Drones for Good? Conceptualizing the Role of Good Drones in Global Governance

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Introduction

This article identifies and reflects on some of the questions arising from the ways in which the global drone proliferation is migrating into aid operations in global governance. While drones have historically been associated with unmanned warfare, in recent years, there has been a public ascendancy of "the Good Drone": mainstream media and the blogosphere are rife with reporting on new beneficial applications for drones, covering everything from peacekeeping, delivery of humanitarian relief, search and rescue, and border control to environmental protection and wildlife conservation.

With "drone proliferation" we understand both the financial growth in the drone market, and the expansion of the geographical scope of this market. This concept also refers to the expansion of an ever more diverse and sophisticated fleet of drones deployed

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to carry out an ever-increasing number of tasks. Stakeholders from international organizations, military and civilian national authorities, civil society, the tech industry and the military-industrial complex are engaged in research and development of new prototypes that can provide more efficient protection of civilians in peacekeeping, greater coverage under more difficult conditions in search and rescue missions, better and faster aid delivery in disasters, and more accurate surveillance in border and migration control, among others.

We believe that this article addresses an important gap in the emergent understanding of civil uses of drones across scholarly disciplines, as well as contributing to the development of the field of "drone studies" in its own right. We also hope that the article can contribute to the emerging Chinese debate on the challenges and opportunities arising from drone proliferation, and the integration of drones into Chinese international aid activities. Finally, we hope that the article can contribute to greater international exchange on the issue, and how we can best govern our shared global airspace.

While the military use of drones has been the subject of significant academic scrutiny since the mid-2000s,[1] the more recent civil society, government, industry, and media interest in the use of drones for civilian and humanitarian purposes has so far received little scholarly attention. Although there are scattered discussions of the technical aspects of drone use in agriculture and the environment,[2] and emergent bodies of work on the role of drones in peacekeeping,[3] humanitarian aid,[4] and border control and crime management,[5] conceptual attention towards what it takes for a drone to "be good" is only emerging.[6]

To this end, the article explores why drones need to be framed as "good" and how drones are framed as "good" through a typology of uses in global governance, understood as the multiple governmental, inter-governmental and non-governmental efforts and mechanisms to manage common public goods and address international issues.[7] We are interested in foreign aid, which can be defined as the international transfer of capital, goods, or services from a country or international organization for the benefit of a recipient country, its environment, biological diversity,

or population, and specifically, how the problems of the sector become framed as amenable to "drone solutions". The international aid sector, whether represented through states, multilateral organizations or non-governmental organizations, currently faces numerous challenges relating to access and to the efficient use of scarce resources. Various new technologies and drones in particular, have come to be seen as important solutions in this respect, increasing efficiency and facilitating access to hard-to-reach areas. This makes the aid sector a particularly salient case to study, and useful starting point for initiating a critical conversation about the political currency "good".

The Good Drone is endowed with almost unlimited imagined and real usages, where the key modus appears to be the idea that there are no crisis situations where the Good Drone cannot intervene to make a difference for the better. A key contribution of this article is to unpack some of the different conceptions of good that are called upon, from subjective moral qualifications to attempts to refer to objective standards of the ethically, legally, politically or commercially desirable. What do the different drone deployments in global governance tell us about different forms of distribution of resources, of space and of access to the technology, and of who gets to see whom? Who and what gets protection?

We argue here that these multiple promises of doing "good" are part of a broader tech-optimism trend, presenting new technologies as the solution to virtually any problem. The tech-optimistic trend is based on the premise that new technologies, and especially different forms of digital information and communications technologies, can solve any problem in the field. As an evolving concept, the Good Drone is attractive as a "politics of the possible", combining technological utopianism with images of possible future functions. The "Good Drone" discourse offers many explicit and implicit ideas of what is good: from efficiency, low cost, and improved bureaucratic decision-making (based on a perfect vision of human interaction on the ground) to more far-reaching visions of global justice and social change.[8]

The article proceeds as follows: the first section lays out our theoretical approach to the Good Drone, followed by a

consideration of the material attributes, capabilities and functions bestowed upon the drone. Then, our analysis proceeds to map out the abstract values and objectives that are brought into play to conceptualize the drone as "good", in essence adding moral value to technology either considered value-neutral or immoral. In the fourth part, we show how this is done by providing a typology of Good Drones in global governance. We discuss humanitarian aid, peacekeeping and conservation and wildlife protection. The final part reflects on challenges of the "Good Drone construct", followed by a brief conclusion that lays out pointers for a future research agenda.

The Good Drone as Technology

Discussion about drones, in political, media and academic spheres has been characterized by two main approaches. First, a deterministic approach, viewing the possibilities and pitfalls of the drone as inherently embodied within the drone itself. For example, critics of the targeted killings will approach the drone itself as the essence of the problem. Similarly, what we here call the technological utopianist approaches see the drone itself as the ultimate game-changer. Second, the social constructivist approach, sees drones, or rather the issues that are raised in relation to drones, as socially constructed issues defined by politics, law and ethics.[9] These contributions see the drone as a manifestation of already existing power relations, but are also interested in how the uses of drones for different purposes reshape social relations and understandings.

We seek to chart a path between constructivism and technological determinism where drones generate new political settlements and constitute forms of institutional power. Our argument is based on the view that technology is not neutral, or just passively adopted by society. Rather, society and technology engage in a mutually constitutive relationship. The construction of technology is subject to political contestation, the realities of professionalism, finance and politics. At the same time, and as evidenced by the ongoing drone wars or the use of police surveillance drones, UAV

technology enables a specific set of political and military rationales and projects that must be investigated, not for their often-alleged "newness" but for the power they represent.[10] The introduction of a new technology is not a linear process and its outcome cannot be predetermined: technology needs to be understood in the broader social, political, legal and security context in which it is both developed and put to use.[11]

Good Drones as the Sum of Attributes and Functions

In this article, we use "drones" to refer to a host of different attributes, capabilities and functions of flying, unmanned platforms, albeit they are also known under a host of different acronyms – UAV (unmanned aerial vehicle), UAS (unmanned aircraft system), RPAS (remotely piloted aircraft systems). We argue that the Good Drone emerges from a shifting matrix of these characteristics. Drones can be large, fly at high or medium altitudes and have long endurance and a wide range, or they can be micro or nano-sized, flow at relatively low altitudes, with a short range and for brief periods of time. Drones can fly fast or slow, solo or in swarms. Some drones have fixed wing sets, reminiscent of airplanes, while others have rotary blades like helicopters. Drones have different levels of autonomy during take-off, flight and landing. Some drones need a special runway while others are handheld devices that fit in a backpack. Hence drones require different kinds of crews for maintenance and use: while the combat air patrols for the larger models deployed for military use counts hundreds of people, hobbyist drones have a crew of one. Most drones run on fuel or batteries, although models are being built that runs on solar power or wind, and if successful would allow drones to be airborne for a lot longer. Drones are made of metal – or plastic, and equipped with an endless array of software with varying levels of security and allowing for different modes of data collection and interpretation. Drones are made by military manufacturers, the tech-industry, by hobbyists modifying do-it-yourself (DIY) commercial-off-the-shelf technology (COTS) or from scratch by individual innovators.

Drones have a range of different functionalities: they perform

overhead surveillance, offering enhanced situational awareness but also the possibility of mapping topographies, populations or changes in the landscape. Drones come with combinations of a range of different sensing platforms, including cameras, thermal cameras, and radars. While some drones are mounted with simple cameras providing an often-grainy soda straw view of events, others are equipped with sophisticated wide area surveillance platforms. Equipped with the right software, drones can intrude upon, disrupt and destroy wireless networks. Drones can be used for targeting, equipped with lasers, missiles, or bombs – or less lethal weapons such as taser guns, gas or rubber bullets. The ongoing miniaturization of drones dovetails with the weaponization of ever smaller, faster and more sophisticated drones, so-called LMAMS (lethal miniature aerial munitions system, or loitering munitions). Drones can carry heavy cargo through sling loads over long distances or transport small containers of medicine or blood over short distances.

What Is 'Good' in the Good Drone

Together with the account of the "physicality" of the Good Drone, we must also analytically consider how the Good Drone is made up of abstract values and objectives. These narratives create drones as technically possible and as utopian, conjuring up broader narratives of societal benefits of Good Drones. Hence, this requires a deeper investigation into the multiple explicit and implicit ideas of *what is good*: efficiency, low cost, bureaucratic decision-making based on a perfect vision of human interaction "below", a strong humanitarian ethos of alleviating suffering, or a utopian vision for social change.

To understand how articulations of "good" attach to the drone, attention must first be paid to a set of discourses that shape both the ways in which drones are used and understandings of drone activities. Much of the ethical debate on the use of armed drones, and the "war on terror" more broadly have been framed as a choice between legal paradigms (international human rights law and international humanitarian law). Through the integration of drones

into peacekeeping missions, drones have also been firmly wedded to the Protection of Civilians (PoC) agenda. In the aftermath of 9/11, enforceable control over civil airspace has remained an important component of domestic national security efforts. According to the same logic, control over hard-to-reach areas *beyond* national borders has become an important priority.

The rise of drones also intersect with societal notions of risk: in a world that is being perceived as more dangerous, drones help humanitarians, the military and others to do their job from a distance. For governments, preparedness for future eventualities is becoming increasingly important to the politics of the present: drones fulfill the promise of preparedness in material and symbolic ways. Finally, drones are alleged to be efficient, effective and cheap according to the principles of neoliberalism, ranging from constituting a "smart" weapon that enhances the military effectiveness to assertions that drones are cheap compared to fighter jets, boots on the ground, police helicopters or safety inspection teams. Drones constitute a dual promise of innovation, both in terms of technological change and the emergence of new business models and opportunities.

Specifically then, "good" refers to the drones' capacity to increase the *efficiency* of the operations in which it interferes, because it reaches difficult locations more easily and is more precise than what human beings themselves can be. In this, there is a presupposition that the technology works, and functions instrumentally as it has been programmed to do, thus reducing the potential for errors close to zero. Frequently, as mentioned above, "good" refers to the assumptions of the *low cost* of drones, in terms of being more economical compared to other alternatives, but also in terms of a cost-benefit analysis taking into account what is being achieved and what value is created versus the raw cost of the drone.

Drones are imagined to be "virtuous" weapons for protecting peace;[12] or they are construed as "smart", in reference to avoiding misuse and accidental use but also in relation to the ongoing push for a smarter defense that combines high quality targeting, effectiveness, and cost efficiency. Drones are good because of their capacity for precision and sensing in activities ranging

from targeting, farming ("precision farming") or search and rescue. "Good" is often based on a multilayered invocation of a *humanitarian ethos* of assisting or protecting people in need: if the drones' heightened efficiency (compared to human rescuers) enables more lives to be saved, this capacity endows the drone with a humanitarian sensibility. This acquired quality is then often made to travel as it is transposed onto similar tasks within different operations, which can then be re-labeled as "humanitarian".

Drones also constitute a politics of the possible, both with respect to the proliferation of "unmanned" technoscape conjured up by the industry in particular and with regard to utopian imageries connected both to what the technology is imagined to be able to achieve if instrumentally deployed. A useful illustration of the former is reflected in the ways in which drones are promulgated as essential tools for a "21st century approach" to first responders in the domain of policing, firefighting, search and rescue, flood management and more: Drones are imagined to come with endless possibilities for first responders, and with that not only improved performances but also with improved forms of public order, public safety, etc. (*more* of any specific public good for the cost incurred by the public purse, and *better* versions of it).[13]

Typology

Humanitarian Drones

First, we look at how drones are presented both as a humanitarian response and as a solution to the inadequacies of humanitarian response. The humanitarian sector faces an unprecedented number of crises globally. The growing operational and financial deficit in the capacity of governments and humanitarian organizations to respond has led to calls for changes in the way such crises are understood and managed. In response to this dual humanitarian and institutional crisis, humanitarian action is experiencing a "technological turn".[14] An important appeal of drones is their ability to undertake "dull, dirty, and dangerous" jobs. In the military field, this translates into the tasks of surveillance, targeted killing and cargo delivery. In the humanitarian field, the "dull, dirty and

dangerous" jobs translate into crisis mapping, surveillance, search and rescue operations and aid delivery. Following natural disasters, drones can be used to locate survivors and assess infrastructure damages; to monitor population movements; to conduct needs assessments to determine where, and how many people are in need and what their needs are; and to build better short-term strategies for handling humanitarian logistics and distributing relief. In the future, fleets of drones may become important for distributing medical supplies or carrying humanitarian relief. While drones were used to survey damage and reconstruction after the 2010 Haiti earthquake, Typhoon Haiyan, which hit the Philippines in 2013, is generally seen as the "breakthrough" for the use of small, handheld drones in humanitarian operations. At present, there is a proliferation of private sector and non-profit initiatives to develop drones for humanitarian purposes. Due to the experience already accumulated in natural disasters and the sensitivities surrounding the use of drones in conflict, the focus has so far been on natural disasters.

While the humanitarian market has been identified as an interesting market for drones, the identification of and lobbying for new "humanitarian" uses also has a separate main purpose, namely, to rebrand the drones as a product.[15] The humanitarian ethos has become an important commodity for the drone manufacturers in relation to the general public, where vendors have been irritated by critical news coverage of the civilian consequences of the use of drones in combat: the drone industry (individual manufacturers, but above all lobbying groups such as the US Association of Unmanned Vehicle Systems International (AUVSI), the British Unmanned Aerial Vehicle Systems Association (UAVS) and ASTRAEA (Autonomous Systems Technology Related Airborne Evaluation and Assessment)) perceives itself to have a need for presenting itself as humanitarian, in order to have legitimacy, with "drone stakeholders" stressing that "drones don't just end human life, they also save it".[16] Moreover, the field of humanitarian drones is a supply driven field: we think Hayes, Jones and Töpfer's observation of the EU market that civilian drone manufacturers often seem to offer solutions in need of a problem, is relevant for

the humanitarian field as well.[17]

Peacekeeping

We now turn to a second example of "Good Drones", namely, peacekeeping drones. In 2015, a UN Expert Panel on Technology and Innovation in UN Peacekeeping called for drones to be integrated into all UN peacekeeping missions.[18] According to the expert panel, drones offer advantages in the realms of surveillance, reconnaissance, documentation, and (potentially) deterrence. Generally, the "drone appeal" is also the perceived advantage of deploying potentially fewer "boots on the ground": if drones can take care of certain mapping exercises and contribute to specifying the concrete needs in certain areas, it will save scarce resources. Drones may also provide a first overview of the security situation in a given area, helping peacekeepers to assess associated risks before entering with troops. The first mission to acquire a drone capability was MONUSCO, the UN Stabilization Mission in the Democratic Republic of the Congo. After the 2012 fall of Goma, at the hands of the M23 guerrillas, MONUSCO was severely criticized for having been ineffectual and incompetent. In March 2013, the UNSC augmented MONUSCO with a Force Intervention Brigade, which was mandated to "take all necessary measures" to "neutralize" and "disarm" groups that posed a threat to "state authority and civilian security" (UNSC 2013a, 7-8). By the time the drone (supplied by Selex ES, an Italian company) was ready for the deployment in November 2013, the M23 guerillas announced that they were ending the rebellion, meaning that the drone never saw combat. Nonetheless, the MONUSCO drone raises several questions about the proliferation of peacekeeping drones. For example, Rwanda (which has been accused of aiding M23) initially opposed MONUSCO's deployment of drones, arguing that "it did not want Africa to become a laboratory for foreign intelligence devices".[19] Other critics have argued that MONUSCO lacks the ability to analyze or act on the intelligence gathered by the drone.[20] Some of the criticism has been directed at sheer incompetence: In September 2015, it was revealed that MONUSCO had failed to collect drone debris eight months after a crash, and had severely delayed paying

compensation to the farmers whose fields had been destroyed by the downed drone.[21]

More generally, there are concerns about the ownership and safety of the data collected and stored by peacekeeping drones. Without adequate procedures and regulations in place, information leaks may undermine the credibility of peacekeeping drones (and peacekeeping in general).[22] Peacekeeping drones can also impact civilian-military relations, as well as the relationships between peacekeeping missions and local populations. Nongovernmental organizations operating in and around Goma, for example, have voiced strong concerns that peacekeeping drones are blurring the line between military and humanitarian action, and that because communities have not been sufficiently informed about why drones are being used, they assume that the drones are being deployed for military purposes.[23] Such objections can be viewed in the context of a larger debate about the UN's integration of its military, peacebuilding, development, and humanitarian efforts; although the intent of the integration is to increase coherence and effectiveness, it may impact humanitarian action – particularly in Africa, which is the world's premier humanitarian emergency zone. Illustrative is an incident which has been repeatedly referred to by MONUSCO officials (to the media and in personal communication with the authors): In 2014, the drone spotted a vessel capsizing on Lake Kivu and alerted peacekeepers, who intervened. This incident has been used as an example of the humanitarian advantages of drones. However, the proliferation of robust peacekeeping mandates is increasingly becoming part and parcel of the "war on terror". In April 2013, "in support of the transitional authorities of Mali", the UNSC authorized MINUSMA, the UN Multidimensional Stabilization Mission in Mali, "to stabilize the key population centers, especially in the north of Mali and, in this context, to deter threats and take active steps to prevent the return of armed elements to those areas".[24] Under this more aggressive mandate, drones were perceived as being needed for reconnaissance – and in May 2015, drones provided by Sweden were reported operational.[25] But in the same region, armed drones are now being used in the "war on terror".

Conservation and Wildlife Protection

The third way that international development problems are being pressed into service for the Good Drone is the use of drones for conservation and wildlife protection, and as a spin-off from this, as a dedicated tool in the African war on poaching.[26] In recent years, the poaching of elephants, rhinos, and other wildlife has increased massively across the continent and appears to create a new form of drone deployment. Conservationists' traditional techniques for monitoring wildlife and their habitats face cost, efficiency, and practical constraints, which necessitate the development of new methods. Thus, drones have been used to monitor habitats and both terrestrial and marine wildlife, as well as to detect changes in land use.[27] In Zambia, for example, drones have been used to detect the presence of chimpanzees; they have also been used in Gabon, to detect the fruiting trees associated with chimpanzees.[28]

While the combination of widespread drone use and improvements in data processing technology raises important privacy issues for conservationists, the use of drones in anti-poaching efforts evoke the most difficult questions. Drones are currently being used to combat elephant and rhino poaching in the Democratic Republic of the Congo, Kenya, Namibia, South Africa, Tanzania, Zambia, and Zimbabwe. The use of drones to intercept and arrest poachers can lead to dangerous – even lethal – consequences.[29] According to the Game Rangers' Association of Africa, the massive market demand for illegal game has led to the death of about a thousand rangers over the past ten years. Poachers are often heavily armed, and rangers are increasingly likely to find themselves in combat situations.[30] But poachers are at bodily risk as well: in 2014, for example, in South Africa' Kruger National Park, one poacher was killed by a ranger who was acting on information gathered by a drone. As reported by the Shadow View Foundation, which was working in collaboration with local rangers, Shadow View had translated aerial information from the drone into strategic guidance for the rangers' ground forces; during the ensuing firefight, one poacher was killed.[31]

Whereas conservationists might argue that drones are merely visual aids for rangers, we would suggest that the use of drones

inevitably changes in significance when conservation is reframed as a "war on poaching" – one that is implicitly or explicitly modelled on the "war on terror" and that relies, as does the "war on terror", on military-grade weapons;[32] and which draws ever larger orbits of civilian life onto the national security agenda. As part of this framing, the United States claims that groups it has designated as terrorist (such as Somalia's Al-Shabaab and Uganda's Lord's Resistance Army) reap profits from the illegal wildlife trade.[33] A 2014 White House fact sheet explains that "like other forms of illicit trade, wildlife trafficking undermines security across nations".[34] When framed in this way, drones become a cheap and effective tool in "the fight to save elephants and rhinos",[35] and thereby masking and covertly contributing to legitimating the more aggressive activities. It is a view that sidesteps an important distinction: using drones to monitor animals and to target poachers are qualitatively and morally different activities. Thus, more debate is needed on the dual functions of drones in conservation work.

Challenges for Ethical Drone Use

Technical Aspects: Security, Malfunction, Human Error

In addition to the type of "good" purposes the typology above helped us get a better understanding of, there is also a set of crosscutting "bad" and "good" attributes that go into the making of "Good Drones". The prospect of increased numbers of drones in civil airspace generates a host of safety and security questions. Airspace safety issues are more inherent in embracing new technology than the potential for misuse.[36] Drones collide, fall down, malfunction or get lost. For example, more than 400 large US military drones have crashed in major accidents around the world since 2001.[37] A persisting industry challenge has been to equip drones with effective collision warning and avoidance systems to be able to share airspace with other aircraft (note the emergence of geo-fencing and in-built restrictions) and to create safe landing systems (such as parachutes).

We are currently in what one industry actor describes as the "amateur's hour" with the emergence of a host of new and old players who want to invent, build, fly and find new uses for

drones.[38] However, industry players increasingly perceive the hobbyist use of drones both as disorderly, and as a source of disorder. Hobbyists fly too far, too close, too low and in places they shouldn't, and as a result jeopardize safety, security and privacy. Frequent reports of "near misses", has created serious regulatory concern about the threat of midair collision between drones and commercial aircraft. In Australia, people are fined for crashing drones over police operations,[39] and in the US (and other places) there have been reports of drone operators delaying the landing of medical helicopters.[40] Moreover, the issue of insurance has so far received little attention in discussions of safety, as the British industry group UAVS now expresses concern that "many UAV operations carried out whether legally or more often illegally have been performed without this appropriate third party liability insurance in place."[41]

Hence, the framing of "Good Drones" must be seen as part of the general drone proliferation which is now understood to engender various forms of disorder that needs to be tackled through denouncing, educating or distancing oneself from hobbyists and irresponsible uses. In addition to the safety and nuisance issue, drone proliferation in civil airspace is increasingly also seen to present a national security risk. Just as drones are touted as having "endless potential" to uphold public order, they are also increasingly recognized as enabling endless potential for criminal or terrorist activities; including stalking, industrial espionage, smuggling by drug cartels, airdrops to inmates or terrorist attacks. Drones can be hacked to steal, spoof or destroy information, or in order to change its flight path. Drones can be used to embarrass or threaten people, and be flown illegally into controlled airspace and in contravention of air navigation orders.[42] Particularly significant and increasingly prevalent is the argument that the misuse of drones poses a serious national security threat.

Construing Responsibility and Legality

In addition to the specific articulations of "good" attached to the work description of the drone, industry, policy and academic discourse display some generic crosscutting notions with respect to

what it takes to be good across military, emergency and civil sector use. Drones should be legal (legally flown for legal purpose) but the legality/legitimacy equation is somewhat fussy: drone use can be claimed to be legal, as in targeted killing, but without being seen as legitimate by the public and civil society or even the international community. A journalism drone recording violent methods of crowd control against unarmed protesters may be illegal but may widely be seen as legitimate. While there is increasing concern about the need for appropriate insurance schemes for all types of drone usage, and flying without it is seen by most actors as illegitimate (although this in practice may be common), regulators also seem to indicate that insurance cannot make up for a legality-deficit.[43] It appears that drones in civil airspace are generally seen as legitimate if they are flown "responsibly" with safe and technically sound hardware and by competent and responsible pilots. However, there is little agreement about what it means to fly responsibly, whether this *has* to be within line of sight or only during the day, or not trespassing over private *and* public property. Neither is there a settled consensus on what it means to be a competent pilot: for example, concerning the need for training and licensing.

Do Drones Generate War? Critical Questions about the Humanitarian Combat Drone

In international affairs, the humanitarian logic has often played an important role in legitimizing interventions and the use of military force. In this context, drones come with a host of promises to protect civilians, to "clean up combat" and make war more humane: drones are construed as "a step forward in humanitarian technology".[44] Generally, proponents of humanitarian combat drones cite their potential for improving the *jus in bello* compliance: because of the superior view of the battlefield, it is argued that drone combat teams can make more "ethically" accurate determinations of proportionality by being better able to discriminate between innocent civilians and legitimate targets, thus lowering the risk of civilian harm.[45]

Whether for targeted killing operations or surveillance, another argument is that drones are deployed instead of "boots on the

ground",[46] and that they therefore, by conducting the military operation from a distance, save lives. This is to the benefit of host populations but also to the benefit of one's own soldiers, their families and communities. By offering "surgically precise targeting", drones promise to be a humane weapon, in the sense that collateral damage is dramatically reduced compared to previous attempts at "precision bombing" from fighter planes. This has led commentators to describe combat drones as the "most discriminatingly humanitarian technology" available.[47] Drones are also supposed to make military action more effective and shorten the timespan of military activity, through achieving strategic and tactical objectives more quickly (and cheaply). According to their proponents, by selectively eliminating targets, drones minimize the risk of a conflict escalating into full-scale war.[48] As military engagements are taken by its supporters as "inevitable", the use of combat drones appears to acquire an air of de facto humanitarian intention – being "the most humanitarian" option available. However, when drones are presented as enabling military operations that are more "humanitarian" in their ways of operating, they may contribute to a general legitimization of the use of force.

Thus, some observers hold that armed drones have become a push factor for military action: instead of being dictated by a coherent overall strategy, the scope of military action is determined by the number of designated individuals drones can target. One development that is receiving increasing attention is that just as drones support the proliferation of the "war on terror", war supports the proliferation of drones: drones are increasingly seen as necessary and effective responses to what are framed as the key contemporary threats – terrorism and militant Islamism. The relaxation of US export restrictions on weaponized drones from 2015; increased Chinese and Israeli exports of weaponized drone platforms; and the emergence of effective, home-grown, weaponized platforms will likely increase the use of drone strikes as substitutes for political settlements. Critical attention should be given to the use of humanitarian rationales in support of unmanned warfare, regardless which country deploys it.

Conclusion: How to Frame Ethical Drone Use in Global Governance?

This article has examined the ways in which the Good Drone is construed through discourses in global governance with high degrees of legitimacy, whether it is to provide humanitarian relief, enforce peace or save wildlife. Making a first attempt to conceptualize the use of drones in global governance, with a focus on foreign and international aid, we have argued that the "Good Drone" may mean a lot of different things according to the context or the actors who employ the term. This will also be the case as drones become a more regular feature of international bilateral and multilateral aid initiatives. The article is a first attempt to carve out a research agenda. Future research must consider how and why different actors create and promote specific notions of "Good Drones", and what they aim to achieve, in aid and beyond. The Good Drone must be examined as a material and symbolic entity: this includes both the direct practical effects (including distributive effects, unintended effects, or the consequences of drones being put to other uses than originally envisioned) for the governance of international aid as well as the indirect legitimating effects of the Good Drone. For the purposes of this article, we have explored the Good Drone as a discursive figure, as a techno-social practice and as an ethical, legal and political concept. We have tried to unpack the different meanings of "good" in the discourse surrounding the actual development and use of drones, whether arising from the language of technological innovation, commercial imagination or political rhetoric.

In conclusion, we call for studying the Good Drone in new settings. So far, mainstream discussions of drone manufacturers tend to assume that the industry is a monolithic, geographically concentrated entity. Nevertheless, as the innovation, production and use of drones continue to spread across Latin America, Africa and Asia, these emerging practices are in need of further study and critical investigation, in particular in light of lagging regulation of airspace and data protection and privacy in many countries. There has been very little scholarly attention to both uses of drones by non-Western actors, and in general how drone uses are experienced

locally by those finding themselves under the drone stare. We hope that the analytical observations and conceptual insights offered in this article can help illuminate these issues more broadly.

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[1] Peter Singer, *Wired for War: The Robotics Revolution and Conflict in the 21st Century*, New York: Penguin Press, 2009; Derek Gregory, "From a View to a Kill: Drones and Late Modern War", *Theory, Culture & Society,* Vol. 28, No. 7-8 (2011a); Derek Gregory, "The everywhere war", *The Geographical* Journal, Vo. 177, No. 3 (2011b); Sarah Kreps and John Kaag, "The Use of Unmanned Aerial Vehicles in Contemporary Conflict: A Legal and Ethical Analysis", *Polity*, Vol. 44, No. 2 (2012), pp. 260-285; D. Brunstetter and M. Braun, "The Implications of Drones on the Just War Tradition", *Ethics and International Affairs*, Vol. 25, No. 3 (2011), pp. 337-358; Grégoire Chamayou, *La théorie du drone*, Paris: Edition La Fabrique, 2013.

[2] Brad Bolman, "A Revolution in Agricultural Affairs: Dronoculture, Precision, Capital", in Kristin B. Sandvik and Maria G. Jumbert, eds., *The Good Drone*, London: Rouledge, forthcoming 2016.

[3] John Karlsrud and Fredrik Rosén, "In the Eye of the Beholder? UN and the Use of Drones to Protect Civilians", *Stability: International Journal of Security and Development*, Vol. 2, No. 2 (2013); T. Piiparinen, "Beyond the Technological Turn: Reconsidering the Significance of the Intervention Brigade and Peacekeeping Drones for UN Conflict Management", *Global Governance: A Review of Multilateralism and International Organizations*, Vol. 21, No. 1, 2015, pp. 141-160.

[4] Kristin B. Sandvik and Kjersti Lohne, "The Rise of the Humanitarian Drone: Giving Content to an Emerging Concept", *Millennium-Journal of International Studies*, Vol. 43, No. 1, 2014, pp. 145-164.

[5] Mark Salter, "Toys for the Boys? Drones, Pleasure and Popular Culture in the Militarisation of Policing", *Critical Criminology*, Vol. 22, No. 2, 2013, pp. 163:177; Maria G. Jumbert, Creating the EU Drone: Control, Sorting and Search and Rescue at Sea, in Kristin B. Sandvik and Maria G. Jumbert, eds., *The Good Drone*, Routledge, 2016; Kristin Bergtora Sandvik, "The Political and Moral Economies of Dual Technology Transfers: Arming Police Drones", in Ales Zavrsnik, *Drones and Unmanned Aerial Systems*, Berlin: Springer International Publishing, 2016.

[6] Kristin B. Sandvik and Maria G. Jumbert, eds., *The Good Drone*, Routledge, 2016.

[7] Thomas G. Weiss, "Governance, good governance and global governance: Conceptual and actual challenges", *Third World Quarterly*, Vol. 21, No. 5, 2000, pp. 795-814.

[8] Jumbert, Maria Gabrielsen & Kristin Bergtora Sandvik, "Introduction: What Does It Take to Be Good?", in Kristin B. Sandvik and Maria G. Jumbert, eds., *The Good Drone*, London: Rouledge, forthcoming 2016.

[9] P. Adey, M. Whitehead and A.J. Williams, "Introduction: Air-target distance, reach and the politics of verticality", *Theory, Culture & Society*, Vol. 28, No. 7-8 (2011), pp. 173-187; Gregory 2011a; Caroline Holmqvist, "Undoing War: War Ontologies and the Materiality of Drone Warfare", *Millennium – Journal of International Studies*, Vol. 41, No. 3, 2013, pp. 535-552.

[10] Geoffrey L Herrera, "Technology and International Systems", *Millennium – Journal of International Studies*, Vol. 32, No. 3, December 2003, pp. 559-593; S. Fritsch, "Technology and Global Affairs. International Studies Perspectives", No. 12, 2011, pp. 27-45; Daniel R. McCarthy, "Technology and 'the International' or: How I Learned to Stop Worrying and Love Determinism", *Millennium – Journal of International Studies*, 2013; Wiebe Eco Bijker and John Law, *Shaping Technology/Building Society: studies in socio-technical change*, MIT press, 1992.

[11] I. Kroener and D. Neyland, "New Technologies, Security and Surveillance", in David Lyon, K. Ball and K.D. Haggerty, eds., *Routledge Handbook of Surveillance Studies*, Abingdon: Routledge, 2012.

[12] C. Kennedy and J. I. Rogers, "Virtuous Drones?", *International Journal of Human Rights*, Vol. 19, No. 2, 2015, pp. 211-227.

[13] Kristin Bergtora Sandvik, "The Public Order Drone: Promises, Proliferation and Disorder in Civil Airspace", in Kristin B. Sandvik and Maria G. Jumbert, eds., *The Good Drone*, Routledge, 2016.

[14] Kristin Bergtora Sandvik et al., Humanitarian technology: a critical research agenda, *International Review of the Red Cross*, 2014, pp. 1-24; Kristin Bergtora Sandvik, "The humanitarian cyberspace: shrinking space or an expanding frontier?", *Third World Quarterly*, Vol. 37, No. 1, 2016.

[15] See also Kristin Bergtora Sandvik and Maria Gabrielsen Jumbert, Les drones humanitaires [Humanitarian drones], *RIS La Revue Internationale Et Strategique*, No. 98, 2015, pp. 139-146; Eric Cezne, Eric; Maria Gabrielsen Jumbert and Kristin Bergtora Sandvik, Drones como Veículos para a Ação Humanitária: Perspectivas, Oportunidades e Desafios [Drones as vehicles for humanitarian action: perspectives, opportunities and challenges], *Conjuntura Austral,* Vol. 7, No. 33-34, 2016, pp. 45-60.

[16] Kristin B. Sandvik and Kjersti Lohne, The promise and perils of 'disaster drones', *Humanitarian Exchange Magazine*, Issue 58, July 2013, http://www.odihpn.org/humanitarian-exchange-magazine/issue-58/the-promise-and-perils-of-disaster-drones.

[17] Ben Hayes, Chris Jones and Eric Töpfer, *Eurodrones Inc*., London: Transnational Institute and Statewatch, 2014, https://www.tni.org/en/eurodrones.

[18] Pilgrim, Sophie, "Are UN drones the future of peacekeeping?", 2015, http://www.france24.com/en/20150409-un-drones-future-peacekeeping-democratic-republic-congo-fdlr-humanitarian-drc.

[19] Charbonneau, Louis, "Rwanda opposes use of drones by the UN in eastern Congo", January 9, 2014, http://www.reuters.com/article/2013/01/09/us-congo-democratic-un-rwanda-idUSBRE90802720130109.

[20] O'Grady Siobhán, "How a U.N. Drone Crashed in Congo and Was Promptly Forgotten", September 10, 2015, http://foreignpolicy.com/2015/09/10/how-a-u-n-drone-crashed-in-congo-and-was-promptly-forgotten/.

[21] O'Grady 2015.

[22] Karlsrud and Rosén 2013.

[23] World Vision, "Unmanned Drones Used by UN Peacekeepers in the DRC", July 10, 2014, http://www.worldvision.org.uk/news-and-views/latest-news/2014/july/unmanned-drones-used-un-peacekeepers-drc/.

[24] UNSC (2013) *S/RES/2100*, April 25, 2013. New York: United Nations, 7.

[25] Jeremy Binnie, "Sweden deploys UAVs to support UN mission in Mali", IHS Jane's 360, May 18, 2015, http://www.janes.com/article/51523/sweden-deploys-uavs-to-support-un-mission-in-mali.

[26] Kristin Bergtora, "African Drone Stories", *BEHEMOTH a Journal on Civilisation*, Vol. 8 No. 2, 2015, pp. 73-96.

[27] Serge Wich, Lorna Scott, and Lian Pin Koh, "Wings for Wildlife: the use of Conservation Drones, challenges and opportunities", in Kristin B. Sandvik and Maria G. Jumbert, eds., *The Good Drone*, Routledge, 2016.

[28] A. C. Van Andel et al., "Locating chimpanzee nests and identifying fruiting trees with an unmanned aerial vehicle", *American Journal of Primatology*, Vol. 77, 2015, pp. 1122-1134.

[29] Wich, Scott, and Koh, 2016.

[30] Game Rangers Association of Africa (n.d.), http://www.gameranger.org/.

[31] ShadowView (2014) Poachers caught by Shadow View drones, http://www.shadowview.org/news/poachers-caught-shadowview-drones/.

[32] Goldhammer, Z., "Can You Wage a War on Poaching?" August 7, 2014, http://www.theatlantic.com/international/archive/2014/08/can-you-wage-a-war-on-poaching/375760/.

[33] *Ibid*.

[34] White House (2014) FACT SHEET: U.S. Support for Combating Wildlife Trafficking, https://www.whitehouse.gov/the-press-office/2014/08/04/fact-sheet-us-support-combating-wildlife-trafficking.

[35] Goldhammer 2014.

[36] Cho, Yeonmin, "Lost in Debate: The Safety of Domestic Unmanned Aircraft Systems", *Journal of Strategic Security*, Vol. 7, 2014.

[37] Whitlock, "When Drones Fall from the Sky", June 20, 2014, http://www.washingtonpost.com/sf/investigative/2014/06/20/when-drones-fall-from-the-sky/.

[38] Steve Roest, personal communication.

[39] Claire Reilly, "Man fined for crashing drone over police operation in Melbourne", December 19, 2014, http://www.cnet.com/au/news/man-fined-by-casa-crashing-drone-police-operation-melbourne/.

[40] WDTN, "Drone delays medical helicopter landing at OH hospital", August 27, 2014, http://www.12newsnow.com/story/26385252/drone-delays-medical-helicopter-landing-at-oh-hospital.

[41] https://www.uavs.org/insurance, n.d.

[42] Mike Segar, "'Reckless or malicious' civilian drone use 'harassing' public-police", November 18, 2014, http://rt.com/uk/206547-drones-public-use-nuisance/.

[43] Alan, Levin, A., "Insurers Step Up for Drone Pilots Unwilling to Wait on FAA Rules", March 6, 2015, http://www.bloomberg.com/news/articles/2015-03-06/insurers-step-up-for-drone-pilots-unwilling-to-wait-on-faa-rules.

[44] Kenneth Anderson, "Targeted Killing in US Counterterrorism Strategy and Law, A Working Paper of the Series on Counterterrorism and American Statutory Law, a joint project of the Brookings Institution, the Georgetown University Law Center, and the

Hoover Institution", May 11, 2009, p. 13, https://www.law.upenn.edu/institutes/cerl/conferences/targetedkilling/papers/AndersonCounterterrorismStrategy.pdf.

[45] For a critique, see: Sarah Kreps and John Kaag, "The Use of Unmanned Aerial Vehicles in Contemporary Conflict: A Legal and Ethical Analysis", *Polity 44,* No. 2, 2012.

[46] Audrey Kurth Cronin, "Why Drones Fail. When Tactics Drive Strategy", *Foreign Affairs*, 2013, Vol. 94, pp. 44-54.

[47] Anderson, K. (2009), "Targeted Killing in U.S. Counterterrorism Strategy and Law", in Wittes, B. (ed.), *Legislating the War on Terror: An Agenda for Reform*, pp. 346-400, Washington, DC: Brookings Institute Press, at 13, cited in Deri, Aliya Robin, "'Costless' War: American and Pakistani Reactions to the US Drone War", *Intersect: The Stanford Journal of Science, Technology and Society*, Vol. 5, 2012.

[48] For a critique, see: Daniel Brunstetter and Megan Braun, "The Implications of Drones on the Just War Tradition", *Ethics and International Affairs*, 25, No. 3, pp. 337-358, p. 346.