Drones and the Question of "The Human"

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Domino's Pizza is testing "Domicopter" drones to deliver pizzas, which will compete with Taco Bell's "Tacocopter" drones. Not to be outdone, Amazon is working on an army of delivery drones that will cut out the postal service. In Denmark, farmers use drones to inspect fields for the appearance of harmful weeds, which reduces herbicide use as the drones directly apply pesticides only where it is needed. Environmentalists send drones into glacial caves or into deep waters, gathering data that would be too dangerous or expensive for human scientists to procure. Federal Express dreams of pilotless aerial and terrestrial drones that will transport goods more cheaply, reliably, and safely than vehicles operated by humans. Human rights activists deploy drones over conflict zones, intelligently searching for and documenting abuses for both rhetorical and legal purposes. Aid agencies send unmanned drones to villages deep in jungles or behind enemy lines, maneuvering hazardous terrain to bring food and supplies to endangered populations. Medical researchers are experimenting with injecting drone blood cells into humans that can mimic good cholesterol carriers or identify and neutralize cancerous cells. Parents in Vermont are using flying drones to accompany children to school, giving a whole new meaning to helicopter parenting. And Pilobolus, a New York dance company, has choreographed a dance in which drones and humans engage each other in the most human of acts: the creation of art.

In all areas of life, there is a rush to adopt drones to make our lives better. But the significance of drones to human civilization is poorly understood. In our headlong embrace of drone technology, we are forgetting to ask two basic questions: What is a drone? And what does it mean that the once obvious boundary separating human and machine intelligence is being diminished?

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What Is a Drone?

There are at least two sources for our present misunderstanding of drones. The first concerns our widespread technological ignorance. Few of us are fluent in the language of computer coding or the intricate workings of algorithms that govern drone behavior. Drones do not simply follow static coded trajectories. Armed with algorithmic instructions that permit machines to react with exceptional speed and reliability to external factors in ways that seem intelligent, drones mimic or improve upon human responses. The Navy's Phalanx Shield weapon chooses targets and fires without any human intervention, and it can do so faster and more accurately than humans. The Phalanx Shield cannot "think," in the true sense of that word, but it does possess a kind of "intelligence," in that it can react according to preset criteria and make flexible judgments following complicated algorithms. In short, drones are now able to carry out tasks autonomously that historically were thought to be the exclusive province of humans. For those of us who are unaware of how algorithms empower drones to simulate intelligence, the human-like behavior of drones is mysterious, impenetrable, and, at times, uncanny.

A second and more important misunderstanding is that drones have been confused with their infamous military exemplars—the Predator and the Reaper—and are therefore exclusively associated with targeted killings in the war on terror. Much of the commentary about drones concerns the legitimacy of extrajudicial killing as well as the civilian casualties that accompany these attacks. Extrajudicial killings are hardly novel, however, given that warring states have been eliminating each other's high-value targets by poisoning, sniper fire, mail bombs, improvised explosive devices, and other means for centuries. Unmanned aerial vehicles are powerful weapons, but they are just that, new tools improving upon a long-standing practice. To the extent that discussions about drones get lost in questions of the morality or legality of targeted killing, we are not actually talking about the full impact of drones. It is a mistake, however, to use the term "drone" to refer only to these much publicized military devices. Drones, more precisely understood, are intelligent machines that—possessed of the capacity to perform repetitive tasks with efficiency, reliability, and mechanical rationality—increasingly displace the need for human thinking and doing.

But let's step back. What is a drone? The original meaning of a drone is a male honeybee. It is a nonworker bee that is fed and kept alive by the hive to serve but one purpose: devoid of a stinger and spared the toil of foraging for food, drone

bees sport special receptors that allow them to find and impregnate the Queen. They live as idlers who do no work and must be fed and cared for by the hive; they also free the worker bees to work without worrying about sex or reproduction. When today we speak of robots, unmanned vehicles, and automated machines as "drones" we speak metaphorically; modern drones recall the original sense of the male honeybee as something that performs one function repetitively and well, without distractions and with unrivalled efficiency.

The metaphorical potential of the drone has been mined at least since Plato. In the *Republic*, a human drone is a fallen member of the oligarchy who desires riches but disdains work. The Platonic drone neither earns money nor builds things. He does not fight for the *polis*. Just as "the drone growing up in a cell is a disease of a hive," so too is the human drone "a disease of a city." What is more, the most talented drones will morph into tyrants. Craving luxuries and working not at all, the drone excels at getting others to work for him.

Plato is hardly the only thinker to note the tyrannical impulse in drones, which is also the subject of Ernst Jünger's prescient novel, *The Glass Bees*, originally published in 1957. Jünger's text centers on a job interview between an unnamed former light cavalry officer and Giacomo Zapparoni, the secretive, extremely wealthy, and powerful proprietor of the Zapparoni Works, which "manufactured robots for every imaginable purpose." Zapparoni's distinction is that instead of the big and hulking robots such as are produced by other industrialists, he specialized in Lilliputian drones that gave "the impression of intelligent ants."

Zapparoni's robots were not powerful in themselves, but working together like drone bees and drone ants, the small drones "could count, weigh, sort gems or paper money." Their power came from their intelligent yet thoughtless coordination. The glass drone bees

> worked in dangerous locations, handling explosives, dangerous viruses, and even radioactive materials. Swarms of selectors could not only detect the faintest smell of smoke but could also extinguish a fire at an early stage; others repaired defective wiring, and still others fed upon filth and became indispensable in all jobs where cleanliness was essential.

Dispensable and efficient, Zapparoni's mini-drones could do the most dangerous and least desirable tasks.

Before Jünger's hero is introduced to Zapparoni's drones, he is given a warning: "Beware of the bees!" And yet, marveling at them, the cavalry officer is fascinated.

He feels himself "come under the spell of the deeper domain of techniques," which, like a spectacle, "both enthralled and mesmerized." His mind, he writes, went to sleep and he "forgot time"—as well as "the possibility of danger." He forgets the warning.

The danger posed by Zapparoni's bees is the one we face today: that we allow our fascination with technology to dull our humanity. We have become infatuated by perfection and intolerant of human error; we worship data-driven reliability and disdain untested human intuition; and we value efficiency over beauty and chance. "Technical perfection," Jünger writes, "strives toward the calculable, human perfection toward the incalculable. Perfect mechanisms—around which, therefore, stands an uncanny but fascinating halo of brilliance—evoke both fear and a titanic pride which will be humbled not by insight but only by catastrophe." As we humans interact more regularly with drones and machines and computers, we may come to expect ourselves, our friends, our colleagues, and our lovers to act with the same efficiency—and inhumanity—of drones.

That reliance upon drones diminishes our humanity is the research-driven conclusion of Sherry Turkle, an MIT anthropologist and technology writer. In her book *Alone Together* Turkle discusses her studies of human interaction with so-called social robots, programmed to respond to human emotion. In regular intercourse with such robots, she argues, humans will reduce their expectations of other humans.

Turkle offers countless examples of smart, thoughtful people who come to crave robotic companionship, often more so than human friendship. One such person is Edna, a great-grandmother, who, when given a robotic baby to play with while she is playing with her real two-year-old great-granddaughter, immediately takes to the robot and proceeds to ignore the real child. Turkle also tells of Aaron Edsinger, a computer scientist who designed the robot Domo. Edsinger feels Domo's attention, senses Domo's desire, and finds it pleasurable to be touched by Domo, "even if he knows that the robot doesn't 'want' to touch him." The point of these and many other stories is that for the lonely—and even for those technically savvy people who know that robots can neither feel nor think—conversing with, caring for, and playing with a machine is fully consistent with the wonder of attachment, friendship, and even love. These relationships with machines are one-sided, diminished, and superficial; and yet, they are satisfying—frequently more satisfying than human relationships.

Turkle concedes that many human relationships are less than optimal. From fake orgasms to canned expressions of sympathy, human friends and lovers can seem mechanical. And yet, in relationships with people, we have to work toward meaningful connection. We "learn to tolerate disappointment and ambiguity," writes Turkle, "and we learn that to sustain realistic relationships, one must accept others in their complexity." But with robotic friends as companions and partners, the work of human relationships fades away.

The trend Jünger and Turkle worry about is unmistakable: we are at risk of losing the rich and mature relationships that mark us as human. The rise of social robots, unmanned aerial vehicles, and other one-dimensional machines that act like humans—without the perceived human weaknesses of distraction, emotion, exhaustion, quirkiness, risk, and unreliability—answers a profound human desire to replace human judgment with the more reliable, more efficient, and more rational judgment of machines. For all the superficial paeans to human instinct and intuition, human beings, in practice, repeatedly prefer drone-like reliability to the uncertain spontaneity of human intuition. In other words, we confront a future in which "human" is a derogatory adjective signifying inefficiency, incompetence, and backwardness.

The Human Condition

To understand the role humans play in a world increasingly augmented by superintelligent drones that repeatedly perform a particular task with a ruthless efficiency, there are few better guides than Garry Kasparov. In 1997, Kasparov had the distinction of being the first World Chess Champion to fall to a chess-playing machine, Deep Blue. Writing in the *New York Review of Books* of February 11, 2010, Kasparov reflected on what that loss meant for the fate and future of humanly-played chess, specifically noting three changes brought about by the rise of the machines.

First, machines have redefined what a good chess move looks like. Chess has always valued moves that combine surprise, innovation, and elegance. A bold move can throw off an opponent. This is changing. As Kasparov writes, "the machine doesn't care about style or patterns or hundreds of years of established theory. It counts up the values of the chess pieces, analyzes a few billion moves, and counts them up again." The point of a computer playing chess is simple: to win. "Increasingly, a move isn't good or bad because it looks that way or because it

hasn't been done that way before. It's simply good if it works and bad if it doesn't. Although we still require a strong measure of intuition and logic to play well, humans today are starting to play more like computers." In other words, the embrace of robotic chess means that humans, to compete, will have to think more like computers and less like humans.

Second, Kasparov argues that the rise of "intelligent" machines neutralizes the advantage of experience. One of the traditional characteristics of the human condition has been the benefit of wisdom acquired with age. But with databases of chess games and the availability of constant play against chess programs, today's preteens can accelerate the learning process, supplanting the necessity of experience. Bobby Fischer's 1958 record of attaining the Grandmaster title at fifteen was broken only in 1991. Since then it has been broken twenty-two times, with the current record holder, Ukrainian Sergey Karjakin, having claimed the title at the nearly absurd age of twelve in 2002. Now in his twenties, Karjakin is among the world's best chess players, but like most of his modern wunderkind peers, he is no Fischer, who stood head and shoulders above his contemporaries.

Finally, chess machines neutralize genius, another traditional and distinctive facet of the human condition. Kasparov tells of his experience of two matches played against the Bulgarian Veselin Topalov, at the time the world's highest ranked Chess Master. When Kasparov played him in regular timed chess, he bested Topalov 3–1. But when he played him in a match when both were allowed to consult a computer for assistance, the match ended in a 3–3 draw.

Kasparov does not conclude, as might be expected, that computers are ruining chess. On the contrary, he argues that computers—projecting the consequences of all possible moves and pointing out possible outcomes and countermoves—will free their human partners to "concentrate on strategic planning instead of spending so much time on calculations." Ironically, Kasparov argues, "human creativity [is] even more paramount under these conditions." As we outsource merely quantitative skills to our artificial brains, we humans will be freed to our higher and evermore creative humanity. There is in Kasparov a whiff of the old Marxist utopianism—that once workers are freed from labor they will have time for higher pursuits like philosophy and gardening. But just as a hundred years of consumerism has shown that Marx's laborers use their excess time not to read or pursue hobbies but rather to work more in order to consume more, so too is it

questionable that humans today will make creative use of the liberation that worker drones provide from the humdrum need to calculate and execute dangerous and repetitive tasks. There is a real question of what human creativity means once it is abstracted from the so-called mechanical activities of calculating, processing, acting, and knowing.

The worry that drones might have an impact on human creativity is reinforced by their enthusiastic embrace by artists. Drone art has become commonplace today. Camera-equipped drones bring an aerial perspective that—like the images from space satellites—frees humans from their earthly limitations. To cite another example, the artist Harold Cohen has spent decades creating the painting machine Aaron, which produces figures and scenes in its own style. Aaron cannot learn on its own, but its art easily passes the Turing Test, which means that art critics cannot tell that Aaron's paintings are done by a machine. Aaron's art has been displayed at London's Tate Modern Gallery, Amsterdam's Stedelijk Museum, the Brooklyn Museum, and the San Francisco Museum of Modern Art. Cohen insists that Aaron is not creative, and he is right. The art of creation is distinct from algorithmic activity and it cannot be broken down into logical formulas, no matter how sophisticated. But Aaron, even if he is not creative, creates art that *appears* to be creative and to have been made by human beings.

The reason such machines are not simply fancy new tools, the reason that drones are different from other technological innovations, and the reason drones pose a danger to the humanity of the human condition is that they are specifically capable of reducing the need for human judgment, human creativity, and human thought. Because of their ability to act flexibly, reliably, and with a quasi-human intelligence, humans find them irresistibly useful. Drones are not susceptible to emotions, fatigue, or distraction. In war, they will kill neither out of anger nor fear. Flying a plane, they will not fall asleep at the wheel or check a text message. Carrying a fetus, if and when they do so, they will provide only the healthiest of diets. We must confront the basic fact that humans frequently prefer the decisions and abilities of machines to the creative intuitions of humans, especially when the tasks involved are important and difficult.

Drones are machines that mimic human action and human judgment and also offer a mechanical albeit importantly seductive ideal of human behavior. In other words, drones transform what we mean by our *humanity*. As drones proliferate and as humans prefer drones to other humans in war, sex, and art, the ideal of

human creativity and human judgment are becoming less recognizably human. There is a real question about what uniquely human activities will be left immune to the penetration of drones.

Drones and War

In this regard it is helpful to consider the question of war. "War," Heraclitus tells us in his fragment 53, "is the father of all things." It is the extremity of war that made Achilles a hero, a model of the human capacity to set the common good above one's own welfare. And it is war that gave Patrick Henry's cry, "give me liberty or give me death," its ringing appeal. War may be hell, but war is deeply human. In the pure violence experienced only in war, war calls forth ideals of justice in order to make sense of its own horrors. Absent the glory and tragedy of war, writes Simone Weil in her essay "The Iliad, or the Poem of Force," there would be no spiritual cauldron in which to forge the mettle of justice.

Given the connection between war and the human ideals of justice, what does it mean that war is increasingly being fought by drones? The desire to substitute machines for humans is most intense precisely in those fields with the highest stakes. In a speech at Bard College in 2010, the roboticist Ron Arkin described how robots "can identify, target, and engage in the battlefield without human intervention." Already, cruise missiles can, once launched, "select and engage a target." Arkin noted that the United States, for instance, employs "Fire and Forget systems, which are torpedoes that can be launched and just patrol a particular region, waiting for a target." And the Phalanx system deployed on Aegis class cruisers has an auto mode that, once turned on, will fire upon anything that nears the ship. For Arkin, the use of fully autonomous drones in warfare is inevitable.

Arkin is not alone in this view. Sir Andrew Pulford, chief Air Marshal of the Royal Air Force in the United Kingdom, declared in a September 2013 television interview that it is simply a matter of time before autonomous "Terminator 2-type" machines will be widely deployed. We already have drones that are faster than humans, stronger than humans, and smarter than humans. The time is coming when drones will be thought also to have better judgment than humans. Even Christof Heyns, the UN Special Rapporteur on extrajudicial, summary, or arbitrary executions, assumes that lethal autonomous robots (LARs) will one day be a reality. It is for this reason that he argues it is "essential for the international community to take stock of the current state of affairs, and to establish a

responsible process to address the situation and where necessary regulate the technology as it develops." Heyns has called for a worldwide moratorium on LARs—weapons systems that, once activated, can lock on and kill targets without further human involvement. "Machines," he argues, "lack morality and mortality, and as a result should not have life and death powers over humans."[1] There is, however, no surer way of clearing a path to lethal autonomous robots than to provide a regulatory framework for their development and deployment.

The moral question regarding the ethics of war is, for others, precisely an argument for the development of lethal and autonomous drones. Arkin and Pulford, for example, argue that drones are to be welcomed—not least because they promise to make war more ethical and more humane. Because of exhaustion, anger, or the desire for revenge, human soldiers often act rashly. Engaged in dangerous operations, soldiers tend to fire first and ask questions later. The list of war crimes that stretch back millennia is all the evidence needed to make visible the inhumanity of man amidst war. Much of this inhumanity comes from the difficulty, if not the impossibility, of training humans to suppress their natural instincts and to submit to a difficult and dangerous moral code. Drones, Arkin claims, have the potential to humanize warfare: indeed, he suggests in his lectures at Bard College that robots in war can "be more humane than humans."

Arkin and Pulford also make the argument—now widespread in technological circles—that drones are simply a novel, powerful, and ultimately useful new tool. Drones can kill, but they also save lives. They are no different from other incredible technologies that can do great good and spread terrible harm. Penicillin saves lives; the combustion engine has freed humanity to move about the earth; DNA evidence and video from surveillance cameras increase the likelihood of a just verdict in legal cases. Of course penicillin, overused, creates untreatable superbugs; the combustion engine has unleashed an ecological disaster; and genetic testing and surveillance threatens our expectations of privacy. All technology is double-edged, but that is not an argument against technology.

There is a certain all-knowing elegance to such arguments, in which one assumes the owl-like vision of history to flatten distinctions and undermine the unprecedented. And yet drones are new. They may simply be our latest machines, but they are machines that—for the first time in history—can perform as well as or even better than humans in those activities that have throughout human history been understood to be quintessentially human. It is precisely because drones lack the mysterious human element in dangerous, difficult, and important

situations that involve diagnosis, creativity, and killing that we increasingly trust drones more than humans to make the better judgment. It is humans who are choosing, consciously or not, to subordinate human judgment to decisions based on data and algorithms. The result is that the emerging age of the drone threatens to transform the fundamental conditions of human life as we have known it.

The fact that we are in the process of transforming the human condition was for Hannah Arendt the great event of our time. In *The Human Condition* Arendt identified labor, work, and action as the three basic activities that have been central to what it means to be human since the dawn of civilization. Since time immemorial humans have labored and sought to provide the means for their subsistence and biological preservation. Beyond labor, humans also work and build structures, create artworks, and found states that endure. These lasting things do not serve biological subsistence, but comprise the humanly built world that gives to human life its characteristic meaning and significance. Finally, humans *act*, which means that they can do things that are surprising, shocking, and new. Like Achilles, who refrains from fighting on account of a slight; like Gandhi, who found strength through peace; and like Martin Luther King, Jr., who followed a dream, we humans can act in ways that are unexpected and also inspirational. It is the capacity of human action to surprise and inspire that motivates artists and citizens to respond to great acts by building monuments, founding new political states, and engaging in revolutionary reimagings of existing polities. The human capacity to act, Arendt argues, is what enables humans to call forth heroes, build civilizations, and change the world.

Arendt helps us to see that spontaneous human actions are at the center of politics. Only unpredictable action can surprise us. Heroic, bold, and even daring or foolhardy deeds are necessary for politics, for only such acts strike a public citizenry as worthy of attention. Singular actions make others take notice, precipitating the public speech and collective action that for Arendt is the core activity of politics. Arendt worried that as human society came under the sway of statistics and "the law of large numbers," action would become both predictable and explainable. Action in a statistical world is reduced to behavior, a result not of spontaneity but rather a product of statistical and historical regularities. And as we rely increasingly on drone-like machines spontaneous and striking human deeds will become increasingly endangered.

In the end, the threat drones pose is not only to civilians in war or to jobs. The real threat is that as our lives are increasingly habituated to the thoughtless automatism of drone behavior, we humans habituate ourselves to acting in mechanical, algorithmic, and logical ways. The danger drones pose, in other words, is the loss of freedom.

NOTES

[1] Christof Heyns, "Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions, Christof Heyns," United Nations Human Rights Council, session 23, April 9, 2013, p. 17.