

INANIMATE SUBJECTS

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The drone hovers. Invisible and menacing. If you get a glimpse, you might see the bulging head with its swiveling eye. Maybe it's looking at you. Maybe you're looking at it. Or through it. It depends who you are.

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My brother is an Air Force pilot. Not long ago, he called to say that he was being transferred to begin flying drones. Actually, I don't think he used the word "drone," as he says this is a media slur freighted with fear. He uses the term "RPAs" or Remotely Piloted Aircraft. I think he prefers this to the military's other commonly used acronyms — UAVs, Unmanned Aerial Vehicles, or UAS, Unmanned Aerial Systems — as it keeps the pilot in the picture. Also, looking back, I'm not sure if he said he would be "flying" them. He may have said "operating," because, of course, you can't slip the bonds of earth from behind the drone pilot's video joystick. My brother would no longer feel the plane vibrate within his body. He would no longer look out and catalog the clouds. Billow, banner, arch, or anvil. Nimbus, cirrus, veil or wall. He would no longer be moving through the air as birds do. But his plane would.

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In the darkened bedroom, a shadowy bird flies by. It disappears into the black. Someone adjusts the flashlight, and the silhouette of a rabbit twitches its nose; a knot of knuckles. Think of nighttime and childhood. Think of puppets. Shadow, marionette, rod, sock, finger, avatar, persona. Think of bug-eyed Ernie in his stripy shirt saying, "Gee, Burt" and snickering behind his hand. Or big-nosed Punch and Judy whacking and pummeling each other on their little stage. There are pregnant puppets full of others, there are puppets made of ice that melts, and there are puppets of paper that burn. Think of Indonesian Wayang Kulit with its oil lamps and amber screens.

Gamelan gongs hammered and clanging, rising and chiming. The black silhouettes of lacy, angular gods looming as they enter their epic battle. Figures sharpen and blur. Heroes go in and out of focus. Everything is handed over to the moment. Think of the swaying papier-mâché giants of political street theater gliding through their oversized world.

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Puppets and drones: it's not really an odd pairing.

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Puppets are only puppets when they seem to have no masters. When they seem to act on their own. Autonomous. Alive. Once we glimpse the master, the puppet becomes merely an object. A doll. Puppets are only puppets, are only truly themselves, when they seem not to be themselves, when we forget that they are puppets. This is the paradox of puppets, and our pleasure in them lies within this paradox. We are enthralled by their power even as we know it is not truly theirs.

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Like a puppet, the drone is both an extension of the operator and an object unto itself. Something manipulated. A body with a distant mind. Like a puppet, the drone enralls us with a power that is not its own. Drones have the strange appearance of autonomy found in robots, automata, and puppets. Unlike a puppet, a drone is not expressive. It likes to hide. It leans more instrumental than performative. Or does it? The bulging head, the high-pitched whine, even the nasty nicknames (Predator, Reaper, Vulture, Demon) slick back into the spectacle (that "autonomous movement of the non-living," as Guy Debord writes¹). Drone potential, even if invisible, is part of the theater of fear in the theater of war. As is their tenacious vision. Their grainy trailers. Snuff film surveillance videos or "drone porn." The blurry insurgents, black or white, in heat sensor mode.

Running. Stopping. Running. The cross hairs flashing. Sparkle on. You are cleared to engage. A pixelated black cloud. Then the dead end we came for; the figures now prone. Here, the drone as puppet slips behind the curtain and instead produces the stage itself, the proscenium screen framing the view from the pilot's naugahyde barcalounger or from our own comfy chair.

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In Truffaut's *The 400 Blows*, there is a scene where the camera lets us watch the faces of children at a puppet show in a darkened room. They appear, at first, transfixed. Still. Lifeless. Then their mouths drop open wide as if unhinged. They bounce up and down jerkily in their excitement. Suddenly, their bodies all lean forward in one motion as if pulled by the same string. One child's hands fly abruptly to his face in horror. He twists as if moved by a rod from above. Another stiffly, but gently, tips his head to rest on the shoulder of his friend. Their eyes stare in one direction. They don't see us. They don't see Truffaut's camera. They don't see the puppeteers. They see only the wolf gnashing his jaw. Red Riding Hood screaming in his grasp. We watch them manipulated by the puppets and by Truffaut. We watch them not in the fullness of who they are, their histories, their changes, their relations. We see them only as they become puppets, become objects, and thus, paradoxically, become themselves.

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The puppet bows its head when it is hung on a nail and again when it takes the stage. The puppet raises its chin, walks jerkily at first, then suddenly there is a shift. It lifts off the ground a little and finds its center of gravity. The torso angles just so, the head tilts, the arm lowers slightly. It is at once awkward and graceful. It is a thing and a thing in itself. Dead and alive. Forced to obey and independent. Immune to suffering, it suffers. It convinces us of its pain through its implausible grace. When the wooden head turns to look at you, the gesture is intimate, real. It stirs you more than the real gestures of the audience all around you.

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The lure of puppets is a vitalizing enchantment. Puppets entice with their uncanny gestures, subtle and abrupt. A glide and then a lurch. Childhood guile. Dark curtains. Strange eyes. Shifting shadows. Black-clad operators in hoods and veils. Moving objects and the occasional glimpse of the strings that lift them.

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In the pitch-black theater, one small light comes on and, with a jolt, an enormous head appears. His staring eyes tell us they're not real, but fail to reassure. The space vibrates with high-pitched screams. This is Bil Baird's Marionette Theater on Barrow Street in Greenwich Village in the late 1960s. My memory does not include my mother, or even myself. There is only the dark, the light, the puppet's eyes, and Toto's chaotic barking, his frenzied skittering.

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Puppets let us see the processes of animation and displacement, even as they make us forget them. It is a banal magic. See us transfixed. See how the puppet in turn puppets us. A puppet is an object that might move us with its movements. This is the fascination of anything remotely operated, an object that cannot move on its own, but does.

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My brother first learned to fly when he was a neurobiology student working with homing pigeons. As part of his summer lab job, he would pack the birds into big, slatted, wooden crates, load them into his battered pickup truck, and drive them out into the country where he would release them and measure things like the odor gradient of the pines, the azimuth of the sun, the magnetic fields. Then,

he'd drive back to the pigeon coop, or loft, where he'd lie out and sleep in the sun and dream whatever nineteen-year-olds dream, until the birds returned and woke him by ringing a bell rigged to their trap door. One day, after watching them fly off into the mystery of their instinct, he drove to the local airport and signed up for a flying lesson. Maybe it was the Swedish flight instructor named Elsa, or maybe it was what he called the "sports-car feel of a small plane," or maybe it was the sense he had that once in the air, as he said, "you really could leave everything behind." Antoine de Saint-Exupéry said, "I fly because it releases my mind from the tyranny of petty things." At any rate, by the time he landed, at the end of his first lesson, he knew he wouldn't be going to vet school. He would be a pilot. All he wanted was to fly. That freedom. That autonomy.

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Autonomy from routine. Autonomy from work. Autonomy from desire. Autonomy from responsibility. Autonomy from ruling tyrants. Autonomy most free when oblivious to autonomy. Autonomy most impossible when passive. Autonomy most exciting when attempted.

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"Slasher, we can put down the sparkle. Going to fused. I see them right there. We are eyes on the west side of the river. We are in fused, if you want to go ahead and throw down your sparkle. OK. I see a vehicle with flashing lights on. Sparkle on sparkle on call contact. Contact Sparkle. Can you zoom in a little bit, man? Let 'em take a look. That truck would make a beautiful target. Thanks dude. I don't think he's gonna let us shoot 'cause they wanna get all these guys. But still. Maybe on a squirter."

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Of course, flying for the military isn't really a place to find, or express, one's autonomy. It's mostly about following orders after all.

But pilots do still make critical decisions, just as they always have, even if the majority of new Air Force pilots today will fly their planes from inside an office. The U.S. military is rapidly converting from a manned to an unmanned fleet; from 2002 to 2010, the Department of Defense increased its unmanned aircraft inventory from 167 to nearly 7,500.² The DOD “base budget” request for UAS for 2012 was \$4.8 billion,³ and the U.S. Air Force is currently training more drone pilots than all conventional fighter and bomber pilots combined.⁴

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The military advantages of this shift are significant, not the least of which is that it is safer for our soldiers. And I have to confess that when my brother told me he was being transferred to fly drones, my first response was a sigh of relief. He would be safe. He wasn't going back to Iraq, or Afghanistan, or Yugoslavia, or Somalia, or any other place where people were trying to kill him, my little brother, the boy I grew up with, playing kick-the-can in the backyard and ping-pong in the basement, sitting next to each other in the back-seat of the car for hundreds of sticky, dull, yet intimate hours. After years of anxious adrenaline surges every time he was posted somewhere dangerous, I was glad to hear he would be out of harm's way. Maybe this is the way love puppets us — the strings that attach me to my brother yanking me away from thinking further about the murky questions of the ethics of domination.

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Inevitably, my flood of relief for my brother was shot through with doubt about the morality of drone warfare — this latest amplification of asymmetry in combat strength. The pilots so secure, the enemy so exposed, it is hard not to see the analogy to rifles versus bows. It is hard not to wonder if using drones makes for an unfair fight. Although, one might ask, when was war ever fair? And really, what would I prefer, bayonets? No. No, I wouldn't. I've seen those Civil War photos and statistics. Unless I can adopt a position of committed pacifism, maybe the more appropriate questions are the ones of “just war theory.” When is war justified, and what is

acceptable in war? Is it used only as a last resort? Is it proportional? Will it avoid creating an evil worse than the one it destroys?

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These are old questions, and I wonder if drones demand new ones. I ask my brother what makes drones different and he writes, "The only difference is the pilot isn't in the plane." At first, I want to object and point out that it is more complicated. There's the stealth issue, for instance. But, while the fact that drones are invisible matters, this isn't exactly new to warfare. Militaries have used camouflage and covert operations since before the Trojan horse. My second objection has to do with the way drones are billed as being more accurate than conventional weapons, but ultimately cause so many civilian deaths. Still, it would be hard to say that they've caused more civilian deaths than conventional warfare. And so, really, their "collateral damage" rates don't make them that different from manned bombers. Except perhaps in the way drones expose, and thwart, expectations. That is, their potential accuracy was part of the rhetoric for their adoption, and their actual carnage caused disappointment, upset, and outrage, even though conventional bombing had been causing exactly the same kind of damage for years. Somehow, this felt different, even if it wasn't. In this way, perhaps one of the most significant things about drones isn't how they hide, but how they reveal our distaste for killing, or at least the killing of innocents. In this way, we might see drones as an ironically effective tool for peacemaking if they can disclose that what their opponents oppose is not drones per se but unjust war.

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Drone warfare has not only reminded us of our horror at the human cost of war, but has also reminded us that the United States is waging a war its people have not approved, since the president's drone-based assassination program lets him perpetrate a warlike violence that circumvents the constitutional imperative for congressional approval of war and the War Powers Act. It is not the drones' invisibility that is really the problem, but the hidden nature of the

war itself.

Behind the drone, the pilot; behind the pilot, the military; behind the military, Obama. Who pulls his strings? Or does the analogy stop there?

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Onstage, Dorothy emerges from behind a curtain, glides past the wizard's staring eyes, and deftly draws back another curtain, only to reveal another puppet. A recursive plunge. A childhood moment of ecstasy and terror.

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A puppet speaks.
A puppet is mute.
A puppet is suggestive.
A puppet is spooky.
A puppet is pathetic.
A puppet is helpless.
A puppet is a surrogate.
A puppet is a proxy.
A puppet is a disembodied self.

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You can substitute a text for puppet.
You can substitute a bomb for a text.
You can substitute a swarm for a self.

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Waiting for a train, my son and I kill time in the Amtrak station's tiny arcade. We are soldiers saving the earth from an alien army. We are good at it. The joystick is familiar and exciting. We control our avatars with ease and agility. These soldiers are our surrogates. Soldiers are our surrogates.

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What to make of the frequently voiced concern that drone pilots kill more willingly and indiscriminately because of the video-game-like quality of their experience? If it is true, it is troubling. But I'm not convinced it is true. The media is full of reports that these soldiers, who have traded the intensity of the battlefield for a day of online tracking and killing at the office, have some of the highest stress rates in the armed services⁵ — a fact that would suggest that they are not desensitized by distance in the way we might imagine.

When I ask my brother why he thinks the PTSD rates are so high, he says, "There's no more band-of-brothers. You do the same job you used to do but without the same support." And people often comment on the strange phenomenon of soldiers who log off from a deadly operation only to drive to their kids' soccer games an hour away. In fact, recent studies suggest that some of the operators's stress might come simply from the long, monotonous hours of work, but the worst cases, those leading to PTSD, seem to occur primarily among operators who have seen, via video, casualties of women, children, or other civilians.⁶ Given the many reports of civilian drone casualties, as well as the problem of drone casualties classified as "militants," but who are killed in noncombat zones like Pakistan, one might hope that this evidence of soldiers suffering from witnessing the suffering of others might actually deter excessive use of drone force.

But this trailing bit of humanity may soon be erased, since the military is already working on how to modulate exactly what drone operators will witness. On the pages of publications like *Science and Engineering Ethics*, military ethicists debate just how sharp the video images relayed by drones should be. Sharp enough to be accurate, but not so sharp that operators can't handle the reality of their actions.⁷ Ultimately, however, the solution looks like it might not be one of resolution (of pixel counts), but of dissolution. Or, more accurately, the military solution to the problem of conscience will involve a literal dehumanization of military pilots as, increasingly, they will be taken out of the loop. This is what the military calls RMA, the Revolution in Military Affairs, the rise of robotic, weaponized, surveillance devices that are fully autonomous.

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Things puppets can do to us: charm, deceive, captivate, fool, trick, remind, amuse, distract, bore, repulse, annoy, puzzle, transport, provoke, fascinate, stand in for, kill.

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For now, most “autonomous mechanized combatant” vehicles and “tactical autonomous combatants” are still remotely controlled by human operators who are responsible for their actions. But soon, the puppets will be turned over to a new master, a computer code, an algorithm that will separate targets from nontargets for automated killing. Military ethics specialist Robert Sparrow asks us to consider whether the “development of robot weapons [will] generate an ‘arms race to autonomy, thus effectively forcing the deployment of weapon systems in ‘fully autonomous mode.’”

In Iraq, we used not swords, but SWORDS, Special Weapons Observation Reconnaissance Detection Systems that are remotely controlled robots armed with machine guns. Some say we can expect swarms of nanodrones to be blown into cities in order to continuously data-mine or monitor inhabitants, streaming information to automated weapon systems. “From this point on,” Defense Watch reports, “nobody in the city moves without the full and complete knowledge of the mobile tactical center.”⁸

Take a look at the DARPA’s hummingbird drone on YouTube. Or consider the DARPA-sponsored Hybrid Insect Micro-Electro-Mechanical Systems (HI-MEMS) project, where scientists have developed a moth-machine cyborg. The pupa is injected with electronic components and, after the inevitably Kafkaesque metamorphosis, the insect unfurls its wings and is flown by its human operator to a distant window where it flutters with the other bugs. Watching, recording, relaying the end of privacy.⁹ And the plan is to have them “weaponized.” Nano- and genetic technology fuse in the latest forms of biological warfare. As Stephen Graham writes in his book

Cities Under Siege: The New Military Urbanism, we can expect swarms of flying microrobots that will target an individual's DNA by means of biological or genetic armaments injected into the subject's bloodstream. Graham quotes U.S. Air Force Colonel Daryl Hauck who writes that, "Single microteeth-like devices could fit well within a blood vessel to carry and insert genetic material into cells."¹⁰ Already, many of our war robots are designed for use in a system that, as Graham writes, "involves rapidly linking sensors to automated weapons so that targets that are automatically sensed and 'recognized' by databases can be quickly, continually, and automatically destroyed. In US military parlance such doctrine is widely termed 'compressing the kill chain.'"¹¹

"Compressing the kill chain." Chilling, but what language of war isn't? And do I really imagine an end to war? No, I don't. So, why my continued hesitations, my anxieties about this technology?

Perhaps our fears about drones can be traced to the sci-fi fear that we will cede control to mindless robots, that we will surrender to them our autonomy. And even some within or close to the military share this concern. Edward Barrett, director of Strategy and Research at the U.S. Naval Academy's Stockdale Center for Ethical Leadership says, "the issue of autonomous lethal systems" or "the idea that you can use software that recognizes the targets and then makes a decision that's ethical to destroy targets, with no human intervention" is "ethically challenging."¹² He asks,

Exactly what would these autonomous systems sense, decide, and do? Would they adequately distinguish combatants from non-legitimate targets such as bystanding civilians and surrendering soldiers — a task complicated by counter-countermeasure requirements? Would they adequately — i.e., at least as well as humans — comply with necessity and proportionality imperatives? Minimizing these possible in bello errors would require the elusive ability to credibly attribute bad results to a culprit — designers, producers, acquisition personnel, commanders, users, and perhaps even robots themselves. And if the notion of "robot responsibility" ever becomes meaningful, would a self-conscious and willful machine choose its own ends, and

even be considered a person with rights?¹³

If, as Barrett suggests, we enter an age when a robot can be “considered a person with rights,” would this mean that instead of the drones being our puppets, we might become theirs?

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Watch the puppet who looks up at the puppeteer. Watch the puppet master who disappears into the puppet. Watch the moment in bunraku when the operator is elevated to his highest status, the day he is allowed to remove the black hood that kept him hidden and thus become *dezukai* or “visible,” a move that, paradoxically, makes him part of the puppet, who, in that precise moment, seems to become doubly real. Watch Punch when he lurches to the edge of his little stage, looks down behind him and, to the delight of the crowd, yells out: “Move my hand. Move your hand. Inside me. Move me. Ah. Never mind. I’ll do it myself.”

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It is a thrilling vision, but it is an illusion that the puppet is real. Just as it is an illusion that robotic weapons and deadly algorithms are autonomous. Because, in fact, a disembodied algorithm can’t commit a war crime, but the one who chooses to deploy it can. The real potential problem is not autonomous robots run amok, but an autonomous state run amok.

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At the tail end of the small-town parade, a group of people surrounded by a sky-blue banner are singing gently. Other banners lofted on sticks proclaim, “We’re All in the Same Boat.” This is the Bread and Puppet Theater at the annual Lyndonville parade in Vermont’s Northeast Kingdom. Behind them, a papier-mâché Uncle Sam perched in a tiny boat of his own and a puppeteer dressed in the dark suit of a businessperson carry signs that say, “Not me.”

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People fear that drones will be used indiscriminately, without conscience, without public consent, and (given their invisibility) without our knowledge, on anyone the state deems an enemy, even its own people. The fact that these are covert devices makes them categorically different from visible weapons in the context of “homeland security.” Nobody wants to see an armed helicopter hovering over their house, but if they do, at least the whole culture knows we’re living in a police state. Without visibility, the safeguard of witnesses disappears. The stealth issue makes it harder to simply turn to the law, because it’s so much harder to know when it is being violated. Military ethicist Edward Barrett concedes that “these less visible weapons could facilitate the circumvention of legitimate authority and pursuit of unjust causes.”¹⁴

While there will always be some people who care more about distant victims and the devastation of “collateral damage” than others, everyone can share the fear that the kill chain will end with us. That we’ll be haunted by the thought of the drone stationed above our city, the clicking bird at the feeder, the moth on the screen door policing us, or the mosquito buzzing up and landing with its microscopic agents poised above our bloodstream. Will it genetically alter you and so, without your even knowing, you will no longer be yourself? Or will it simply kill you? When it comes to dissent, just the idea of such deadly puppets is a fierce ideological tool.

Finally, we shouldn’t forget that the conversation about drones is shaped by the fact that we live in a state committed to a doctrine of undending war and that this constrains the ways in which we might legislate drone use. We can, and should, oppose any unethical use of “autonomous combat,” any use that threatens to make us the puppets of the state, but until we can revive the notion of “peacetime” itself, all use is wartime use because all time is wartime.

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Not bagpipe, sitar, or hurdy-gurdy. This drone sound-track is more like a motor. A sustained monotonous tone. A monophonic effect. A buzzing of male bees where MALE = Medium Altitude Long Endurance. Eyes twice the size of workers'. Fly, hover, see. Fly, hover, see. Theirs is a machinic persistence. It gives them the ease of thoughtless determination. They've got the endless buzz of eternal war. One note continuously sounded.

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We long for autonomy from danger, and in order to gain this, we cede our agency to others who will stand in our place, whether they are human soldiers or autonomous weapons systems. Inevitably, the desire for safety creates new dangers. It can be tempting to protect our security at any cost. But the cost of security can remake us. It can turn justified acts of defense into preemptive acts of tyranny. It can transform defenders into predators. We turn from the drone named Global Observer to the one we call the Predator. We turn from the Sentinel, Heron, and Hermes to the Hunter, Avenger, and Reaper. We turn from knowingly using these puppets as tools to foolishly accepting the notion that the puppets themselves are in control. We watch them perform in scenes of declared combat like Afghanistan and then watch them restage in undeclared ones like Pakistan. Or Oakland.

What would it take to turn this around? What two-faced puppet whose head can be spun to reveal that the backside of the demon is the god, that even situations that seem impossibly entrenched contain other possibilities? I'm not sure how moved I'd be by a Janus puppet appearing in some old-time political street theater intended to wake me up and get me moving. But what about Janus riding high on a citizen-deployed puppet-drone out to protect the people?

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The Uncle Sam puppet struts out onto the dirt floor of the stage only to encounter the slogan, "The basic task of feet is kicking the ass of the government." A group of puppeteers yanks down his pants, leav-

ing his pink cardboard buttocks exposed for their blows. The audience jeers happily, but quiets down for a pantomime of “the elemental battle of good and evil,” in which both sides die, writhing and then still on the floor. Bread and Puppet founder Peter Schumann steps onto the balcony and says it is time to address stupidity and history with “the possibilitarian imperative to rise up to the post-battle existence.” He says that the antidisaster battle cry that life demands from us, the one the world demands from us, the one the world needs, is “Up and at ‘em.” (Actually, I think he says, “Up and atom” with a wink). The puppeteer Diggers exhort us to “stand up now.” They sing that “the gentry must come down and the poor shall wear the crown.” The dead players rise and sing. And so does the watching crowd.

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Float. May Day Parade, 1936. Fake ticker tape spewed. They said, like blood. Covering “The Capitalist” puppet. His giant head stamped with a swastika. In Plate 11, Jackson Pollock descends the stairs. Hat pushed back on his head, he guides a limb two-stories high across the face of the building. The fire escape trembles. This is the Siqueiros Experimental Workshop, Mexican revolutionary muralist David Alvaro Siqueiros’ Fourteenth Street studio. Below, Union Square was full of communists. Some say 60,000. Assembled, capitalism’s gargantuan hands clutched a donkey and an elephant. Relentlessly, a hammer (with a sickle) smashed the ticker tape machine. Its streamers endlessly unfurling.

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Why all these puppets? Peter Schumann says, “People exist as citizens and puppets are insurrectionists and therefore shunned by correct citizens — unless they pretend to be something other than what they are, like fluffy, lovely or digestible.”

Whether the puppet is our tool or our toy, puppets are inevitably political because they wear on their faces our own lack of power. Puppets perform our longing for autonomy and its absence — in

our personal, social, and political relations. In love, in work, in affairs of state. Puppets offer us a way to see ourselves. Puppets reveal themselves to be both objects and subjects blind to their constitutive subjectivity, just as we so often are. Like us, they are at once actors and acted upon. Puppets concretize our social relations, and make it possible for us to consider the normally invisible forces that control us; once considered, these forces might be better understood and, hence, possibly, overcome. In the object of the puppet, we glimpse the subject of the human. In the object of the drone, we glimpse the subject of society. What if the juxtaposition of puppets and drones allows us to glimpse something beyond our usual patterns and habits of domination and acceptance?

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Maybe now it is time to put away the plaything of this metaphor in favor of a more active one, something that reminds us of the ways in which we are not puppets and that drones are not our masters, but we theirs. Maybe I'll cut the strings and turn all these puppets into effigies. Effigies are puppets that burn. Effigies don't have a puppet's spirited animation, but their makers do. When the flames engulf the effigy, we don't see the doll, only the daring.

¹ Guy Debord, *The Society of the Spectacle* (Rebel Press/Aim Publications). 1987. Section Two, Chapter One. 1–2.

² Jeremiah Gertler, "U.S. Unmanned Aerial Systems," Congressional Research Service, 7-5700 www.crs.gov. R42136. January 3, 2012. Page 2. <http://www.scribd.com/doc/77662547/1105-001>.

³ United States Department of Defense. Fiscal Year 2012 Budget Request Overview. Office of the Undersecretary of Defense (Comptroller)/CFO. February 2011.

⁴ Bumiller, *New York Times*. December 18, 2011.

⁵ Elisabeth Bumiller, "Airforce Drone Operators Report High Levels of Stress," *New York Times*, December 18, 2011. http://www.nytimes.com/2011/12/19/world/asia/airforce-drone-operators-show-high-levels-of-stress.html?_r=1.

⁶ Bumiller, *New York Times*.

⁷ Robert Sparrow, "Building a Better WarBot: Ethical Issues in the Design of unmanned Systems for Military Applications," *Science and Engineering Ethics* (2009) 15:169–187.

⁸ Stephen Graham, *Cities Under Siege; The New Military Urbanism* (London: Verso, 2010) 168.

⁹ http://www.darpa.mil/Our_Work/MTO/Programs/Hybrid_Insect_Micro_Electromechanical_Systems_%28HI-MEMS%29.aspx.

¹⁰ Graham, 173–174. Ftn 72 references Daryl Hauck, "Pandora's Box Opened Wide: Micro Unmanned Air Vehicles Carrying Genetic Weapons," research paper, Air War College, Air University, Maxwell Air Base, 2004, 21.

¹¹ Graham, 169.

¹² Kim Lawton, "The Ethics of Drones," *Religion & Ethics Newsweekly*, Public Broadcasting System. August 26th, 2011. <http://www.pbs.org/wnet/religionandethics/episodes/august-26-2011/the-ethics-of-drones/9350/>.

¹³ Edward Barrett, "Rise of the Drones: Unmanned Systems and the Future of War," Statement to the House Committee on Oversight and Government Reform Subcommittee on National Security and Foreign Affairs. March 23, 2010. www.fas.org/irp/congress/2010_hr/032310barrett.pdf.

¹⁴ Barrett, 2.