commentaries. https://ihl-databases.icrc.org/ihl/INTRO/470.
International Human Rights and Conflict Resolution Clinic (Stanford Law School) and Global Justice Clinic (NYU School of Law). "Living Under Drones: Death, Injury, and Trauma to Civilians from US Drone Practices in Pakistan," (September, 2012).
Isikoff, Michael. "Justice Department Memo Reveals Legal Case for Drone Strikes on Americans." NBCNews.com. February 4, 2013. investigations.nbcnews.com/_news/2013/02/04/16843014-justice-department-memo-reveals-legal-case-for-drone-strikes-on-americans?lite.
Jameson, Frederic. "Itemised". *London Review of Books*, Vol. 40 No. 21 · 8 November 2018, pages 3-8.
Judson, Jen. "Army Will Hold Off On DCGS-A Award as Palantir Lawsuit Plays Out." *Defense News*, August 8, 2017. www.defensenews.com/home/2016/07/18/army-will-hold-off-on-dcgs-a-award-as-palantir-lawsuit-plays-out/.
Kent, Sherman. *Strategic Intelligence for American World Policy*. Princeton: Princeton University Press, 1949.
Kindervater, Katharine Hall. "The Technological Rationality of the Drone Strike." *Critical Studies on Security* 5, no. 1 (February 2017): 28–44.
Kitchin, Rob, and Martin Dodge. *Code / Space: Software and Everyday Life.* Cambridge: MIT Press, 2014.
Knorr-Cetina, Karin. "From Pipes to Scopes: The Flow Architecture of Financial Markets." *Distinktion 7* (2003): 7–23.
Knorr-Cetina, Karin. "The Synthetic Situation: Interactionism for a Global World." *Symbolic Interaction* 32, no. 1 (2009): 61–87.
Koh, Harold Hongju. "Authorization for Use of Military Force After Iraq and Afghanistan." Statement by Harold Hongju Koh Sterling Professor of International Law –The Yale Law School – before the Senate Foreign Relations Committee. https://www.foreign.senate.gov/imo/media/doc/Koh_Testimony.pdf.

Korn, Alina. "Israeli Press and the War Against Terrorism: The Construction of the 'Liquidation Policy'." *Crime, Law and Social Change* 41, no. 3 (2004): 209–234.
Latour, Bruno. "On Actor-Network Theory: A Few Clarifications, Plus More Than a Few Complications." *Philosophical Literary Journal Logos* 27, no. 1 (1996): 173–197.
Latour, Bruno. *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford: Oxford University Press, 2009.
Latour, Bruno. *We Have Never Been Modern*. Translated by Catherine Porter. Cambridge: Harvard University Press, 1993.
Law, John. "On the Methods of Long-Distance Control: Vessels, Navigation and the Portuguese Route to India." *The Sociological Review* 32, no. 1 (May 1984): 234–263.
Lewis, Bradley A. "The Death of Human Intelligence: How Human Intelligence Has Been Minimized Since the 1960s." *Military and Strategic Affairs* 8, no. 1 (2016).
Locke, John. *Second Treatise of Civil Government*. Indianapolis: Hackett, 1980.
Luccio, Matteo. "Companies Pick Up Where Google Earth Enterprise Leaves Off." *Apogeo Spatial* (May 9, 2016). www. apogeo-spatial.com/companies-pick-up-where-google-earth-enterprise-leaves-off/.
Lury, Celia, Luciana Parisi, and Tiziana Terranova. "Introduction: The Becoming Topological of Culture," *Theory, Culture & Society Journal* 29, no. 4/5 (2012): 3–35.
Mackenzie, Adrien. "Simulate, Optimise, Partition: Algorithmic Diagrams of Pattern Recognition from 1953 Onwards." In *Cold War Legacies: Systems, Theory, Aesthetics*. Edited by Beck, John, and Ryan Bishop, xx-xx. Edinburgh: Edinburgh University Press, 2016.
Mandeville, Bernard. *The Fable of the Bees*. Translated by Phillip Harth. London: Penguin, 1989.
Mayer, Jane. "The Predator War: What are the Risks of the C.I.A.'s Covert Drone Program?" *The New Yorker*, October 26, 2009.
Megret, Frederic. "War and the Vanishing Battlefield." *Loyola University Chicago International Law Review* 9, no 1 (2011): 132–152.
Milliard, Coline. "Jane & Louise Wilson on Dubai, Surveillance, and Intelligent Architecture." *Artinfo*, September 12, 2013. Accessed December 18, 2017. http://www.uk.blouinartinfo.com/news/story/956865/jane-louise-wilson-on-dubai-surveillance-and-intelligent.

Milton, George F. "The Material Advancement of the Negro." *The Sewanee Review* 3, no. 1 (1894): 37–47.
Moll, Kevin N. "Towards a Comprehensive View of Compositional Priorities." In *Counterpoint and Compositional Process in the Time of Dufay: Perspectives from German Musicology*. Edited by Kevin N. Moll, 1–62. New York: Carland Publishing, 1997.
Morphy, E. W. "Violin Teaching in Its Relation to the Organization of Civic Orchestras." *The Musical Quarterly* 4, no. 1 (January 1918): 50–60.
Munro, C. A. O. "Mapping the Vertical Battlespace: Towards a Legal Cartography of Aerial Sovereignty." *London Review of International Law* 2, no. 2 (January 2014): 233–261. https://doi:10.1093/lril/lru008.
Muss, Mike. "The Story of the PING Program." Accessed April 4, 2016. www.webcitation.org/5saCKBpgH.
National Geospatial-Intelligence Agency. "About NGA." National Geospatial-Intelligence Agency. Accessed September 12, 2016. https://www.nga.mil/About/Pages/Default.aspx.
Nault, Lawrence. "NGA Introduces Global Area Reference System." *Pathfinder* (2007). http://earth-info.nga.mil/GandG/coordsys/grids/novdec06_GARS.pdf.
Ni, Jie, and Rama Chellappa. "Evaluation of State-of-the-art Algorithms for Remote Face Recognition." Paper presented at the IEEE International Conference on Image Processing, Hong Kong, China, September 24-29, 2010.
Nichols, Thomas M. *Eve of Destruction the Coming Age of Preventive War*. Philadelphia: University of Pennsylvania Press, 2013.
Osinga, Frans. "Science, Strategy and War: The Strategic Theory of John Boyd." PhD dissertation, Universiteit Leiden, the Netherlands, 2005. http://www.projectwhitehorse.com/pdfs/ScienceStrategyWar_Osinga.pdf.
Otterlo, Martijn Van. "Machine Learning View on Profiling." In *Privacy, Due Process and the Computational Turn: The Philosophy of Law Meets the Philosophy of Technology,* edited by Hildebrandt, Mireille, and Katja De Vries, 41-65. New York: Routledge, Taylor & Francis Group, 2013.
Padberg, John W., ed. The Constitutions of the Society of Jesus and Their Complementary Norms: A Complete English Translation of the Official Latin Texts. Boston: Institute of Jesuit Studies, 1996.
Pakistan Bureau of Statistics. "Pakistan Bureau of Statistics: 6th Population and Housing Census." Accessed September 5, 2017. www.pbscensus.gov.pk.

Pakistan Bureau of Statistics. "Pakistan Bureau of Statistics." Accessed March 14, 2017, http://www.pbs.gov.pk.
Parks, Lisa, and Caren Kaplan, eds. *Life in the Age of Drone Warfare*. Durham: Duke University Press, 2017.
Parks, Lisa. "Vertical Mediation and the U.S. Drone War in the Horn of Africa." In *Life in the Age of Drone Warfare,* 134–161. Durham: Duke University Press, 2017.
Peretti, Jacques. "Palantir: The 'Special Ops' Tech Giant that Wields as Much
Phillips, Mark. "A Brief Overview of ABI and Human Domain Analytics," *Trajectory Magazine*, June 22, 2011, accessed October 1, 2016, https://www.scoop.it/t/geointelligence/p/4046250147/2015/06/22/a-brief-overview-of-abi-and-human-domain-analytics.
Popper, Karl R. *The Logic of Scientific Discovery*. London: Routledge, Taylor & Francis Group, 2010.
Porter, Gareth. "How McChrystal and Petraeus Built an Indiscriminate 'Killing Machine'." *Truthout*, 2011. www.truth-out.org/news/item/3588:how-mcchrystal-and-petraeus-built-an-indiscriminate-killing-machine.
Porter, Lindsay. *Assassination: A History of Political Murder*. New York: Overlook Press, 2010.
Pratt, Simon Frankel. "'Anyone Who Hurts Us': How the Logic of Israels 'Assassination Policy' Developed During the Aqsa Intifada," *Terrorism and Political Violence* 25, no. 2 (2013): 224–245.
Priest, Dana, and William M. Arkin. "Top Secret America: A Washington Post Investigation." *The Washington Post,* 2017. Accessed September 30, 2017. http://projects.washingtonpost.com/top-secret-america/.
Protevi, John. Political Physics: Deleuze, Derrida, and the Body Politic. London: Athlone Press, 2001.
Protocol Additional To The Geneva Conventions Of 12 August 1949, And Relating To The Protection Of Victims Of International Armed Conflicts (Protocol I), Of 8 June 1977
Raunig, Gerald. *Dividuum: Machinic Capitalism and Molecular Revolution*. Translated by Eileen Derieg. Los Angeles: Semiotexte, 2016.
Regulations concerning the Laws and Customs of War on Land. The Hague, 18 October 1907.

Rivera, Ray, Sharifullah Sahak, and Eric Schmitt. "Militants Turn to Death Squads in Afghanistan." *New York Times*, November 28, 2011.
Roberts, Adam, "What Is a Military Occupation?", British Yearbook of International Law, Volume 55, Issue 1, 1 January 1985, Pages 249–305.
Roberts, Joanne. A Very Short, Fairly Interesting and Reasonably Cheap Book about Knowledge Management. Los Angeles: SAGE, 2015.
Rohde, David. "What the United States Owes Warren Weinstein." *The Atlantic,* April 28, 2015. https://www.theatlantic.com/international/archive/2015/04/warren-weinstein-drones/391655/.
Ross, Alice, and Jack Serle. "Most US Drone Strikes in Pakistan Attack Houses." The Bureau of Investigative Journalism, February 6, 2017. https://www.thebureauinvestigates.com/stories/2014-05-23/most-us-drone-strikes-in-pakistan-attack-houses.
Rouvroy, Antoinette. "The End(s) of Critique: Data Behaviourism Versus Due Process." In *Privacy, Due Process and the Computational Turn: The Philosophy of Law Meets the Philosophy of Technology,* edited by Hildebrandt, Mireille, and Katja De Vries, 143–182. New York: Routledge, Taylor & Francis Group, 2013.
Sassen, Saskia. Territory, Authority, Right: From Medieval to Global Assemblages. Princeton: Princeton University Press, 2006.
Scahill, Jeremy. "The Assassination Complex." The Intercept, October 25, 2015. Accessed March 8, 2016. http://www.theintercept.com/drone-papers/the-assassination-complex.
Scharcanski, Jacob, Hugo Proença, and Eliza Du, eds. *Signal and Image Processing for Biometrics*. Berlin: Springer, 2014.
Schmitt, Carl, *The Nomos of the Earth in the International Law of the Jus Publicum Europaeum*. Translated by G. L. Ulmen. New York: Telos Press, 2006.
Schmitt, Carl. "The Liberal Rule of Law." In *Weimar: A Jurisprudence of Crisis*. Edited by Arthur Jacobson, and Bernhard Schlink, 294–300. Berkeley: University of California Press, 2000.
Schmitt, Carl. *Land and Sea: A World-historical Meditation*. Edited and Translated by Russell A. Berman and Samuel Garrett Zeitlin, New York: Telos Press, 2015.
Schmitt, Carl. *Political Theology: Four Chapters on the Concept of Sovereignty*. Translated by George Schwab. Chicago: University of Chicago Press, 2005.

Schuppli, Susan. "Walk-Back Technology: Dusting for Fingerprints and Tracking Digital Footprints." *Photographies* 6, no. 1 (2013).
Shachtman, Noah. "Spy Chief Called Silicon Valley Stooge in Army Software Civil War." *Wired*, June 3, 2017. www.wired.com/2012/08/palantir/.
Shah, Pir Zubair. "My Drone War." *Foreign Policy*, February 27, 2012. Accesses December 4, 2015. http://www.foreignpolicy.com/2012/02/27/my-drone-war.
Shakespeare, William. *The Arden Shakespeare Complete Works.* Edited by G. R. Proudfoot, Ann Thompson, and David Scott Kastan. London: Arden Shakespeare, 2011.
Shaw, Ian G.R. *Predator Empire Drone Warfare and Full Spectrum Dominance*. Minneapolis: University of Minnesota Press, 2016.
Sherazi, Zahir Shah. "US Drone Strike Kills Seven in South Waziristan." *Dawn,* January 25, 2015. Accessed August 2, 2017. https://www.dawn.com/news/1157194
Simondon, Gilbert. "The Position of the Problem of Ontogenesis." Translated by Gregory Flanders. *Parrhesia 7* (2009): 4–16.
Simondon, Gilbert. *Du Mode D'existence des Objets Techniques*. Paris: Aubier, 1958, 1969, 1989.
Simondon, Gilbert. *L'individu et sa Genèse Physico-biologique*. Paris: Presses Universitaires de France, 1964; Paris: Éditions Jérôme Millon, 1995.
Simondon, Gilbert. *L'individuation À La Lumière des Notions De Forme Et D'information*. Paris: Paris Éditions Jérôme Millon, 2005.
Simondon, Gilbert. *On the Mode of Existence of Technical Objects*. Translated by Ninian Mellamphy. Paris: Aubier, Editions Montaigne, 1958.
Sloterdijk, Peter. Translated by Wieland Hoban. *Spheres. Vol. 1: Bubbles: Microspherology.* New York: Semiotext(e), 2011.
Sloterdijk, Peter. Translated by Wieland Hoban. *Spheres. Vol. 2: Globes: Macrospherology.* New York: Semiotext(e), 2014.
Sloterdijk, Peter. Translated by Wieland Hoban. *Spheres. Vol. 3: Foams: Plural Spherology.* New York: Semiotext(e), 2016.
Sloterdijk, Peter. *In the World Interior of Capital: For a Philosophical Theory of Globalization*. Translated by Wieland Hoban. Cambridge, UK: Polity, 2015.
Smith, Norm. Got Progress? Managing People and Projects with Ease, Results, and Style. Lulu.Com, 2011.

Strang, Joshua. "Image: Combined Air Operations Center (CAOC) at Al Udeid Air Base, Qatar." Public Domain.
Temple, M. H. "The Bolshevik Bee." *The Lotus Magazine* 10, no. 2 (February 1919): 56–60.
Tenney, Y. J., Adams, M. J., Pew, R. W., Huggins, A. W., and Rogers, W. H. "A principled approach to the measurement of situation awareness in commercial aviation." NASA contractor report 4451. Langley Research Center: NASA, 1995.
The Bureau of Investigative Journalism. "Drone Warfare." The Bureau of Investigative Journalism. Accessed September 4, 2017. http://www.thebureauinvestigates.com/projects/drone-war.
The Founders' Constitution. "Article 1, Section 9, Clause 2: Habeas Corpus Act." http://press-pubs.uchicago.edu/founders/print_documents/a1_9_2s2.html.
The New York Times. "Israeli High Court: No Ban on Targeted Killing." *The New York Times*. December 14, 2006. Accessed November 14, 2016. www.thelede.blogs.nytimes.com/2006/12/14/israeli-high-court-no-ban-on-targeted-killing.
The Oxford English Dictionary. 2nd Ed., 4 vol. Oxford: Oxford University Press, 1989.
The Smart Nation and Digital Government Group. "Many Smart Ideas One Smart Nation." Accessed December 11, 2017. https://www.smartnation.sg/.
The Society of Jesus, Constitutions S.J., N°527.
The White House. "An Open Letter to the CIA from President Obama." Accessed December 12, 2016. https://www.whitehouse.gov/the-press-office/message-president-cia-workforce.
Tolles, Frederick B., and William Penn. "William Penn on Public and Private Affairs, 1686: An Important New Letter." *The Pennsylvania Magazine of History and Biography* 80, no. 2 (April 1956), 236-247.
Trial Council Joint Force Headquarters. "Statement in Support of Providence Inquiry." US vs Private First Class Bradley E. Manning, 2013.
U.S. Agency for International Development. "USAID Extreme Possibilities Map, (USAID, 2017)." Accessed January 6, 2016. https://stories.usaid.gov/usaidmap.
U.S. Air Force. "Air Force Distributed Common Ground System." U.S. Air Force – About us – Fact Sheet. Accessed October 13, 2010. www.af.mil/About-Us/Fact-Sheets/Display/Article/104525/air-force-distributed-common-ground-system.

U.S. Congress. "145 Congressional Record 924: Statement of Senator Moynihan," congress.gov, 1999.
U.S. Congress. H.J.Res.89 - 115th Congress (2017-2018): Authorization for Use of Military Force Against al-Qaeda, the Taliban, and the Islamic State of Iraq and Syria." www.congress.gov. Accessed October 2017. https://www.congress.gov/bill/115th-congress/house-joint-resolution/89/text.
U.S. Government Accountability Office. *Defence Acquisitions: The Global Information Grid and Challenges Facing Its Implementation.* Washington, D.C.: U.S. Government Accountability Office, July 28, 2004. Accessed September 20, 2017. <http://www.gao.gov/products/GAO-04-858>.
U.S. Intelligence Community. "Member Agencies." U.S. Intelligence Community – Intelligence Careers. https://www.intelligencecareers.gov/icmembers.html.
U.S. Joint Staff J6. *The Global Information Grid (GIG) 2.0 Concept of Operations Version 1.1.* Washington, D.C.: U.S. Joint Staff J6, March 2011. https://info.publicintelligence.net/DoD-GIG2-CONOPS.pdf.
U.S. Navy Research. "CNO Keynote at the Naval Future Force S&T EXPO". YouTube video, 33:07. [Posted July 21, 2017]. www.youtube.com/watch?time_continue=3&v=AtjbirbIU44.
U.S. Office of the Press Secretary. "Press Briefing by Press Secretary Josh Earnest." Washington, D.C., April 23, 2015. https://obamawhitehouse.archives.gov/the-press-office/2015/04/23/press-briefing-press-secretary-josh-earnest-4232015.
United Nations High Commissioner for Refugees. "UNHCR Global Appeal 2014-2015 - Pakistan". UNHCR. www.unhcr.org/528a0a300.html.
United Nations. "Chapter I." Charter of the United Nations. Accessed March 16, 2017. http://www.un.org/en/sections/un-charter/chapter-i/index.html
Veuthey, Michel, *Guerilla et Droit Humanitaire,* 2nd edition, 1983.
Virilio, Paul. *War and Cinema: The Logistics of Perception*. Translated by Patrick Camiller. New York: Verso, 1989.
Walters, Vernon A. *Silent Missions*. New York: Doubleday, 1978.
Warner, Michael. "Wanted: A Definition of 'Intelligence'." *Journal of the American Intelligence Professional* 46, no. 4 (2002). https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/csi-studies/studies/vol46no3/article02.html

Weizman, Eyal, *Hollow Land: Israel's Architecture of Occupation*. London: Verso Books, 2017.

Weizman, Eyal, *The Least of All Possible Evils: Humanitarian Violence from Arendt to Gaza*. London: Verso Books, 2011.

Weizman, Eyal. "Legislative Attack". *Theory, Culture & Society* 27, no. 6 (2010): 11–32. https://doi:10.1177/0263276410380937.

Weizman, Eyal. "The politics of verticality", http://www.opendemocracy.net/ecology-politicsverticality/article_801.jsp (2002), accessed 10/03/2017.

Weizman, Eyal. "The politics of verticality: the West Bank as an architectural Construction". In K. Biesenbach (Ed.), *Territories: Islands, camps, and other states of Utopia*. Köln: Walther König. (2003).

Werner, Wouter G. "The Curious Career of Lawfare." *Case Western Reserve Journal of International Law* 61, no. 3 (2010). http://scholarlycommons.law.case.edu/jil/vol43/iss1/4.

WikiLeaks. "Admiral Fallon Discusses Security Cooperation with General Kayani." Public Library of U.S. Diplomacy. Accessed March 16, 2017. https://wikileaks.org/plusd/cables/08ISLAMABAD609_a.html

Wilcox, L., "Embodying algorithmic war: Gender, race, and the posthuman in drone warfare". *Security Dialogue*, 48(1), 11-28, 2016.

Woodman, Spencer. "Palantir Provides the Engine for Donald Trump's Deportation Machine." *The Intercept*, March 2, 2017. theintercept.com/2017/03/02/palantir-provides-the-engine-for-donald-trumps-deportation-machine/.

Appendix 1: Selected Bibliography Related To Drone Strikes And The Question Of International Law

Aaronson M and Johnson A (eds), Hitting the Target? How New Capabilities are Shaping International Intervention (Royal United Services Institute for Defence and Security Studies (RUSI) 2013)

Abizaid JP and Brooks R, Recommendations and Report of the Task Force on US Drone Policy (The Stimson Center) 2015

Akande D, 'Classification of Armed Conflicts: Relevant Legal Concepts' in Wilmshurst E, International Law and the Classification of Conflicts (Oxford University Press 2012)

Anderson K, 'Targeted Killing and Drone Warfare: How We Came to Debate whether there is a "Legal Geography of War"' in Berkowitz P (ed), Future Challenges in National Security and Law, Hoover Institution (Stanford University 2011)

Aronsson M, 'Remote Law-Making? American Drone Strikes and the Development of Jus ad Bellum' (2014) Journal on the Use of Force and International Law, p. 273.

Barela SJ, The Legitimacy of Drones: UCAVs for Cross-Border Counterterrorism (Ashgate 2015).

Brookman-Byrne M, 'Drone Use "Outside Areas of Active Hostilities": An Examination of the Legal Paradigms Governing US Covert Remote Strikes'. Netherlands Int Law Rev. 2017.

Casey-Maslen S, 'The Use of Armed Drones', Ch 13 in Casey-Maslen (ed): Weapons Under International Human Rights Law (Cambridge University Press 2015).

Dorsey, J and Paulussen, C, 'Towards a European Position on Armed Drones and Targeted Killing: Surveying EU Counterterrorism Perspectives' ICCT Research Paper April 2015.

Dworkin A, 'Drones and Targeted Killing: Defining a European Position' European Council on Foreign Relations, Policy Brief ECFR/84 (July 2013).

Henderson I and Cavanagh B, 'Unmanned Aerial Vehicles: Do They Pose Legal Challenges?' in Hitoshi Nasu and Robert McLaughlin (eds) New Technologies and the Law of Armed Conflict (Springer 2014).
Heyns C, Akande D, Hill-Cawthorne L and Chengeta, T, 'The International Law Framework Regulating the use of Armed Drones' (2016) 65(4) International and Comparative Law Quarterly 791.
Lubell N and Derejko N, 'A Global Battlefield? Drones and the Geographical Scope of Armed Conflict' (2013) 11(1) Journal of International Criminal Justice 65
McCorquodale R, 'Human Rights and the Targeting by Drone' (18 September 2015) EJIL: Talk! www. ejiltalk.org/human-rights-and-the-targeting-by-drone (accessed 29 April 2017)
Paulussen C, Dorsey J and Boutin B, 'Towards a European Position on the Use of Armed Drones?
Pejic J, 'Extraterritorial targeting by means of armed drones: Some legal implications' (2015) International Review of the Red Cross 1 (DOI: 10.1017/S1816383114000447)
Schmitt MN, 'Extraterritorial Lethal Targeting: Deconstructing the Logic of International Law' (2013) 52 Columbia Journal of Transnational Law 99
Schmitt MN, 'Charting the Legal Geography of Non-International Armed Conflict' (2014) 90 International Law Studies 1
Shah SA, International Law and Drone Strikes in Pakistan: The Legal and Socio-Political Aspects, Routledge, Oxon (2015)