# African Drone Stories

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Abstract:

The process of normalizing drones throughout Africa has received little scholarly attention. Discussions of drone proliferation tend to assume that the drone industry is a monolithic, geographically concentrated entity, and that drone use will look the same and engender the same controversies, regardless of geography. The article aims to think through African drone proliferation by analyzing how drones and Africa are being construed as solutions to each other's problems, and by exploring the interface between images of Africa and the notion of the drone as a game changer for development and security. The article also reads the African drone in the context of the early deployment of surveillance drones in Africa in the 1970s, as well as the legacy of technological imperialism and colonial airpower. The perception of Africa as being in need of external drone intervention dovetails with the drone industry's efforts to identify and promote good uses for drones — efforts that are central to increasing the legitimacy of drones in the eyes of the Global North. Hence, the article argues that the 'African drone' has become a vehicle for the production and distribution of norms, resources, and forms of legitimacy that have implications for drone proliferation, both within and outside Africa. [1]

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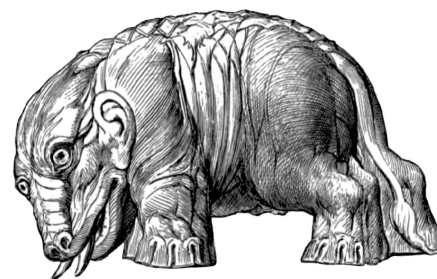
In early 2015, I received an invitation to travel to Johannesburg, to attend the first-ever annual Unmanned Autonomous Systems Africa forum. **[2]** According to the invitation, "the use of unmanned systems is increasing across myriad of sectors on the African continent. Companies, government departments and NPOs [nonprofit organizations] are realising the cost and safety benefits that can be derived from unmanned systems." The forum promised to bring together manufacturers, operators, and users of unmanned autonomous systems, from a range of industries, to discuss the potential for such systems in Africa — including the potential for commercialization.

In the Global North, where the drone industry still has its most important markets, drones are widely seen as technologically immature; moreover, their proliferation is limited by a deep cultural stigma, as well as by concerns about potential threats to security and privacy posed by domestic drone surveillance. **[3]** Although the invitation to the forum noted that Africa also suffers from "barriers to implementation"—specifically, "legislation and lack of information" — the conference materials also made it clear that the "promise" of drones is in many respects a reality in Africa: the technology is now used across the continent.

So far, the many parallel processes that are normalizing drones throughout Africa have received little scholarly attention. To address this gap, I will explore a particular aspect of contemporary drone discourse: namely, the interface between images of Africa and the notion of the drone as a game changer.

"Game changer" is one of the phrases most often applied to drones; for many, drones hold the promise of changing not only how things are done and by whom, but what's possible within (or despite) a given context. In Africa, drones are explicitly spoken of as game changers in discourses on development (Maisonet-Guzman 2014), peacekeeping (Spooner 2015), humanitarian aid (Smedley 2015), and the "war on poaching" (Chiaramonte 2015). What's important for my purposes here, however, is that such discourses are linked to particular ways of imagining Africa itself. Thus, one of my goals is to unpack the mutually constitutive relationships that create "the African drone."

My goals and my approach are largely empirical: relying on my long-standing engagement with industry, academia, civil society, the media, and the public on the subject of drones, **[4]** I have put together a set of observations on the interplay between drones and Africa. My sense is that there is a particular African drone story worth telling at this point in time. As I see it, the concept of the African drone has become a vehicle for the production and distribution of norms, resources, and forms of legitimacy that have implications for drone proliferation, both within and outside Africa.

There is a rich literature dealing with images of Africa in the postcolonial and neoliberal context. **[5]** I propose that within contemporary drone discourse, Africa is construed as a site of intervention shaped by three factors: the legacy of colonial and postcolonial governance, the contemporary

[2] The title of the forum reflects the industry's preference: what I call "drones," it calls UASs (unmanned aerial systems), RPAs (remotely piloted aircraft), or UAVs (unmanned aerial vehicles).

[3] I rely on a broad conceptualization of the "drone industry": as used here, the term refers mainly to military manufacturers based in the United States, but also to established European, Israeli, and South African military manufacturers, as well as to start-up manufacturers in the United States and elsewhere.

[4] See, for example, Sandvik and Lohne (2014); Gabrielsen and Sandvik (2016), and Lidén and Sandvik (2016).

[5] See, for example, Mamdani (1996), Ferguson (2005), and Chabal (2009).

[6] The humanitarian emergency zone is where a global system of international organizations, donor and troop-contributing nations, and nongovernmental organizations operate in parallel with, as well as across, domestic state structures to respond to and administer a permanent condition of crisis (Ferguson 2006, 41).

logic of the humanitarian emergency zone, [6] and the rhetoric of emerging markets. External actors — that is to say, drone operators — are portrayed as the solution to the problems of ill health, poverty, and general "underdevelopment" that are specifically defined as African. In fact, in their discussions of drones, both industry and the media implicitly and explicitly invoke the otherwise unfashionable concept of underdevelopment, for which drones are held up as the appropriate antidote: the theory is that drones can not only help Africa move beyond insecurity, colonial ills, and humanitarian crises, but can prevent it from languishing in the immature stages of capitalism.

In the Global North, drones are generally perceived as "underdeveloped" technologies that are subject to a range of risks, from pilot error to mechanical failure, cyber-attacks, and bad weather. [7] Africa, however, is being constituted as a field with better opportunities for product development: a place where drones, freed from the restrictions on access to civil airspace that pertain in the Global North, can obtain legitimacy as "good" technology.

Thus, the perception of Africa as being in need of external drone intervention dovetails with the drone industry's efforts to identify and promote good uses for drones — efforts that are central to increasing the legitimacy of drones in the eyes of the Global North. Equally important is the industry's practical need to test and improve the technology by increasing flight hours and trial applications. Compared with the relative inaccessibility of United States (US) and European airspace, African airspace is an attractive testing site. I suggest that Africa is the perfect recipient of "good drone interventionism" — not only because the continent is construed as being eternally in need of externally imposed aid, but because of its (relative) inability to resist the rescue and/or investment efforts of outsiders, regardless of whether they target African territory or African airspace. [8]

The article consists of six principal parts: (1) a consideration of drones as game changers; (2) an analysis of the ways in which drones are presented as a means of "leapfrogging" past Africa's development problems; (3) a discussion of the imagined uses of the "Ebola drone" as a key player in the "war on Ebola"; (4) an examination of drones as a response to security problems (e.g., insurgencies and terrorism) that have been "created" by Africa; (5) an analysis of the ways in which Africa is supporting the rise of "good drones," and thereby helping to legitimize the technology; and (6) brief reflections on the future of drone proliferation in Africa and beyond.

Game Changers for Development and Security: Conceptualizing the African Drone

A game changer is a new element that significantly alters an existing situation or activity. In what senses are drones game changers? With their promise of real-time, more detailed views (as well as more detailed views) from above, drones are believed to offer enhanced situational awareness and faster and better-informed decision making down below. For weaponized

[7] The drone industry usually blames the immaturity of the technology on the restrictions limiting drone use in civil airspace.

[8] This inability can be traced, in part, to underfunded civil aviation authorities; outmoded or inadequate regulation of civil aviation; insurance and data-protection issues; and the scant amount of debate on drones in African civil society. But see Wanjala (2015) on legal challenges pertaining to the increasing number of drones in Kenya.

[9] Briefly summarized, a much-criticized politico-military rationale for the use of drones in war has been that the "drone stare" — a video feed in near-real time — allows the operator to see and strike with "surgical precision," not only minimizing civilian casualties but also making war cheaper and more humane by averting the need to put boots on the ground.

drones, the expectation is one of "surgical" precision in the selection and striking of targets. **[9]** Arguments about efficiency and low cost permeate discussions of civilian and military drones alike: drones are cheaper to fly than commercial aircraft, fighter jets, and police helicopters. They are also cheaper and safer than "boots on the ground." Drones provide more affordable and versatile surveillance and killing capacity, and they are soon expected to offer a range of advantages for cargo carrying. And in places where such activities would otherwise be practically or politically impossible, civilian and military drones enable information gathering, targeting, and supply. Finally, the appeal of drones as game changers can be traced to the belief that new technologies — in particular, robotics and information and communication technology (ICT) — can solve virtually any problem.

While the game-changer rhetoric is a staple of the drone discourse outside Africa, the focus here is on the ways in which the notion of drones as game changers corresponds to particular ways of imagining Africa and Africans. The construction of the African drone as a game changer is subject to political contestation and to the realities of professionalism, finance, and politics (Bijker and Law 1992; Herrera 2003), but it is also shaped by the continent's historical legacy of technological imperialism and colonial airpower (Headrick 1981; Omissi 1990; Killingray 1984). Thus, any reading of the perceived capacities and attractions of unmanned technology must also take into account the unbroken link to the African colonial context.

The deployment of drone technology in the African setting supports a set of political, military, humanitarian, and commercial rationales and projects that must be examined — not for the oft-cited "newness" of drone technology, but for the productive and historically embedded power that technology represents. Historically, technological innovations that have lowered the economic and human cost of penetrating, conquering, and exploiting new territory were among the preconditions for imperialism (Headrick 1979). The innate qualities of airpower, in particular — speed, predictability, and an unrivalled view from above — were important tools for colonial governance (Headrick 1979; Omissi 1990).

The first use of airpower in Africa occurred during the Italo-Turkish War, fought in Libya in 1911–1912. In their conquest of Morocco in 1912–1914, the French used aircraft for reconnaissance and bombing (Killingray 1984). British use of airpower to enforce civil control in sub-Saharan Africa began in 1916, in the Sudan and British Somaliland. And in 1920, airstrikes undertaken by the Royal Air Force against the Somali Dervishes became "one of the most potent arguments for air substitution elsewhere." (Omissi 1990, 54) Surveying the 1920s, a British Air Staff memorandum noted that "the use of air power as an instrument in the control of semi-civilized countries . . . became a permanent feature of our system of imperial defence." (Killingray 1984, 432f.)

The "politics of substitution" was a precursor to the boots-on-the-ground argument of today: in sub-Saharan African colonies, the idea of substituting airpower for infantry found a "more ready welcome from cost-conscious colonial officials and army officers." Thus, airpower enabled the British

Royal Air Force to "guard against incipient unrest from 'a semi-seditious, pseudo-religious under-current of pan-Ethiopian aspirations'" in East and Central Africa, and internal unrest (in Nigeria) and possible French aggression in West Africa (Killingray 1984, 441).

The use of surveillance drones in Africa initially emerged as a part of the colonial apparatus. South Africa's nearly forty-year history of military drone development and deployment, for example, is deeply embedded in the politics of the apartheid era. The first known prototype, the Champion, was developed by the South African Council for Scientific and Industrial Research in 1977 and delivered to the South African Air Force in 1978. Some of the Champions (most likely operated by South Africans) were also supplied to Rhodesia for use in the Zimbabwean liberation struggle (1964–1979), which was also known as the Rhodesian Bush War (Secret Projects 2014; Oliver 2015). Finally, a fleet of South African and Israeli drones "saw extensive combat duty across the southern African theatre between 1980 and 1987, operating from Mozambique to Angola." (Oliver 2015)

The contemporary emphasis on the "discretion" of drones and their minimal needs for infrastructure reflects previous thinking on colonial airpower. Writing on Iraq, Satia (2014, 7) notes that "with wireless communications and minimal infrastructure, air control enabled dominance of a region in which more overt colonial rule was a political impossibility." In an increasingly anti-imperial and democratic world, air control allows covert pursuit of empire: drones "offer a means of surmounting the awkward problem of engaging in military action over an ostensibly sovereign country." (Satia 2014, 7)

Against this backdrop of technological imperialism, I offer two analytical prisms — "technological utopianism" and "technological fantasies" — for making sense of how the African drone is being constituted in the realms of development and security.

Development and Drone Utopianism

According to Segal (1986), technological utopianism is a belief in technological progress as inevitable, and in technology as the vehicle for

> "achieving a "perfect" society in the near future. Such a society, moreover, would not only be the culmination of the introduction of new tools and machines; it would also be modelled on those tools and machines in its institutions, values and culture." (Segal 1986, 119)

I conceive of "drone utopianism" as a corollary of technological utopianism. In the cosmology of drone utopianism, technology substitutes for politics, becoming the solution for a raft of problems — from insecurity to resource inequality and injustice; it also offers a means of gaining mastery, in the present, over the risks and uncertainties of the future (Gabrielsen Jumbert and Sandvik 2016).

Currently, the most prominent manifestation of drone utopianism is

the rush on the part of the private sector — including giants like Amazon, DHL, and Google — to develop and promote the use of small cargo drones. [10] Most of the public discourse, however (including media coverage), has focused on the potential use of cargo drones to distribute aid (see, for example, Andrade 2013). In this discourse, such drones are portrayed as a panacea for all the problems attending relief provision, evoking a utopian vision of development that is void of discomfort, waste, physical insecurity, and the risk of jeopardizing foreign policy objectives or contradicting mission statements. In this vision, drones are not only rhetorically tasked with delivering aid, ending hunger, and providing health care, but with "connecting Africa" by effectively transporting goods, and thereby enhancing private enterprise. [11]

Thus, from the perspective of drone utopianism, Africa can be saved by technological progress. At the same time, drone utopianism itself depends, at least in part, on a particular idea of "Africa": in this symbiotic relationship, Africa needs drones, and drones need Africa.

Security and Technological Fantasies

Crang and Graham (2007) use the term "technological fantasies" to describe the creation of narratives that position emergent technologies as necessary — and effective — responses to dire security threats. These technological fantasies are not simply narrative devices used to achieve desired ends; they also actively shape larger security cultures and afford them influence (Monahan and Mokos 2013).

There is significant literature discussing the technological fantasies that can be found in the rhetoric surrounding the use of armed drones. Lidén and Sandvik (2016) have noted that the technological optimism associated with drones (military and non-military alike) is especially prone to viewing drones as the answer to various security issues. By this logic, drone strikes become the preferred mode of preventing and managing the "imminent threat" posed by individuals identified as insurgents or terrorists. The risk of drone-based containment strategies, however, is that nations will be dragged into war without any clear purpose, ethical rationale, or exit strategy. Thus, the kinds of operations and activities that drones enable have the potential to lock an unprecedented number of external actors into new trajectories of policy making, spending, and use of force — what Duffield (2007) has labelled "unending war".

Leapfrogging: Drones versus Roads

Leapfrogging refers to bypassing the stages of investment or capability building through which countries were previously required to pass in order to achieve a particular level of economic development (Steinmueller 2001); in other words, it refers to the opportunity to adopt advanced or state-of-the-art technology without first adopting its precursors (Fong 2009). [12] The notion is embedded, for example, in the idea that African countries

[10] The Kaman K-MAX, a US cargo helicopter first used in 2011, is the only known example of the long-term operation of a cargo drone. The K-MAX was deployed to supply troops at remote outposts in Afghanistan (thus protecting the lives of cargo-helicopter pilots, soldiers at the bases, and those who would otherwise have had to undertake dangerous journeys by road), as well as to support the more abstract goals of saving of lives by contributing to nation building in Afghanistan and protecting US homeland security in the war on terror.

[11] Later in the article, drones are discussed as instrumental for creating and sustaining new markets, and as ideal vehicles for bypassing ("leapfrogging") infrastructure investment.

[12] Borrowing from the scholarship on leapfrogging and ICT (Steinmueller 2001), I offer an analogy that has significant relevance to the African context: over the past decade, there has been great optimism regarding the leapfrogging potential of ICT in Africa (with regard to mobile phones in particular). Like ICT, drones are experiencing a rapid and continuing decline in cost, combined with a growing range of *applications*. Also like ICT, drones are easily transported, internationally available, and do not require massive infrastructure investments. Steinmueller (2001) describes ICT technology as appearing "readily transferable to whichever country can make productive use of them". I argue that the same assumption applies to drones, including the belief that they have the potential to contribute to development leapfrogging.

with poor road infrastructure could "leapfrog right from donkeys to drones" (Feltman 2014).

The rhetoric of humanitarian crisis permeates development discourse; the result is a fusion of the emergency ethos with concerns about underlying structural problems. This fusion yields a humanitarian logic that is explicitly transitional and utilitarian: for example, as part of "a new strategy of fighting poverty from the air", there have been several proposals to provide rural Africa with networks of humanitarian cargo drones (Chow 2012). In a related vein, several commercial players have described plans for cargo drones that will initially engage in humanitarian aid, but that will then transition to purely commercial activities, as they undergo further development and become able to carry more cargo. For example, Jonathan Ledgard, director of Afrotech, notes that the payloads carried by the first cargo drones will probably be "units of blood to keep alive children who otherwise would perish. But they will quickly evolve into larger and heavier craft until they can carry 20 kilos or more over distances of several hundred kilometers." (Ledgard 2014) Ledgard has also suggested that "one day, perhaps 40 percent of African trade could travel by drones. . . . That would boost economies and link cities, tribes and countries in lucrative trading channels." (Lagesse 2015)

Several features of the leapfrogging discourse are worth analyzing: first, leapfrogging is generally linked to the objective of rapid economic growth. In an environment where the absence of functioning markets is defined as one of the principal obstacles to such growth, some view drones as a means of overcoming "one of Africa's steepest challenges: a lack of transportation infrastructure that stymies trade." (Lagesse 2015) Second, the continent's lack of infrastructure — including power lines, airspace control, and commercial flights — is attractive to the drone industry: African airspace has been described as "less cluttered with flights that have slowed the adoption of commercial drones in North America and Europe." (Lagesse 2014) From this perspective, it is not drones but the absence of infrastructure that is the utopian factor.

Under the heading "Forget roads — drones are the future of goods transport", Andreas Raptopoulos, the founder and chief executive officer of Matternet, a drone start-up, has suggested that "following the lead of road systems in the West is a nearly impossible task for the African continent." (Raptopoulos 2013) Similarly, in an article titled "Making the Case That Africa Needs Drones More than Roads", Simon Johnson, the director of the Flying Donkey Challenge (a planned race between cargo drones around Mount Kenya), observes that "there's incredible growth happening there, but not a lot of infrastructure. Roads just can't be built fast enough. So why not use flying robots instead?" (Feltman 2014) One could argue, moreover, that in the African context, future infrastructure projects would be irresponsible: Raptopoulos has observed, for example, that not building roads means avoiding a "huge ecological footprint" (Raptopoulos 2013). And according to Jonathan Ledgard, drone highways entail "much less disruption to the environment than if new highways, tunnels or canals were

built." (Lagesse 2015; see also Ledgard 2014)

But will drones effectively eliminate obstacles to development? The leapfrogging discourse, with its images of "connecting Africa", uses drone utopianism as the basis for a utilitarian argument, yielding a moral economy that is intended to enhance the appeal of drones. Resistance to this argument usually takes the form of scepticism: critics ask whether the claims made for a technology's leapfrogging potential are realistic; whether, in an attempt to tap the potential of such technologies, developing countries should divert scarce resources from other projects; and what the expected returns, timing, and scale might be (Steinmueller 2001). The World Bank, for its part, has concluded

> "that a country's capacity to absorb and benefit from new technology depends on the availability of more basic forms of infrastructure. . . . It would be great if you could always jump straight to the high-tech solution, as you can with mobile phones. But with technology, as with education, health care and economic development, such short-cuts are rare. Most of the time, to go high-tech, you need to have gone medium-tech first." (Economist 2008)

The assumptions underlying utopian views of cargo drones should be subjected to critical scrutiny — not least because the implementation of such strategies has distributive consequences, particularly in relation to procurement and funding for research and development. For example, in discussing the potential of "Predators for peace", which would be used to deliver HIV/AIDS medication, Chow (2012) argues that drones can be game changers because they offer the potential not only to reduce or eliminate corruption, theft, and insecurity, but to circumvent interference from factors such as disasters and bad weather, which often compromise aid delivery. However, in response to Chow's endorsement of drones as a means of providing relief, an online reader commented, "This sounds like it's going to be really expensive. Do aid groups really have the money and resources to acquire and operate drone aircraft?"

Because the consequences of following leapfrogging strategies are a matter of life and death, proponents bear a heavy moral weight (Steinmueller 2001). In light of the ongoing struggle to secure access to health care and education for broad swaths of the African population, what does it mean, from an ethical perspective, to take seriously the argument (or even to make the argument) that the ambition to build roads should be forgone in favour of building drone highways?

The Ebola Drone: Technological Utopianism and the Insecurity of "Underdevelopment"

As a result of the abysmal state of national public health — as well as inattention and incompetence on the part of the international community — the Ebola outbreak that began in Guinea in late 2013 evolved into an epidemic, which was quickly redefined as a matter of security. By September

2014, President Obama had framed the outbreak as a national security issue (Klein 2014), and the United Nations (UN) had declared Ebola to be a threat to international peace and security (UN 2014). The "war on Ebola" soon proved to be fertile rhetorical ground, both for observers who took the metaphor at face value and for critics who decried the endless use of war metaphors (Gregory 2014).

As I have noted elsewhere (Sandvik 2014a, 2014b), a particularly puzzling aspect of this short-lived, imagined "war" was the convergence of the virus, unmanned technology, and notions of humanitarian governance. The "Ebola drone" arose from this convergence, as a material representation of ideas about the relationship between disease and security (both national and international); the means and ends of aid delivery; and the potential of drones not only to save Africa, but to save "us" — including the United States — from African ills.

As noted earlier, technological fantasies position emergent technological systems as necessary — and effective — responses to dire threats. This was precisely the type of work that the many narratives of the Ebola drone appeared to be doing, regardless of whether they appeared in mainstream media or in the more remote parts of the blogosphere. The deployment of AFRICOM (the US Africa Command), for example, can be viewed as a militarized medical response patterned on the war on terror. **[13]**

In keeping with the notion of technological fantasies, the proposals to use drones for reconnaissance, intelligence gathering, and surveillance were all premised on the idea that it was possible to "see" Ebola from a distance, so as to identify infected (and thus potentially dangerous) individuals (iHLS 2014). One observer suggested that drone reconnaissance could enable the military to see "what's happening in this village? Any signs of illness? Are people fleeing?" (Murphy 2014). Another suggested that if Global Hawks were stationed at the US drone base in Niger, they could easily fly over Liberia, providing surveillance that "could help the fight against Ebola by looking for unusual human behaviour, like a sudden vehicle exodus or overcrowded hospitals, which might give away an outbreak before it's reported." (Atherton 2014) Elaborate scenarios were devised to prove the value of the Ebola drone in producing ground truth:

> "Someone's sick, they call a cab to take them to the hospital, they may be shedding the virus [via fluids] in the cab. They reach the hospital and there's no beds; then they go home and they've contaminated these cabs. . . . It's the sort of subtle clue you can catch from space, with enough time, patience and, most importantly, attention. That's where drones come in, which could provide more eyes on potential hotspots." (Tucker 2014)

Thermal imagery was also proposed as a means of identifying those who had become ill (SPI 2014): in a discussion of DIY (do-it-yourself) drones, for example, one user observed that

> "people who have Ebola have an increased temperature as it is one of the symptoms and from what I have seen on News

[13] This perspective was reflected in the following comment, from division spokesman Lt. Col. Brian DeSantis: "Our job is to build Ebola treatment units and train health care workers. There is no mission for us to handle infected people, human remains or medical waste. . . . We will have our own facility separate from the population where we will handle force protection and life support, similar to our facilities in Iraq or Afghanistan." (Watson 2014)

> most of the checking at airports is done by individuals with infra-red thermometer. The UAV could highlight individuals who might have symptoms and they could be isolated or given treatment." (DIY 2014)

Of course, even if infrared science could successfully detect fever through layers of cloth and sweat, it could not have detected the cause of a fever.

Most remarkable however, was the utopian rhetoric surrounding the potential use of drones to drop off food, water, and — most importantly, medication — to Ebola-affected populations (Auerbach 2014). The Ebola drone was imagined as a useful way to carry what did not actually exist: a cure for Ebola. In the words of one observer, "a flying drone can prove useful to send medical supplies to remote locations. It would act as a simple way to either stop or slow down the spread of the Ebola virus," and would be a "safer alternative than people travelling to dangerous areas just to deliver materials." (Inveneo 2014)

Other proposals touted the ability of drones to mediate closed airspace: "Surely the United States can use them to bring protective medical gear to hospitals in countries like Liberia or Sierra Leone. Closed borders to commercial air traffic are no barriers to drones." Finally, drones were tasked with the old jobs of bringing hope—and pamphlets—to suffering peoples, as if ignorance and despair were behind the epidemic:

> "Drones also can bring hope and, say, by pamphlets deliver valuable information to West Africans. . . . Knowledge can combat disease and the fear that precedes it. People need to know how to protect themselves, how to discern the signs of sickness, . . . and how to treat the stricken or safely dispose of the dead." (Wilcox 2014)

It was the lack of genuinely convincing uses for drones, however, that most strikingly illustrated the presence of drone utopianism. As Luege has observed, the Ebola crisis lacked a "possible scenario . . . in which you can't deliver something more efficiently with a motorbike within the area that the drone can cover." (Luege 2014) According to Luege, the perception that drones could solve the Ebola crisis was founded, in part, on the misperception that "the challenge of fighting Ebola is . . . delivering drugs to remote areas" — when in fact, the Ebola outbreak became as serious as it did because it was urban in nature.

Those who viewed Ebola as a "supply-chain challenge" — that is, as a matter of logistics—were engaging in the classic technology-transfer argument, which holds that military technology is always better, and that using such technology for civilian purposes is feasible, responsible, and economic: given the region's bad roads and the shortage of trucks, the perception was that civilian drone technology could not deliver the "tons of supplies" that were needed. Thus, Auerbach (2014) argued, for example, that "military-grade drones" were the answer.

In the military sphere, part of the appeal of drones is their ability to undertake "dull, dirty, and dangerous" jobs — many of which are related

to supplying troops. According to one observer, the unmanned Kaman K-Max helicopter had been "extraordinarily successful at delivering supplies to American troops in remote parts of Afghanistan" and "could easily be repurposed to deliver humanitarian aid" (Auerbach 2014; see also Weisberger 2011); thus, the K-MAX could circumvent poor infrastructure and the risk of theft, while enabling remote management and reducing the number of personnel needed on the ground. The not-unexpected second part of this argument, however, was that the United States already owned the K-Max, which was sitting idle in storage (Auerbach 2014).

When viewed as a tool for protecting Western health care workers, the Ebola drone was imagined to be capable of many things—including seeing and sensing Ebola-infected individuals. And despite the fact that current drone technology allows for only limited cargo capacity and short flight times, the Ebola drone was imagined to be free of these constraints. Outside of its presumed practical applications, however, the Ebola drone can be understood as a reflection of efforts — on the part of both the drone industry and the drone DIY movement — to reshape public perceptions of drones as "spy" or "killer" drones.

Thus, the Ebola drone was defined as a humanitarian drone, capable of carrying medication and other aid where health workers were unable to go, either because of insecurity or bad roads. At the same time, however, the Ebola drone was largely a set of imaginings about the extended use of military drones. As conceived for deployment in the war on Ebola, it was endowed with the potential to be surgically precise, avoid the burden of placing boots on the ground, and allow for remote management.

Meanwhile, West Africans were strangely absent from the technoscape of the Ebola drone, a realm that was inhabited only by Western actors, who possessed the hardware, technical skills, and know-how required for crisis management. In the technological fantasies that animated the Ebola drone, the locals were presumed to be infected, potentially infected, or dead; thus, they were allotted roles either as threats (the "Ebola terrorism scenario") or victims (the humanitarian crisis scenario). Either way, whether as individuals or communities, they were largely devoid of agency.

Ultimately, the Ebola drone was in keeping with the rationales underlying a militarized approach to virtually any crisis; on a different level, however, the Ebola drone was also a utopian response to a lack of knowledge about how to deal effectively with a disease that had emerged from structural injustice, a post-conflict context, and "culture".

Drones as Solutions to African Insecurity

Continuing the theme of technological fantasies, I argue in this section that drones play an important role in dealing with perceived security threats — specifically, those arising from within Africa.

As one observer noted, during the period following the wars in Iraq and Afghanistan, Africa became "the next frontier" for UAV operations (Oliver 2015). Drones were first used in Africa by the South African apartheid

regime; in the contemporary context, the first known drone strike on African soil occurred in 2007, in Somalia, where the United States had been consecutively targeting warlords, Al-Qaeda, the Islamic Courts Union, and Al-Shabaab since 2001 (BIJ 2015). While the claim that drones "can yield game-changing interventions in the fight against terrorism in Africa" (Attuquayefio 2014) is contestable, drones have certainly enabled the expansion of the war on terror across the continent (Cole 2013; Dörrie 2013; Hinshaw 2013). The United States, the United Kingdom (UK), and France have established drone bases and used surveillance and combat drones in Chad, Libya, Mali, Niger, and Somalia (Mazzetti and Schmitt 2011; Public Intelligence 2013; Whitlock 2013; UAS Vision 2014; Tran 2015). Surveillance and combat drones are also increasingly in use by African militaries (Oliver 2015).

At the same time that it is part of the global war on terror, drone use in Africa has intermittently been infused with humanitarian motifs: in Libya in 2011, for example, drones were used in Operation UNIFIED PROTECTOR, the aim of which was to "protect civilians and civilian-populated areas from attack or threat of attack" — which included enforcement of the no-fly zone (NATO 2011). **[14]** Citing UN Security Council (UNSC) Resolution 1973 on Libya, which was passed on February 6, 2011, President Obama approved the use of armed drones, justifying their deployment as tools of humanitarian assistance for the protection of Libyan civilians (CBS 2011). During the deployment, 250 armed-drone sorties (flown by US and UK drone pilots between April 1 and September 2, 2011) resulted in 145 "strike sorties"—meaning that targets were identified and engaged (Woods and Ross 2011). The enormous humanitarian costs of the Libyan intervention were only belatedly acknowledged. By 2015, the terror motif had returned, and the United States was again looking to use armed drones in Libya, this time against the Islamic State (Entous and Lubold 2015).

In Mali in 2014, Operation Barkhane replaced Operation Serval, the previous French mission. The purpose of Operation Barkhane is to "regionalize" counterterrorism efforts in the Sahel, partly by helping to prevent the further development of terrorist safe havens in five countries: Burkina Faso, Chad, Mali, Mauritania, and Niger (Larivé 2014). As part of Operation Bahkhane, France is now deploying three Reaper drones for surveillance. According to the French Air Force (2015), the Reapers are "indispensable on [sic] a theatre of operations as large as Europe."

> "The Reaper drones have demonstrated their usefulness and performance by achieving all operations and intelligence in support of the Barkhane Force. . . . The valuable information they provide enables units to understand and remain aware of the environment in which they will operate and the threats they will face."

In his discussion of colonial airpower, Omissi (1990, 59) concludes that "air policing was perhaps most politically and militarily successful where financial, geographical and strategic logic pointed in the same direction."

[14] US drone deployments have also been imagined as having potential for international criminal justice: on a 2011 visit to Uganda, then-secretary of state Hillary Clinton expressed optimism that drones would soon be able to find Joseph Kony (Lee 2012).

While the African drone wars of today are part of a colonial legacy of intervention, they are also frustrated reactions, on the part of the Global North, to the failures of developmentalism and state-building projects. 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. As one observer has noted with respect to Barkhane, "the fighting aspect of this mission could go on endlessly without the inclusion and implementation of a state-building dimension in each country of the Sahel region" (Larivé 2014) — an observation that is equally relevant to US and UK counterterrorism efforts.

One development that is receiving increasing attention is that just as drones support the proliferation of the war on terror in Africa, the war supports the proliferation of drones. More than fifteen African states have purchased drones, and at least six can manufacture their own (Menke 2014). In 2015, the South African company Denel Dynamics introduced the Snyper (an armed version of its Seeker 400 drone), which comes with four Impi-S missiles (Defence Web 2015).

The market for Israeli military drones continues to grow across Africa — thanks, in part, to the Israelis' historical collaboration with the South African drone industry. China, meanwhile, has exported five armed drones to Nigeria, to boost that country's efforts to fight Boko Haram. (The drones are CH-3s, which are manufactured by the China Aerospace Science and Technology Corporation; it is unknown whether they are under the control of the Nigerian Air Force or are being flown remotely by Chinese military contractors.) Observers have suggested that, taking its cue from US efforts to protect its oil supply in Iraq, China may be offering Nigeria armed drones in order to protect its investment in the Nigerian oil sector (McCarthy 2015; Maughan 2015).

As Omissi (1990) notes, airpower was previously used in Africa to address a wide range of issues, from insurgencies to tribalism, anticolonialist movements, and even tax evasion. Today, however, drones are increasingly seen as necessary and effective responses to what are framed as the key contemporary threats: namely, terrorism and militant Islamism. The relaxation, in 2015, of US export restrictions on weaponized drones; increased Chinese and Israeli exports; and the emergence of effective, home-grown, weaponized platforms will likely increase the use of drone strikes as substitutes for political settlements.

Effective targeting will create "milestones" — that is, legitimacy-producing signposts of success in the war on terror. Through the target-selection process, drones help define African security problems as security threats to the Global North. To the extent that they succeed in identifying, isolating, and eliminating such threats, drones are eradicating the need for more comprehensive strategies.

Africa's Security Problems: A Solution to the Problem of Drone Legitimacy

The focus so far has been on what drones can do for Africa; I turn next to what Africa can do for drones: specifically, the ways in which Africa's problems are being enlisted in the quest for drone legitimacy.

Against the backdrop of ongoing controversy about the drone wars, the drone industry's push to open US and European civil airspace to drones (by 2015 and 2016, respectively) has provoked broad public debate on new issues: namely, privacy and safety. As I have discussed elsewhere, the drone industry is attempting to strengthen its symbolic capital by promulgating the notion of "good drones" (Sandvik and Lohne 2014). In 2012, for example, the Guardian reported that the British lobbying group UAVS (Unmanned Aerial Vehicle Systems Association) had recommended that "drones deployed in Britain should be shown to 'benefit mankind in general,' should be decorated with humanitarian-related advertisements, and should be painted in bright colours to distance them from those used in warzones." UAVS wants, moreover, to "be associated with safe, civil applications that have a humanitarian, ecological and environmental benefit." (Gallagher 2012)

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 (Gabrielsen Jumbert and Sandvik 2016). I would argue that by allowing practices with high degrees of legitimacy — peacekeeping, crime control, and conservation — to be juxtaposed with drone uses that, in other contexts, may be viewed as more controversial, the African context provides opportunities to strengthen the notion of the good drone.

Drones in Peacekeeping Missions

Peacekeeping missions are one example of drone use intended to address specifically "African" problems. Of the sixteen ongoing UN peacekeeping missions, nine are located in Africa (DPKO 2015). And in 2015, a UN Expert Panel on Technology and Innovation in UN Peacekeeping called for drones to be integrated into all UN peacekeeping missions (Pilgrim 2015). According to the expert panel, drones offer advantages in the realms of surveillance, reconnaissance, documentation, and (potentially) deterrence.

The panel's recommendation reflects an important shift from keeping the peace to *enforcing* the peace, which is a significant departure from the traditional UN peacekeeping principles of impartiality, limited use of force, and consent of the main parties. **[15]** 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

[15] Karlsrud (2015) has referred to this shift as "when the UN wages war."

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). **[16]**

Just *before* passage of Resolution 2098 (UNSC 2013), which approved the actual purchase of UAVs by MONUSCO, the UN Office of Central Support Services, Procurement Division, released a bid for the provision of one UAV to be used by MONUSCO for three years. **[17]** Selex ES, an Italian company, won the tender, and the deployment date was slated for December 2013 (Apuuli 2014). In November 2013, however, M23 announced that it was ending its rebellion, meaning that the Selex ES never saw combat.

The MONUSCO drone raises several questions about the proliferation of peacekeeping drones in Africa. For example, Rwanda (which has been accused of aiding M23) initially opposed MONUSCO's deployment of drones, arguing that it "it did not want Africa to become a laboratory for foreign intelligence devices." (Charbonneau 2013) Other critics have argued that MONUSCO lacks the ability to analyze or act on the intelligence it gathers (O'Grady 2015). 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) (Karlsrud and Rosén 2013). 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 (World Vision 2014). **[18]**

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. As is illustrated by repeated references, on the part of MONUSCO officials, to a 2014 incident in which a drone spotted a vessel capsizing on Lake Kivu and alerted peacekeepers, who intervened, MONUSCO views integration as an advantage (Reuters 2014). Furthermore, MONUSCO regards the drones as engaging simultaneously in reconnaissance, peace enforcement, and humanitarian data gathering (humanitarian organizations are given the opportunity to assign specific surveillance missions to the drones). **[19]**

Drones, Riot Control, and Crime Fighting

In the Global North, attempts to improve policing are increasingly taking the form of militarization. As Hall and Coyne (2014) have observed, the

[16] 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" (UNSC 2013b, 7). Under this more aggressive mandate, drones were perceived as being needed for reconnaissance — and, as of this writing, MINUSMA was in the process of acquiring them. In 2014, the UN assigned a similarly robust mandate to MINUSCA, the UN Multidimensional Stabilization Mission in the Central African Republic (UNSC 2014).

[17] In 2006, MONUSCO's predecessor, MONUC (the UN Organization Mission in the Democratic Republic of the Congo), was supported by Belgian troops with drones. This early deployment ended when one of the drones was shot down and the other crashed, killing and injuring civilians.

[18] 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 (O'Grady 2015).

[19] MONUSCO official, personal communication, July 2015.

political economy underlying the militarization of domestic policing is premised on "crises" that prompt the government to take immediate action, but that ultimately become perpetual wars—the war on drugs and the war on terror being the primary examples. Hall and Coyne argue that as the police engage in military-style training, acquire military weapons, and employ military tactics in everyday operations, the protective state devolves into a predatory state that undermines the rights of the populace. One corollary is a shift in how the police conceive of the events and behaviours with which they are expected to deal: for example, criminality is redefined as insurgency and crime control as low-intensity conflict; in a militarized law enforcement environment, both require counterinsurgency tactics and equipment (Kraska 2007).

While putting guns on police drones remains highly controversial, ideas for using drones to deliver and deploy less-lethal agents for law enforcement purposes — such as smoke canisters (for crowd control) and steel spikes (to destroy tires) — have circulated since the late 1990s (Murphy and Cycon 1999). Globally, less-lethal weapons are fairly common in domestic policing, as are deaths caused by the use of such weapons. Proponents argue that arming drones with less-lethal weapons will reduce both collateral damage and threats to the security of police officers, while critics caution against the legitimizing effect of less-lethal weapons (Rappert 2003).

My focus here is on the South African context, which has allowed armed drones to emerge and may allow them to be deployed in civil airspace. The drone in question is the Skunk Riot Control Copter, which is manufactured by Desert Wolf, a South African company. According to the manufacturer, the Skunk is "designed to control unruly crowds without endangering the lives of the protesters or the security staff." The drone is equipped with both blinding lasers and onboard speakers to send verbal warnings to a crowd; it also has four high-capacity gun barrels capable of shooting up to four thousand paintballs, pepper-spray balls, or solid plastic balls at rates of up to eight balls per second, to be used in an extreme, "life threatening situation". According to the manufacturer, the Skunk was developed to "assist in preventing another Marikana" (Desert Wolf n.d.g) — a reference to a 2012 strike in South Africa, in which police killed forty-four miners (Smith 2014).

While Desert Wolf has explicitly targeted mining companies that might potentially have to deal with striking workers, the use of the Skunk can easily be extended to any kind of urban protest. Hennie Kieser, Desert Wolf's managing director, has observed that "removing the police on foot, using non-lethal technology, I believe that everyone will be much safer" (Kelion 2014). For its part, the International Trade Union Confederation has strongly objected to "the deployment of advanced battlefield technology on workers or indeed the public involved in legitimate protests and demonstrations." (Kelion 2014)

While improved crowd control seems to be part of a global domestication strategy for armed drones, I think that the specifically African context of the Skunk matters, in two ways: first, the prospective use of drones in riot

control is another example of the ways in which "African problems" are being enlisted to help drones gain legitimacy and market access; second, Desert Wolf, despite sensationalist coverage and widespread outrage against the product, seems to have gained some acceptance for its insistence on the inevitability of the use of force by police, and for the critical role of military-style drone technology in directing this force toward being "less lethal".

Drones and Poaching

The third way in which African problems are being pressed into service for the "good drone" project has perhaps the greatest appeal: namely, the use of drones in the African war on poaching. In recent years, the poaching of elephants, rhinos, and other wildlife has increased massively across the continent. As Wich, Scott, and Koh observe, conservationists' traditional techniques for monitoring wildlife and their habitats face cost, efficiency, and practical constraints, which necessitate the development of new methods. Drones have been used to monitor habitats and both terrestrial and marine wildlife, as well as to detect changes in land use (Wich, Scott, and Koh, 2016). 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 (Van Andel et al. 2015).

While the combination of widespread drone use and improvements in data processing technology raises important privacy issues for conservationists, it is the use of drones in anti-poaching efforts that evokes 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 (Snitch 2015). And as Wich, Scott, and Koh (2016) note, the use of drones to intercept and arrest poachers can lead to dangerous — even lethal — consequences.

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 (Game Rangers' Association of Africa n.d.g). 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, ShadowView had translated aerial information from the drone into strategic guidance for the rangers' ground forces; during the ensuing firefight, one poacher was killed (ShadowView 2014).

Whereas conservationists might argue that drones are merely visual aids for rangers, I 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 (Goldhammer 2014); and which draws ever larger orbits of civilian life into the national security

[20] 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 (Goldhammer 2014). A 2014 White House fact sheet explains that "like other forms of illicit trade, wildlife trafficking undermines security across nations." (White House 2014)

orbit. **[20]** When framed in this way, drones become a cheap and effective tool in "the fight to save elephants and rhinos" (Goldhammer 2014), 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.

Conclusion

Through an empirical examination of African "drone stories", this article explores the image of the drone as a game changer for Africa. The scope of my investigation has been intentionally broad. I began by historicizing current developments, which revealed both the surprisingly early uses of surveillance drones in Africa, and the legacy of technological imperialism and colonial airpower. In my discussion of technological utopianism and technological fantasies (specifically with regard to leapfrogging and the Ebola drone), I focused on the links and overlaps between the twin trajectories of development and insecurity.

Finally, I observed that supposedly unambiguously "good" uses of drones, for purposes such as peacekeeping, crime control, and conservation, raise difficult questions — both about the use of force, and about the deliberate framing of drone uses in ways that evoke the war on terror. While peacekeeping, riot control, and anti-poaching efforts constitute very different responses to very different threats, drones are touted as game changers in all three cases. Moreover, each type of response is currently undergoing both militarization and reframing, in which drones play an important part. None of these uses are unambiguously "good"; thus, it is all the more important to attend to how these uses are constructed, and how they are reappropriated to enhance the legitimacy of drones more generally.

My overall goal was to think through African drone proliferation by analyzing how drones and Africa are being construed as solutions to each other's problems. To this end, I explored the assumption that drones can help Africa to move beyond "underdevelopment", while simultaneously helping to protect the Global North against security threats arising from within Africa. Finally, I suggested that the drone industry regards Africa as offering opportunities to enhance the legitimacy of drones in the Global North.

As civilian and military drone use proliferates within and outside Africa, I hope that my insights about the "African drone" can help illuminate drone proliferation wherever it occurs. Discussions of drone proliferation tend to assume that the drone industry is a monolithic, geographically concentrated entity, and that drone use will look the same and engender the same controversies, regardless of geography. The only way to counteract this view is to examine the specifics: that is, to uncover and describe actual examples of drone use — particularly outside the West, particularly by non-Western actors, and particularly among local communities, civil society, or others who find themselves under the military or commercial "drone stare".

None of these areas have received significant scholarly attention.

At the same time, it is important to beware of technological determinism. Drones do not eradicate human agency. We know little about emergent local practices of tinkering with donated drone technology, or inventing affordable, effective indigenous drones. As the production and use of drones spreads across Africa, Asia, and Latin America, it will be important to tell richer and more critical "drone stories", and to engage in further investigation of industry practices, policy making, and the everyday use and adaption of drone technology.

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