Drones as Actants: A Socio-Material Analysis of Drone Warfare

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Abstract

The increasing propensity of drone strikes as a method of killing has led to a corresponding increase in literature concerning this new device for killing. Given the rapid increase into the amount of deaths resulting from this technology this article investigating drone warfare is both timely and merited. Drone strikes have generated large swathes of literature largely due to their controversial nature. Indeed, implications on the nature of violated national sovereignty with regards to attacks by drones is a common feature for much of the contemporary literature regarding drones. Much work concerning the study of drone therefore acknowledges them merely as extensions of military capability and regards their utilisation as the logic that dictates states will operate their most effective weapons.

This article decides to depart from this interpretation of drones. Rather it decided the exact technology that makes up these military drones, used in the numerous acts of killing occurring around the world, is significant and meriting analysis. Taking Bruno Latour's Dingpolitik as its theoretical basis is considers the technology that compromises drones and their piloting systems as actants. It then explores how this consideration, that technology can influence the interactions between man and machine and their subsequent outcomes with respect to drones. It is demonstrated within the article that taking this theoretical premise clearly drones as actants lead to a dispersion of responsibility for the acts of killing that they commit. It is also raises a cause for concern by demonstrating that as an actant the drone operating system impact adversely upon its operator. This thesis provides an insight into how we can further our analysis into international relations by considering it through the lens of socio-materialist approaches.

Research Question: "How does considering drones as actants affect our comprehension of drone warfare?"

Introduction

The Rise of Drone Warfare

Drone strikes are a comparatively recently developed method of attack. Militaries have only been able to utilise this specific device to implement an act of killing for around two decades. This specific method of killing is showing no sign of abating. Instead, as military technology continues to evolve, the frequency of drone strikes is increasing. The growing number of drone strikes cannot solely be put down to a causal rise in conflicts across the globe. Rather the increase in the utilisation of drones is so pronounced that drone strikes form an ever larger proportion of the acts of killing carried out by militaries. Thus, the specific device of the drone is taking ever greater prominence in attacks against other human beings. These attacks have the ultimate aim of killing. It is obvious to me that such an increase in killing in a specific form should prompt investigation and consideration into its specifics, and indeed it has.

Approaches to Drone Warfare

Subsequent to the mounting spread of drone strikes research into the fields of drones, the strikes they carry out and the impact upon conflict have all increased massively. The majority of literature on drones focusses upon two separate strands; effectiveness and legitimacy. Articles concerning effectiveness consider whether drone warfare is the optimum manner for waging war in terms of a successful military campaign, when compared to other methods of

action that militaries have at their disposal (Boyle, 2013; Barnaby, 2014). This is a pragmatic consideration of drones within the context of the specific conflict that their utilisation occurs during. Alternatively, the articles which take legitimacy as the lens through which to analyse drone warfare focusses upon the specific legal framework that the strikes abide by, or contravene (Simberski, 2015; Ceccoli and Bing, 2015; Allinson, 2015). The arguments and conclusions put forward by this grouping of academics focusses upon the moral considerations, and subsequent ramifications, that might occur when drones infringe upon the boundaries of legality.

Considering this it is apparent that drone based analysis which falls into both of these strands of investigation is most commonly situated within the greater context of an explicit (non)conflict in which the drone operations in question are carried out. It is from this specific conflict that conclusions are drawn. This makes the drone as a device, and as the object of study in the work, neutral. Therefore, work could be carried out in a similar, even nigh on identical way, considering the practical or legal implications of the attack within the same conflict context with any other method of killing instead of drones. It is the conflict in question and its relation with drones that becomes the object of consideration. In short drones are interchangeable with any other device in the majority of the work on drones.

Why Drones Are Different

Drone warfare is resulting in an escalating amount of attacks and subsequent deaths of targets. Thus it is surprising to me that most attacks apparently focus upon the nature of drones as a neutral device. However, what if one where to argue that drones, by their very nature, are unique technology? Given the inclination of militaries to utilise drones for additional acts of killing if there is something specific about the drone this surely merits

investigation. It is worth knowing whether the very nature of the technology that is utilised is a mounting number of killings is shaping the processes and results of this killing, given that the increase in drone usage is unlikely to cease.

In this article I reject the neutral consideration of drones and instead consider them as an object different to any other device for killing. As my main point I take the argument that the specifics of drone technology lead to specific resultant affects when drones are utilised by militaries for the act of killing. I stress that only drones will produce the after effects I argue are the consequence of drones being the chosen device to carry out murder. If this is accepted one considers the drone to be an actant. The term actant emerges from a strand of work that rejects the general neutrality of devices and objects (La Tour, 2005; Orlikowski, 2001, 2007; Carlile, Nicolini, Langley, and Tsoukas, 2013; Amiceille, Arandau and Jeandesboz, 2015). Interaction by man and machine is thus influenced by the particulars of the machine or device in question. This man-machine relationship provides a pertinent, broader theoretical framework in which the merited consideration of drone warfare can occur.

As opposed to blank, neutral objects, considering drones as actants entails seeing them to be potentially as influential as the nature of their user or the context of their operation. This article takes the notion of drones as actants seriously. As a result, the research question posed is as follows; How does considering drones as actants affect our comprehension of drone warfare?

The structure of this article is as follows. First I review the literature regarding contemporary drones and demonstrate how there is an area of drone literature that is not yet extensive and which my article can help to substantiate with its analysis. Second I develop the theoretical framework by which I mean to analyse the exact mechanisms of the drones utilised by militaries in the act of killing. Third I present my hypothesis. Within this section I argue that

considering drones as actants impacts upon the act of killing with drones in a unique manner. I submit two major, separate precise implications of using drones to commit acts of killing. The first concerns the impact upon the pilots, or operators, whose remit it is to kill utilising the mechanisms of a military drone. These individuals who commit the act of killing are profoundly and distinctively affected by the specifics of drone attacks in a manner that would not occur in the same way where they using alternative devices to eliminate their military's targets. The second argument put forward regards the actant of the drone's impact upon the decision making process throughout the technical system as a whole. The exact nature of the drone enables, even facilitates, a diffused responsibility throughout the nexus that targets and strikes during the process of killing. Following is an analysis of data gathered concerning the operation of the drone as an actant. Finally, this article makes the case that considering drones as actants can hugely affect our comprehension of drone warfare with significant implications for their operators and legal responsibility for deaths.

Literature Review

Literature Regarding Drones

The specific mechanisms of drone are the object of analysis for the article. It is therefore important to acknowledge the predominant contemporary approaches that others have taken during their analysis of drones. Fatal drone strikes being a relatively modern and extremely controversial phenomenon means that is has spawned a great deal of academic analysis in recent years. The analysis has not been all in the same direction and accepting of the same basic principles for analysis. There are numerous different angles and ontological lenses through which the use of drones to kill can be considered. Furthermore, there is a myriad of differing case studies that have occurred, such is the proliferation of drone warfare, that

articles can tend towards addressing occurrences of individual drone strikes, or a specific campaign or target of killing. Here these varying approaches are shown and it is demonstrated that the path of analysis this article takes fits into a comparatively less developed niche of drone literature.

Literature on the Legality and of Drone Killings

As mentioned during the introductory phases a significant portion of the literature regarding drone is primarily concerned with drone strikes location within the legal parameters. As such work regarding the legality of drone warfare tends to focus upon whether specific instances of drone operations where in accordance with the relevant explicit or implicit laws that govern military engagement. The selection of these instances such as in Warzistan, in Pakistan (Walters, 2014 (2)) show clearly that the use of drones occurs in instances one does not find traditional military fighting forces. Indeed, other articles draw attention to potential legal violations that the usage of military drones entail. Abeyratne and Khan (2014) consider international law, with regards to state sovereignty, the most important consideration when analysing the appropriateness drone warfare. Essentially operating in a manner which violates international law is what determines drone usage as illegitimate.

A similar example of legal consideration is presented by Lewis and Crawford (2013) who remark that drone usage violates international law in some cases but not in others. Specifically, when given consent, even tacit consent, from the nation in which the drone attack is occurring then the utilisation of drones is as permissible as engaging with any other kind of device for killing (Lewis and Crawford, 2013). It is acknowledged that the use of drones may set a worrying precedent for future engagements (ibid, 2013) if legal premises can be so easily compromised with the drone, without genuine fear of the retaliation by the

targeted. It is remarked that international law is not always clear cut regarding drone operations (Lewis and Crawford, 2013; Abeyratne and Khan, 2014). It is apparent though that the analysis presents more concern for incidents occurring prior to writing rather than potential implications of continual use of drones to carry out acts of killing.

The work of Simbirski (2014) shows that discussion of drones as devices for killing enemies can be normative questions asked about the utilisation of drones in any instance. This can go so far as even suggesting that campaigns previously have fallen into the category of inter-state terrorism (ibid, 2014). Here there is a deep concern about the legitimacy of the programme at all Such strong formulations of arguments suggest that there can be a deep concern for ethical or moral implications from using drones to kill. Brunssetter and Jiminez-Barcadi (2015) show how one particular nation, the United States, frequently runs in contradiction to the laws or norms that govern military engagements across the world, highlighting a moral dilemma when two sides ethical considerations do not achieve the same outcome. To sum up this sub-section legal considerations of drones, with the various permutation they consider, reveal that a categorical answer on the legitimacy of drone warfare is not to be found. The methodological approach of pieces concerning legality and (moral) legitimacy tends towards exploring set instances of drone strikes and are focused upon the context of the attack and subsequently neglect to consider the individual nature of drones carrying out attacks. Instead drones are seen as an extension of capability for engagement, rather than a unique weapon.

Literature on the Practicality of Drones

Another major grouping of contemporary drone literature surrounds the efficiency and effectiveness of drones as a tool of war. This could also be considered an evaluation of the military utility of the drone mechanism in conducting killing within a larger frame of a conflict. This practicality can concern the simple capabilities of drones to kill but can also deal with the drone mechanism's capability of achieving the desired political and social outcomes in the context of warfare.

Literature in some cases simply focusses on identifying the capability of drones and situating them, as with any other weapon or device for killing. Work on this analyses the capability for killing possessed by the drone within the context of the greater military arsenal. Information regarding the results of specific strikes is hard to gather considering the location of the drone strikes in a conflict zone, sometimes outside the realms of legality and this covert (Forensic Archaeology, 2015). However, despite not knowing the results of individual strikes the technical killing capabilities that the drones possess via their weapons mechanisms is explored within literature. An example of this is Mahnken (2013) who suggests there is a general inclination towards precision based warfare in advanced military nations, as exemplified by the development of precision missiles now deployed by drones. This strive towards further precision is what might consolidate the drone within modern militaries; it is simply the most capable tool for the job. Other work (Pierce, 2013; Barnaby, 2014) corroborates the opinion espoused by Mahnken and others that the changing nature of militaries to inclusion of drones is simply and natural reflection of the military's desire for optimum devices for killing. As a reflection of a towards a military with the highest tech possible drone strikes are utilised because they enable killing with less risk, at a greater distance and can provide comparatively more damage than other weaponry conducting the same operation.

Some articles regarding the drone's capabilities look past the simple physical capability for killing and address the potential impact of drone operation in the context of the conflict that killing with drones is occurring in. Within this frame the key question appears to be whether drones can establish the same stability as an occupying force would in a military campaign. Some scholars appear to doubt the capabilities of the military to achieve this. Powers (2013) demonstrates that the utilisation of drone killings by the United States since 2001 has actually exacerbated negative feeling towards the forces of the United States. Usage of drones can further the recruitment of enemies that the killing with drones were meant to eliminate (Powers, 2013). The capability of the United States in meeting its goal of eliminating opposition in the area is thus compromised by the use of drones. By creating ill feeling towards the nation behind drone strikes this shows how the use of drones can create additional conflict compared to the utilisation of alternative devices for killing. Whilst individual drone strike may be successful Ceccoli and Bing (2015) argue that the usage of drones can negatively impact on the perception of the nation across the international community as well as those targeted specifically by the drones. This can only impact negatively upon the military in question's attempts to establish legitimacy (Ceccoli and Bing, 2015).

The main considerations in literature regarding the practicality of drones are its killing capabilities compared to other weapons and also drone utilisation's impact on the military. Whilst drone capability is lauded as advanced and devastating the usage of this mechanism can potentially hamper the aims of the military utilising drone killings

Consideration of the Drone as an Object

The strands of literature discussed thus far represent the majority of the work on drones that exists in contemporary academic literature. The two are substantive bodies of work yet the work within them contains no severe contestation of concepts, but rather leads to arguments that are context driven. It is the context of a particular usage of drone that is the determination of the legitimacy or effectiveness that forms the arguments of the previous two statements. They do not appear to take consideration as to whether there is something specific about the drone that is effecting drone warfare. This concept, that the nature of the drone affects our comprehension of what results from the act of killing with drones is one that splits the literature directly in to two camps. The notion that drones are unique weapons is by no means an unanimously acknowledged one. Some perceive the drone as only a neutral tool. Alternatively, some work, a minority in the field of the study of drones would purport that that a drone is not a neutral tool in the context of killing but rather a specific device that shapes a drone specific type of killing (Walters, 2014 (1); Asaro, 2013).

First then are the examples of how some literature takes the drone as a neutral tool. Much of the literature discussed beforehand can be argued to fall within the category of the neutral drone argument. When discussing legality for examples the concern for the authors was over state sovereignty and international being potentially violated because one state had managed to extend its ability to commit the act of killing into another's territory (Lewis and Crawford, 2013; Abeyratne and Khan, 2014; Brunstetter and Jiminez-Barcadi, 2015). The argument is in relation to states here. The drone itself is seen as an extension of that state as it carries out military operations that result in the act of killing in area outside of the accepted sovereignty of the attacking state. However, these works never consider that the drone is anything more than a tool of the state. It is simply the chosen method for the state to conduct its act of killing, the same argument could be constructed simply replacing the drone for a bomber or a

missile launched from within the borders of the attacking military's state. As such the drone, although its capabilities enabled the attack, remains neutral during its analysis. Instead, it is when and where it is used that determines its effects. Drones have enabled attacks to occur with certainly greater range and lower risk by their design and weaponry (Mahnken, 2013 Boyle, 2013) as understood during the analysis of the practicality of drones. However, literature within this framework concentrated as the drone relative to alternatives within the military arsenal. The drone's mechanism provided it with superior capabilities made it utile to the military in carrying out previously impossible attacks (Boyle, 2013). The unique properties and mechanism of drones were only considered in light of its ability to kill the targets of the military operating it. The drone was only a tool of its operators in effect. Within this paradigm drone usage is thus comparable with the utilisation of any device for the act of killing, and logically militaries tend towards the best weapon at their disposal.

A great deal of literature neglects to consider the specifics of drone technology in shaping its usage and would consider it no different to the utilisation of any other device for the act of killing. Some articles do make considerations that the choice of drones for the act of killing may have effects on warfare that wouldn't occur with other weapons. Coeckelbergh (2013) suggests that the nature of a drone mechanism results in greater proclivity in the utilisation for drones for the act of killing. However, although acknowledging that some attacks may be specific for drones it cannot be argued that this is not an argument along the lines expressed in the practicality literature. The drone technology is merely an enabler for results that are already desired by the military.

Some work, however, inspired by socio-technological studies presents a markedly different proposal for our interpretation of killing with drones. Within this strand of literature drones are not considered neutral tools for the military to utilise. They can and do, in various ways,

uniquely shape the results of their usage unlike any other military device used for the act of killing.

Some work upon drones does not argue that drones are a neutral tool such as work on the topic by William Walters (2014 (1)) and Anna Leander, (2014). These authors suggest drones represent an object that can be studied through socio-technology lenses such as dingpolitik in order to gain a better understanding of drone warfare. In this sense the drone is far from a neutral object, it is potential as much a shaper of the results of its use for killing as its operators or conflict-context. The drone is therefore an actant; an object that enables and shapes interaction in specific manners due its inherently specific nature. It is within this branch of drone literature that I would situate myself; that the drone should not be considered a neutral object but rather a specific and unique mechanism for analysis.

Theoretical Framework

The research question posed by this articles is as follows: How does considering drones as actants affect our comprehension of drone warfare? The mechanisms and premises that enable a hypothesis to be formulated in answer to this question will be developed within this section. This section develops and demonstrates a nuanced concept of an actant and which will enable the shaping of a hypothesis that is theoretically informed enough to provide a suitable argument. It will show how the specific mechanisms of drones denote them as a unique actant.

This section provides the theoretical background that justifies the consideration of drones as actants. Theories about human and machine interaction are varied. A great deal considers all technology, including drones, to be neutral. As discussed previously this means that the utilisation of objects is determined by the user. The results or effects can be traced directly to

the operator and the context in which they were operating. The technology itself had no role in shaping the outcome, merely it was an option the operator could choose to utilise for the act they wished to perform.

A growing stand of academic work refutes the basic concept that as a designer of technology humans are solely and simply utiliser. Rather this work advocates that the specifics of either the design or the operational method of the technology in question can have a serious, profound impact upon the utilisation of said technology (Walters, 2014 (1); Leander, 2014; Orlikowski, 2000, 2007; Carlile et al 2013 La Tour, 2005; Bonelli and Ragazzi, 2014). Even within work that accepts that technology is not neutral there are different constituents to this thread of academic investigation.

Socio-materiality is an example of one of these threads. Pioneered by Orlikowski, socio-materiality presents the notion that materials, or technology, is linked inextricably with the user. The utilisation of technology can be seen primarily as the interaction between the user and their technology (Orlikowski, 2000) (Orlikowski, 2007) (Jones, 2013). What is meant by this is that the specifics of technology structure its utilisation. A utiliser does not operate regardless of the nature of the technology with which they are interacting. Rather their subsequent use is shaped by the structure the technology provides. In relation to this article accepting the tenets of socio-materiality theories enables the formulation of arguments that acknowledge that an item of technology's interaction with its user affects the direction and results of its use.

Another prominent and highly relevant example of work on the man machine draws from the Dingpolitik theory devised initially by Bruno Latour (2005; Walters, 2014; Leander, 2014). The concept of Dingpolitik entails that the nature of objects with which humans interact affects these interactions and their results. Technology that we utilise can affect our decisions

making processes and the outcome of utilisation due to the specific nature of that technology. As such technology becomes an actant, an enabler and shaper of interaction and utilisation of technology by humans. If this tenet is taken seriously it allows arguments to be formulated that technology can shape, or even dictate, the results of its use by man. Accepting this means acknowledging the device, technology or object in question to be an actant. An actant forms a key part of the process by which utilisation occurs (La Tour, 2005). An actant is essential to the process of utilisation. As such this ontology runs in direct contrast to the suggestion that technology of any form constitute neutral tools which humans utilise irrespective of their particular properties. The varying nature of technologies means a varying nature of actants. Accepting the premise of dingpolitik as a mechanism for analysis means considering that the specific nature of technology provides a specific result of utilisation. Within international relations, specifically the realm of study, this would mean that any device used in the act of killing could be expected to provide a different resulting process that a device of another sort.

To conclude this theoretical framework section, I now explicitly state what the accepted theoretical framework that will shape my hypotheses is. I locate myself within the broader theoretical framework of socio-material studies. I accept the mechanisms of socio-materiality that technology can structure out interactions. Furthermore, I specifically frame this article within the theoretical concept of Latour's dingpolitik and consider that objects can become actants. In relation to the research question posed by this article I take the notion that drones are actants seriously. The arguments that follow are thus framed by this theoretical developed framework regarding the nature of man and machine's relationships. Within this framework the arguments that are put forward are expected to acknowledge that as an actant the specific mechanisms and design of the drone as a device for killing other humans gives us a specific comprehension of drone warfare, unique to this exact piece of technology.

Hypothesis

This section demonstrates my arguments for exactly how our comprehension of drone warfare is effected once we take the dingpolitik derived concept of actants seriously in respect to drones. As a result, the arguments presented here illustrate how the nature of the drone technology itself determine the effects of the drone's utilisation during the act of killing. I believe that accepting theoretical tenets of socio-material studies, especially dingpolitik, and interpreting drones as actants has significant ramifications for our comprehension of drone warfare. This paper addresses two major arguments of how interpreting drowns as actors affects our comprehension of drone warfare. The first is that the drone technology has exclusive adverse effects upon drone operators. The second is that due to the nature of the drone operating system there is a dispersion of responsibility for the act of killing that is created as a result of the utilisation of drones for this purpose.

Concepts

The arguments presented draw from the theoretical framework of the previous section. This means that our subsequent comprehension of drone warfare must be drawn from the actant nature of the drone operating system. Within this mechanism of dingpolitik and socio-materiality there are specifics of the drone design that result in the specific results that follow the utilisation of the drone for its designed purpose; murdering other humans with the utilisation of the drone's weaponry technology. Within this subdivision I demonstrate how the arguments I have presented conform to the theoretical framework and can be investigated to demonstrate how the notion of actant can contribute to the understanding of drone warfare. The first argument which must be conceptually unloaded is that the technology of the drone,

as an actant, has resultant adverse effects upon drone operators who utilise the technology for the act of killing.

There are many technological specifications of the drone that if considered as an actant would change our understanding of drone warfare. This could on a broader scale even influence the understanding of the man-machine relationship more generally in the military context of committing the act of killing. As I detail later the actant drone's ability to make the operator impervious to direct physical danger or damage. This is unique to the drone as no other military technology eliminates risk to this extent and still carries out attacks with lethal force (Asaro, 2013). So the specific technology of the actant enables of specific and unique to drones response from the operator. The ability to analyse targets from in an unprecedented level of detail and then still remain impervious also contributes towards adverse effects on the operators. Feelings of guilt can likely emerge from the technology of the operating system that allows the operator unparalleled video clarity from a continued state of invincibility has consequences that are unique to the actant that is the drone. Furthermore, there could be adverse effects resulting from the reality that only the drone enables conflict and the act of killing for the military in the form on a nine-five-job, unlike anyone else engaged in the act of killing for the military can encounter through the utilisation of other technology.

The effects would have to be perceivably adverse. This means an obvious damage to health or psyche of the operator resulting from operating drones during the process of killing. What is most important though in order for the data to support the hypothesis would is to show incontrovertibly that the adverse effects emerging from the utilisation of drones for the act of killing was unique to the actant, and could not be provided by any other actant.

The notion of a dispersion of responsibility for the act of killing within the technical process is the second argument I propose in the hypothesis. The dispersion to support the hypothesis

would have to be evidently unique to drones in the act of killing. A dispersion of the act of killing would relate directly to the concept of agency. Specifically, the amount of agency afforded to the drone operator for the process of killing would not be complete. The agency of the operator would instead be restricted by the specific technological parameters that the drone operating system consists of in a manner that other military killing devices do not provide.

To summarise this section; ratification of the hypothesis depends at face value as to whether it confirms adverse effects and a dispersion of responsibility for killing amongst the technical process. More specifically, however, it would have to be as a result of the consistency and design from the actant suggested by the research question; the drone operating system's technological makeup, that this dispersed responsibility for the act of murdering enemies emerges.

Object of Study

For the research question "How does considering drones as actants affect our comprehension of drone warfare?" the object of study must be the process of killing with drones. It is primarily for the act of killing that the military drone is designed and utilised. What must be considered as the object for study is the process of interaction between man and machine producing a discernible actant. This means that the interaction between the operator of the drone and the technology they are operating lead to the understanding of the drone as an actant. It is the technology unique to drones that is most important when considering man machine relationship. This is due to the fact that this is how the drone as a unique and effective actant can be discerned.

Data Gathering

Data gathering in relation to the process of killing for the vast majority of drone operators is not available in an independent or neutral fashion. The operation of contemporary drone strikes is, as previously mentioned, mired in controversy as demonstrated by the plethora of literature regarding their legitimacy and political implications (Boyle, 2013; Lewis and Crawford, 2013; Abeyratne and Khan, 2013). Detailed information about individual strikes and targets is confidential and impossible to access for strikes (Forensic Architecture, 2014 Intercept, 2013) either from the ground to view the aftermath or of being able to observe the man machine interaction first hand during the process of killing being carried out by a drone.

Interviews with (former) drone operators and verifiable accounts of the methods of drone operation would be the next alternative to being able to directly observe the process of killing being carried out by drones from the perspective of the operator. Interviews would only provide a self-perception of the interaction between man and technological actant that occurs between the drone operator and the drone operating system. However, this self-perception could still provide adequate data for the analysis section of this article where it to be successfully consolidated with verified accounts of the workings of the process of killing with drones.

Interviews conducted by myself would be ideal but regrettably these were not forthcoming. Nevertheless, existing interviews, although not answering questions devised by myself, could still provide adequate information. A detraction of this data was that former drone operators were all interviewed together, the interview content dispersed amongst various websites, but there was some content from which useful, worthwhile data could be gathered for analysis. The operators had all worked on the drone programme for an extended period of time and thus had information about both the technology utilised during the act of killing.

Furthermore, there did exist various academic articles reporting on drone operational technology which I could directly analyse myself. The article is therefore based on the most appropriate, accessible data regarding the man and machine interaction that occurs when operating drones. It should be taken into account that they can be substantiated by secondary sources that consider the factual specifics of both drone strikes and their impacts. I feel therefore that this method of data collection provided the optimum basis for analysis of considering the implications of accepting the theoretical consideration that drones are actants.

Method of Data Analysis

The analysis of data gathered from the interviews and depictions of drone operating systems will be done by synthesising with existing secondary sources that relate to the theoretical framework established earlier. The interviews can be subjected to a hermeneutic or textual analysis (Ruiz Ruiz, 2009) style to analyse whether they support or detract from the hypothesis of a clinical, depersonalised process of killing, with responsibility dispersed in relation to drones.

Information from the interviews could also be determined to demonstrate the specific technology of drones, the actants under consideration, and how this technology interacts with the operator to create the act of killing that is solely created when carried out by drones. In addition to this the information garnered from verifiable accounts or academic sources on drone operation can provide the specifics of the technology with which to reconcile the interview accounts. This will ensure that the consideration of the actant is drawn from factually correct statements regarding the specific nature of drone technology that is essential, as stated by the hypothesis, in demonstrating the impact of considering drones as actant. That is, namely, that the actant of the drone's utilisation as a tool for the act of killing results in

adverse effects upon the operators unlike any other device utilised for killing. In accordance with the hypothesis the utilisation of drones leads to the dispersion of the responsibility for the act of killing during the technicalities of the process of killing with drones.

Analysis of Drones as Actants

Adverse-Effects on Drone Operators

The first argument I put forward within the hypothesis is that if we consider the drone as an actant utilised during the act of killing the result is adverse-effects upon the operator as a result. These adverse effects are unique to the utilisation of drones for killing and subsequently would be absent from the operators had the conducted their act of killing with another military device or technology. Adverse effects would necessitate that the mental or physical wellbeing of the operator was somehow compromised as result of interaction with the drone operating system and subsequently using it complete the process of killing.

The first point that can be made regarding the adverse effects resulting from operating drones to kill is relating to the reality that drones make pilots impervious to direct physical damage from the enemies or targets they are meant to be eliminating. The specific adverse effects come in the form of psychological struggles driven by guilt as a result of carrying out the act of killing without any genuine risk of physical harm to the operator themselves (Project Red Hand, 2015; Guardian, 2015; Telegraph, 2012). The enemies targeted by the drone have no chance of being able to retaliate against a strike that will in all likelihood outmatch them many times over (Mahnken, 2013). The specific technology of the drone is what causes this; nothing else can fly with such disconnect from the potential danger of physical harm to the pilot or crew (the Telegraph, 2012 Asaro, 2013, NBC, 2015). The drone is operated from a

room on a secure military facility, frequently on another continent to where the drone is operating. The specific component of the actant utilised by the operator to kill others operates from a detached location. No other vehicle technology possessed by the military allows this sort of strike operation. It is this distance that creates the damaging affect upon the operators conducting this completely unbalanced form of contact, knowing that their physical integrity cannot be compromised by those they are operating the drones to kill. Thus the specifics of drone technology allow for negative psychological affects upon the operators due to the distance enabled by the drone's remote operating system between the living body of the pilot and their target many thousands of miles away.

Despite being far away the level of visual data available to a drone pilot before conducting an attack in unparalleled. This means that despite being extremely distanced from the area in which the act of killing will occur, to the point of invulnerability, they are enabled by the ability to switch between advanced cameras that allow them to gain sensory information comparative to being much closer to the act of killing (the Guardian, 2015; Telegraph, 2012 Subbarman, 2013). The detail available means operators can become familiar with where their operations fly over, sometimes the same route for consecutive days (Telegraph, 2012). This is precise enough to be able to tell, for example, from distance, that the targets of the operator could have fallen asleep (the Guardian, 2015). This means that operators have a very visual display of the target of their object of killing in spite of being as physically removed as possible. Thus the exposure to the potentially graphic act of killing, even to be able to distinguish the activities carried out by the targets at the time of killing is enabled thousands of miles away by the unique camera mechanism that forms the military drone.

The two previous points regarding sensory information show that one can argue that considering drones as actants we see that the technology by which drones are operated enables a unique level of adverse effects on the pilots that is not present within other killing methods and devices that a military utilises.

As well as the time accrued during the operating system it can also be said that the lifestyle in general afforded to the drone pilots is unique and subsequently the effects of this, adverse as they can be, are unique. The drone allows its operators to work with a device specially designed for the act of killing for the hours comparable to a civilian job and then return to their civilian home when not operating the device (the Guardian, 2015 Telegraph, 2012). This is a unique lifestyle for a combatant, a person engaged in the act of killing for the military. The stress that occurs from entering and re-entering the combat zone is occurring everyday as opposed to once every four months as typical for other combat missions (Telegraph, 2012). The stress caused by entering and leaving the process of killing every day is enabled by drones. Stress induced diseases such as PTSD can affect drone pilots as much as it can military personnel who are physically vulnerable. However, the distance between body and killing component that the drone mechanism consists of creates this unique, and adverse effect, for drone pilots.

One point that draws from the life split between civilian home and drone operation is that drone operators are denied the sociability of war that would be available to military personnel undertaking the act of killing using a different actant or technology. The camaraderie available to other military personnel that can provide solidarity and consolation amongst other humans conducting the same task is absent for the drone operators. This absence is uniquely present for drone operators showing another case of how considering drones as actants leaves the result of adverse effects.

A final point that highlights that the specifics of drone technology impact adversely on the drone operators can be derived from the interviews. The distance from the act of killing, invulnerability and 'nine to five' working method have the result that drone pilots are considered within military circles to be inferior or inadequate when compared to pilots of conventional aircraft (the Guardian, 2015 Aratos, 2014). The situating within a room to carry out the act of killing, as it occurs to drone warfare, is unfavourably viewed compared to piloting a manned aircraft. These are military personnel who are, even if remotely, still physically vulnerable unlike the drone operators. Operating a drone can therefore damage self-worth perception of drone operators as the actant they use to kill enables them a process of killing unavailable to personal who interact with other devices to perpetrate the act of killing. It can be seen from this series of arguments that if we consider drones as actants then our interpretation of drone warfare is certainly affected. Drone warfare results in adverse effects upon the operators of drone a result of the exceptional human machine interaction enabled by the exact technology that manifest itself in the drone operating system.

Effects upon the Decision Making System

The adverse effects that are ensuing for personnel operating drones could be seen to manifest themselves predominantly after the act of killing with drones in military operations has taken place. However, it can also be argued that the drone as an actant has repercussion for the way decisions are made during the process of killing. The basis of this argument is that the responsibility for the acts of killing that are a consequence of drone strike operation is dispersed due to the technological nature of the actant drone.

The crux of the argument that drone technology produces a dispersed act of killing is that the technology of the drone reduces the agency of the operator in relation to the process of killing. As state previously the screen provides uniquely close, accurate views to the drone operator. However, I would argue that the screen in this situation poses more question than answers in terms of the targeting aspect of the process of killing. There is a complete inability to access detailed information regarding the targets, or other people, present on the screen (Project Red Hand, 2015; the Guardian, 2015; NBC, 2015). Feedback is instead presented in the form of numbers as coordinates and attack or desist instructions follow. The drone operator might have been running surveillance upon the target for a number of days (the Guardian, 2015), even weeks, yet contextual or personal information regarding the person is not provided. Instead via the phone that is present within the cockpit area of the drone operating system command will be given ordering to engage or not to engage (Subbarman, 2013). The personal information may not be provided to other forms of combatants yet it is the drone's sensory technology that allows advanced surveillance before engaging a target that brings the pilot closer to the target that any other equivalent military technology could. This allows the pilot to locate and target more accurately. There needs to be some capability to analyse on behalf of the pilot specifically aiming at shapes know to indicate a person (Project Red Hand, 2015; the Guardian, 2015).

However, there is no remit for the operator to check the identity of the target once the command is given to engage, rather he utilises the drone as commanded, in response to information that is gathered from intelligence in a different department of their military (Project Red Hand, 2015). Access to the network is not available to the drone operators for reasoning why, the information they can gather from their missions is frequently simply given as a total number of kills they have enacted (Project Red Hand, 2015; the Guardian, 2015).

Given the absence of any contextual or clarifying information it appears that responsibility for the killing cannot be entirely attributed to the drone operator who utilised his devices weaponry. Rather the technology of drones necessitates analysis of the targeting screen but eliminates the need for agency in the targeting phase of the process of killing; thus leading to a murder whereby the responsibility for killing is dispersed amongst the high-tech military network in which the drone operator is working.

Conclusion of Analysis and Implications of the Study

The preceding analysis section of the article considered the research question of: How does considering drones as actants affect our comprehension of drone warfare? In answer to this question it is clear that considering drones as actants affects our understanding of drone warfare in two ways. First we understand that the specifics of drone technology lead to corresponding adverse effects on the military personnel who operate the drone. We see that the invulnerability created only by the technology of the drones arouses feelings of cowardice and failure to legitimise oneself as a combatant. The ability to gain unprecedented analysis of targets before acts of killing is a further potentially traumatic facet of drone warfare that emerges only as a result of technology solely operated within drones. The split home and combat lifestyle that drones as actants enable and facilitate can have further adverse effects upon the operators of this technology namely increasing stress levels by repeatedly leaving the combat mentality

The drone technology also enables the denial of the solidarity with fellow soldiers or airman that would occur where another device being utilised for the act of killing. As well as resulting in the numerous adverse effects for their operators, the technology of drones also

allows the dispersion of responsibility for the very act of killing. By means of removing the necessitation for agency of the operatory in targeting, yet still relying on a high degree of sensory analysis, pinpointing the responsibility behind the dead that result after a drone strike is not a simple task.

Taking drones as actants seriously means understanding that drone warfare causes a dispersed responsibility for the dead that result from drone strikes and also a number of adverse effects upon the personnel who operate the drone; both of these occur only within the technological premises of the drone system. What then are the implications of this study? In terms of drone strikes in particular it would suggest that there should concern about the specific effects from the presence of this particular actant in the process of killing. The personnel that utilise this can suffer mental damage that is absent for other forms of military engagement. Whilst furthermore those concerned with the killings that result thousands of miles away from the drone's controls may have little recourse to ever discern the genuine responsibility with their deaths. Considered in the broader realm of IR, the article suggests that the human-machine relationship can be a useful and fitting framework through which to investigate security issues within international relations. Considering any technology as a potential actant means that analysis about how the device shapes its utilisation can attempt to analyse where simply consideration of technology as a neutral tool does not. Furthermore, there are legal questions that could be asked considering whether technologies can change the legal responsibility for deaths or other attacks committed between individuals who have impact into an advanced technological process that culminates in the murder of other individuals

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