

SPAWN

GAMERS, HACKERS,
AND TECHNOGENIC LIFE

Colin Milburn

RE

Topiary @atopiary • 21 Jul 2011

You cannot arrest an idea.

Edward Snowden @Snowden • 29 Sep 20

Can you hear me now?

OpLastResort @OpLastResort • 27 Jul 20

ussc.gov --> enter Konami code (with cursor

↑↑↓↓←→←→ B A <Enter> ----> CAEK (repea

NyanCat powers...) #opLastResort.

Chelsea Manning @xychelsea • 8 July 201

the “rules” are the problem

Anonymous @YourAnonNews • 21 Feb 20

It's just a game. It always has been.

Cory Doctorow @doctorow • 30 Nov 2016

Fr... eril defend it with all your mi

Carity @StealThisSingul • 1

... Freedom is Eternal Vigilantes.

Commander X @CommanderXanon • 25

Ala Minority Report, once again fiction beco

reality in a world so surreal it's hard to to be

it's real anymore.

Barrett Brown @BarrettBrown_ • 12 May 2

I read the entirety of Orwell's correspondenc

essays in prison, but just now learned that h

knuckles tattooed while in Burma. George C

knuckle tattoos.

Jay Leiderman @JayLeidermanLaw • 20 M

Hackers are not dangerous, they are misun

The Lulz Boat @LulzSec • 15 Jun 2011

Tango down—cia.gov—for the lulz.

AnonOps @anonops • 6 Mar 2012

#Anonymous Is an idea, not a group. There

no leader, there is no head. It will survive, b

during, and after this time.

Lizard Squad @LizardPatrol • 24 Nov 2014

You cannot arrest a lizard.

RESPAWN



EXPERIMENTAL FUTURES

Technological lives, scientific arts, anthropological voices

A series edited by Michael M. J. Fischer and Joseph Dumit

SPAWN

**GAMERS, HACKERS,
AND TECHNOGENIC LIFE**

Colin Milburn

RE

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www.nyan.cat.

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INTRODUCTION. ALL YOUR BASE

The screen flickers. A siren blares. The future has arrived: “In A.D. 2101 war was beginning.” As flames engulf the bridge of the lead battle cruiser, the captain of the ZIG fleet asks, “What happen?” The mechanic responds, “Somebody set up us the bomb.” Amid the chaos of explosions, the communications operator shouts, “We get signal.” While the captain struggles to understand the catastrophe, bellowing an incredulous “What!” to his crew, the operator connects the incoming transmission to a holographic display screen: “Main screen turn on.” As the image comes into focus, the captain cannot hide his shock: “It’s you!!”

Sure enough, it is the leader of the cyborg invasion force known as CATS: “How are you gentlemen!!” The CATS leader—humanoid in appearance yet radically other, a hybrid of alien flesh and mechanical components—taunts the human defense fleet with imminent doom: “All your base are belong to us. You are on the way to destruction.” It seems that CATS has managed to infiltrate all the human space colonies and outposts, taking over the bases while the ZIG fleet looked the other way. The captain seems unwilling to accept this turn of events: “What you say!!” But CATS assures him that all hope is lost: “You have no chance to survive make your time.” The holographic transmission fades out with the mocking laughter of CATS echoing throughout the bridge: “Ha ha ha ha. . .”

The captain clasps his hands, uncertain how to react. The crew urges him to action: “Captain!” Finally, the captain steps up, back in the game. He



FIGURE 1.1. *Zero Wing*: CATS leader. European version of the Sega Mega Drive port, Toaplan, 1992. The original arcade version of *Zero Wing* was released in Japan in 1989.

orders a counterattack: “Take off every ‘ZIG!’” As the ZIG pilots scramble to take off, the captain commends their skills and orders them to engage the alien enemy: “You know what you doing. Move ‘ZIG.’ For great justice.” The battle for the future of humanity is on.

This opening scene to the Japanese video game *Zero Wing*—or rather, its oddly translated 1992 European release for the Sega Mega Drive—has become legendary.¹ In this game, the player takes the role of a human spaceship pilot fighting against the CATS army. CATS vividly represents the threat of total cybernetic takeover, embodied in the smirking face of the leader: a fusion of the organic and the robotic, the human merged with the computer (fig. 1.1). According to CATS, the posthuman future is already inevitable: “You have no chance to survive make your time.”² The game presents an allegory of the information age, our increasing dependence on computational systems, and the risk that “all your base” might already be controlled—whether by a political force or a technically sophisticated intruder. At the same time, CATS’s notoriously cryptic dialogue in the English translation suggests the instabilities and failures that likewise characterize the practices of high-tech globalization.³ Indeed, while the international circulation of digital games

and other media may help constitute a common global culture, mistranslations and epic malfunctions abound.

Wildly embraced by geeks and gamers precisely because of its multiple levels of irony, and above all, the badass way that CATS threatens complete annihilation while hilariously failing to execute proper grammar or cultural awareness, *Zero Wing* has become a familiar touchstone for online lore, laughs, and leetspeak. In particular, the line “All your base are belong to us” is now a widespread catchphrase for technical prowess—as well as its precarity. CATS’s boastful claim has spawned a profusion of remixes and weird appropriations.⁴ Among the myriad and sometimes baffling applications of this meme, several have reinforced the sense in which *Zero Wing* serves as a metaphor or a playable simulation of our own historical moment, the age of computational media and the mass digitization of culture. For many gamers, the phrase represents the promise of video games in particular, the astonishing growth of the games industry over the last thirty years and the rising dominance of games as a medium of expression (fig. 1.2). The journalist Harold Goldberg, for example, makes this claim in his 2011 book, *All Your Base Are Belong to Us: How 50 Years of Videogames Conquered Pop Culture*. For others, it is indicative of digital technologies and ubiquitous computing more generally, where CATS becomes a figure for the internet as such (figs. 1.3 and 1.4). After all, what could be more emblematic of the internet and its cultural modalities than high-tech cats? Lol!

From this perspective, the momentary paralysis of the ZIG fleet captain is especially significant. The captain—a highly trained officer of Earth’s defense force, eminently prepared for military engagements of all kinds—does not know how to react to this particular invasion because, before it has even begun, it seems already to be over. The explosive CATS attack is not the beginning of a war but its conclusion, the endgame, and this is why the captain is so shocked. The alien is already inside. Posthumanization is already under way. The distressing implications of this situation (especially for the captain, who can barely keep up) are uncannily evoked in the mangled English translation, which affords a set of interpolated meanings and partial significations precisely by virtue of its grammatical hybridity, its semiotic mashup. For “All your base are belong to us” is an assertion that is less about mere possession or appropriation than an *ontological condition*, that is to say, the belongingness of the human base—all the base—to the cyborg world. It is an essential belonging, emphasized by the copula and the infinitive: “your base are belong,” as if always already. Crucially, it is not simply the *bases* at stake, the colonies and outposts. Rather, it is “all your base,” in other words, the base



FIGURE 1.2. Cover image for bornon413's 8tracks playlist: "A hard cyberpunk mix for playing *Space Invaders*, or any shooter with aliens, really," bornon413, "All Your Base Are Belong to Us," 8tracks, June 23, 2014, <http://8tracks.com/bornon413/all-your-base-are-belong-to-us>. The scan lines call attention to the medium, the electronics of gameplay. Gamers often creatively mix *Space Invaders* with *Zero Wing*, highlighting thematic continuities—and implying that games about high-tech invaders ("any shooter with aliens, really") are also about the ascendancy of video games in the field of cultural production.

as such: the very foundation of civilization, the infrastructure of society, the wellspring of culture, the basis of what it means to be human—all utterly transfigured under the regime of alien science. At least, according to CATS.

In this light, the CATS leader presents a claim about technogenesis—and an affirmation of technogenic life. As a philosophical concept, technogenesis refers to the entanglement of human evolution with technological evolution, the individuation of technical objects, subjects, and collectives altogether.⁵ On the other hand, as a trope of science fiction, technogenesis suggests



FIGURE 1.3. Gamer cat. Created by Davieeee, just for fun: “A lolcat i made for the lolz.” Posted at DeviantArt, November 30, 2009, <http://davieeee.deviantart.com/art/All-your-base-are-belong-to-us-145307166>. The lolcat phenomenon emerged on 4chan as early as 2006. Its popularity accelerated in 2007 thanks to the commercial site *I Can Has Cheezburger*? It is one of the genres of feline-oriented media that dominate the modern internet. This particular lolcat is playing the *StarCraft II* multiplayer beta in late 2009. Yet Blizzard Entertainment did not release the beta through its Battle.net online service until February 2010. How did the cat get access prior to the official release? Must be some kind of 1337 h4xor.

something yet more speculative, namely, the emergence of new life-forms, artificial entities, and synthetic organisms from within systems of technology. For example, in Syne Mitchell's 2002 novel, *Technogenesis*, the billions of people linked through global telecommunications systems evolve a network consciousness: “It was as if the crowd was a single entity and the connected people its cells.” They form a vast posthuman creature called Gestalt: “A flash image of Gestalt, not as a separate entity hovering above humanity, but distributed through the minds of billions. Each human contributing part of their mental processes, part of their being to the whole.”⁶ Similarly, in Wil McCarthy's 1998 novel, *Bloom*, self-replicating molecular machines represent a phylum of inorganic vitality, a species of living hardware: “A tiny machine, like a digger/constructor but smaller than the smallest bacterium, putting copies



FIGURE 1.4. “lolCATS.” Created by bico-kun (a.k.a. Michael James Brew). Posted at DeviantArt, December 10, 2008, <http://bico-kun.deviantart.com/art/lolCATS-105995322>. The CATS leader speaks in the idiolect of lolcats to indicate the depth of the intrusion—“in ur base,” root access—fiddling with the secret, private parts of the system (“movin’ ur’ zig”). The cyborg cat, meanwhile, dreams of pwning “cheezburgerz”—“All your cheezburgerz are belong to us”—recalling the base, that is, the origin of the lolcat meme and its influence on internet culture (“I can has cheezburger?”).

of itself together with cool precision. . . . In short, a pretty typical piece of technogenic life.”⁷ In these stories, the emergence of a specifically technological form of life—different yet fully equivalent to biological life—is also the occasion for discovering the technical aspects of the human, the degree to which technics are not merely ancillary or extrinsic to the proper base of humanity, but fundamental and constitutive.⁸ Hence, the development of new kinds of technogenic life is itself interwoven with the technogenic condition of human history and its future.

This much is suggested in *Zero Wing*. The mechanic’s observation, “Somebody set up us the bomb,” certainly seems to mean that someone has attacked with explosives. Yet the sudden technological upheaval provokes a syntactic chaos, rife with alternate meanings: *somebody set up* a situation that we cannot escape, a setup that triggers high-tech combat, making *us the bomb*. The

CATS attack sets up or reveals our own explosive potential, our own technical acceleration. In bombing us, we become as the bomb. Human life—if it is to survive—has no choice but to internalize the shockwave of this detonation, its fallout and its meanings, and launch into the game (“Take off every ‘ZIG’!!”), exposing an intrinsic capacity for technoscientific response, that is to say, responsibility. At least, in the world of *Zero Wing*.

In this book, I therefore use the term *technogenic life* to describe how the conditions for life as such—nature as much as nurture, lifeworld as much as lifestyle—emerge, evolve, and transmogrify in the era of advanced technoscience, especially in relation to pervasive computerization. It is about the development of new forms and practices of life through digital media, and video games in particular. These practices of technogenic life include political interventions and direct action at the level of technics—that is to say, technopolitics—as well as affective productions and performances, collective mobilizations, and a set of subversive pleasures known as the *lulz*: corrupted laughter, weaponized lols. As practices, they animate a set of subject positions—or rather, dispositions—characteristic of our high-tech culture: shockwave rider, hacker, geek feminist, pirate, troll, maker, modder, gamer. These subject dispositions—invariably grassroots and bottom-up, even if shaped by a certain degree of privilege and a proximity to hubs of expertise—are situated and contextual.⁹ They respond to the massive technical and epistemic shifts taking place in the world today, what the media theorist Alexander Galloway describes as “the current global crisis . . . between centralized, hierarchical powers and distributed, horizontal networks.”¹⁰

We see it everywhere, even in *Zero Wing*. In the midst of crisis, with everything at stake, the captain—the figure of top-down command—falls down on the job. The illusion that everything is under control, that the status quo will prevail, unravels when faced with the insidious force of cyborg technology. But from below, from within the ranks of technicians and machinists, media operators and communications specialists, the human survivors of the CATS attack rebound. They spring to action, prodding the captain as they maneuver the command ship through the explosive field, tuning signals and modulating the technical surround.

And let us not overlook the heroic ZIG pilot who speeds off to confront the alien menace (“You know what you doing”). The pilot fends off wave upon wave of enemies—not from the outside but already in the middle, embedded in technoscientific systems and linked into the computational network, exhibiting the same cybernetic condition as the CATS collective. The pilot zigs and zags across the screen, fighting against the CATS calamity



FIGURE 1.5. *Zero Wing*: The hand of the pilot, moving ZIG. Toaplan, 1992.

precisely through the instrumentation of the ZIG (fig. 1.5). The pilot is visible in the narrative only as a component of the machine, accessing the zone of conflict through this privileged device.¹¹ To say the least, the ZIG pilot is a mirror image of the player of *Zero Wing*—the player who controls the ZIG by keeping a tight grip on the Mega Drive controller, mashing buttons as fast as fingers can fly. The player . . . in whose hands the future lies.

Reload

Zero Wing offers a model of engagement. It fabulates, speculates on the expanding regime of computation, and then bodies forth a way of grappling with this situation in the mode of high-tech play. In its own ludicrous way, then, it suggests the capabilities of games to defamiliarize and recalibrate our sense of things, becoming instruments of representation as well as intervention. The designer Will Wright has even argued that games are like the tools of laboratory science in this regard, enhancing our sensory and cognitive capacities, our intuitive understanding of complex systems and processes of historical change:

And what's interesting to me about games, in some sense, is that I think we can take a lot of long-term dynamics and compress them into very short-term kind of experiences. Because it's so hard for people to think fifty or a hundred years out, but when you can give them a toy, and they can experience these long-term dynamics in just a few minutes, I think it's an entirely different kind of point of view, where we're

actually mapping, using the game to re-map our intuition. It's almost like in the same way that a telescope or microscope recalibrates your eyesight. I think computer simulations can recalibrate your instinct across vast scales of both space and time.¹²

Extending our perception while presenting tricks and tactics for inhabiting the world differently, games are technoscientific contraptions, engines of experimentation. They are toys, certainly. But according to Wright, they enable tacit knowledge of phenomena that extend above and below the everyday human scale. By playing in fictive worlds, experimenting with their rules and affordances, we get a feel for futurity, potentiality—the virtual as such. The world not only as it is, but how it might have been, or how it yet might be.

The logic of experimentation inheres to video games at every level. It is rooted in the procedures of exploration, testing the capacities of the game, discovering the laws and limitations—even if trying to break them. Moreover, ludic structures of repetition hold forth the possibility if not the requirement of playing again, learning from previous errors and serendipitous discoveries to play better each time. While some games punish failure harshly, for example, so-called permadeath games that make us start over from the very beginning if we die, others enable restarts in the middle of things, allowing us to spring back into action after a fatal blunder, hopefully wiser for the experience. Among gamers, there is a term for this springing back, this returning to life, this continuance of the game: *respawn*.

The language of respawn first appeared in *Doom*, explicitly in the command-line parameter “-RESPAWN” (introduced in 1994 with version 1.2 of the software), which would set all dead enemies to rise again after a brief hiatus, and also implicitly through a gameplay feature that the instruction manual described as “eternal life after death”: “If you die, you restart the level at the beginning with a pistol and some bullets. You have no ‘lives’ limit—you can keep restarting the level as often as you’re killed. The entire level is restarted from scratch, too. Monsters you killed are back again, just like you.”¹³ Try, try again. Today, respawn broadly means the resurrection of any video-game character after death, defeat, or disintegration. It expansively informs gamer discourse, as well, underlying favorite proverbs such as “Gamers don’t die, they respawn!” and “I am a gamer, not because I don’t have a life, but because I choose to have many.” Respawn stands for a surplus of vitality, a reserve of as-yet unexpended life, a technologically mediated capacity to keep on going even while facing dire adversity.

It recalls the biological while simultaneously estranging it, soliciting a postbiological way of seeing. That is, while many forms of life are known to spawn, only technogenic life can respawn. As a trope, respawning echoes and affirms the cyborg vocabularies of digital culture. In computer science, for example, the metaphor of spawning to indicate the processual creation and execution of another process is quite venerable, dating back at least to the VMS operating system in the 1970s. Its repurposing in the context of video games has only further enhanced the sense of reproductive, evolutionary potential immanent to computational systems. Like other concepts from computer science that draw parallels to the realm of organic nature—swarms, worms, viruses, bugs, and so forth—respawning performs the liveliness of algorithmic media, the fecundity of digitized information, the uncanny animacies of code.¹⁴

It aligns with the orientation of many fields of technoscience today, such as nanotechnology and synthetic biology, which increasingly figure life as programmable, compilable, and rebootable. The sense of “eternal life after death” inherent to the respawn function is shared by the methods of bioinformatics, for example, which promise a surfeit of generative information to emerge from genomic databases: DNA sequences extracted from dead cells become endlessly searchable data brimming with future pharmaceutical interventions, genetically engineered machines, and new forms of synthetic life to come.¹⁵

Respawning is therefore a sign of the times, indexing the computerization of our biology, the vitality of our machines, and the convergence of video games with the molecular sciences. As if to emphasize these connections, in 2012 researchers at the European Bioinformatics Institute developed a software application for the Illumina Genome Analyzer to improve the accuracy of DNA sequencing. This software application for high-throughput nucleotide base identification is called—what else?—All Your Base.¹⁶ “You have no chance to survive make your time. Ha ha ha ha. . . .”

Reset

All video games produce an excess of high-tech vitality, a controlled overflow of technogenic life. It is visible in various signifiers of the respawn function that have characterized video games from their earliest days: +Life, 1-UP, Health Pack, Power-Up, Extra Life, and so forth. But it is also tangible in the intensive motivation, the urge to keep playing, that ludic structures of repetition seem to cultivate, infecting players with an immoderate and sometimes ob-

sessive desire to press beyond the imposed obstacles and complete the mission, score the points, beat the level—achievement unlocked.¹⁷

The majority of commercial video games, of course, are designed to keep such desires contained inside themselves, recycling surplus energy, depleting whatever intensities have built up before the conclusion, the final boss, the kill screen. After all, while innumerable mainstream games feature violent combat and cultivate scenes of fierce competition, aggressive violence rarely spills over from the gameplay session into the so-called real world.¹⁸ Likewise, although a multitude of games feature narratives of resistance and rebellion, tasking players to challenge the forces of oppression every day in their living rooms, for the most part, revolutionary insurgency does not spread directly from the gameplay session into everyday political discourse. And while many games entrain players to carry out actions contrary to habit or preference, these novel experiences do not often translate seamlessly to other contexts. Learning how to wavedash in *Super Smash Bros. Melee*, for example, takes time and concentration. Mastering the technique might lead to spectacular feats in the game, but this peculiar exploitation of digital physics does not work in other games—much less in the real world. Such specialized skills are relevant primarily to a mode of existence produced in and around the game, folded back upon itself.¹⁹ In general, video games are devices that produce an excess of technogenic life—represented in the respawn function—and then immediately recapture it, exhausting it through reward and achievement systems, escalating challenges, familiar tropes, contrivances of narrative closure, and other containment mechanisms that are part of what makes games so much fun in the first place.

And yet the containment mechanisms are not always complete. This is exactly the point. For some games, and for some players, the end of the game is not the end. Even the production of downloadable extras, official sequels, or a transmedia franchise does not always manage to fully expend the accumulated respawn energy, the anticipatory desire generated by the gameplay itself. For some games, and for some players, there is more. Alternate meanings and interpretations proliferate, unpredictable emotions and practices diversify and spread, new communities emerge.²⁰ The inbuilt mechanisms for harnessing ludic intensities, delineating the inside and the outside of the game, fail to maintain the boundaries.

In other words, there are players who do try to make wavedashing work in the real world—modifying the constraints, aspiring to make the impossible possible, struggling against the stubborn physics engine of everyday life (figs. 1.6 and 1.7).



FIGURES 1.6 AND 1.7. Wavedashing in *Super Smash Bros. Melee* (top) and in the living room (bottom). Screenshots from imnot18hehe, “How to Wavedash in Real Life,” YouTube, March 6, 2013, <https://www.youtube.com/watch?v=hLnSoo5wOmQ>.

In these moments, recreational entertainment proves to be less an escape from normality than a reopening, an opportunity for innovation, reflexivity, and deeper engagement. It's no secret—at least, not any more. After all, the tendency of games to exceed their own closure, to propagate concepts, affects, and patterns of conditioned response beyond themselves, is precisely what underlies the projects of gamification, serious games, citizen science games, health games, recruitment games, training games, and other forms of edutainment, which intentionally try to focus the exuberant energies of ludic environments toward other social purposes.²¹ But even in channeling in-game mechanisms for specific out-of-game situations, they also end up providing players with tools for other operations—including critical reflection on the role of games themselves in the contemporary mediascape. The artist Joseph DeLappe famously proved the point with his *dead-in-iraq* project, performed from 2006 to 2011 inside the U.S. military recruitment game *America's Army*. DeLappe used the game's own chat system to recite the names of all the military personnel killed during the long Iraq conflict. Though his avatar was frequently shot by other players in the process, DeLappe would simply wait to respawn, extending his memorialization of the casualties of war through each new digital life. Under the right circumstances, video games offer ways to experiment with the technopolitics of the present, to think otherwise even from the inside.

Relaunch

In the summer of 2013, in response to Edward Snowden's revelations of the vast data-surveillance operations carried out by the U.S. National Security Agency, a number of agitated geeks peppered the internet with images that proclaimed, "All your data are belong to U.S." (figs. 1.8 and 1.9). Across the world, protestors even took the catchphrase offline to catalyze further provocations in the streets, in the flesh (figs. 1.10, 1.11, and 1.12). Along with other sardonic responses to the Snowden leaks, these media-savvy interventions neatly distilled the ongoing conflicts of control and freedom in the global information network. While satirizing the risks to civil society represented by mass securitization, they also reaffirmed the significance of video games for political expression and resistance. For they addressed the scandal of invasive data mining by refurbishing a favorite nerdish assertion of high-tech domination: the multivalent double-speak of CATS.

At the same time, members of the hacktivist collective Anonymous launched Operation NSA, a coordinated set of demonstrations that also

FIGURE I.8. Edward Snowden as meme. Creator unknown, made at Make a Meme, 2013, <https://makeameme.org/meme/all-your-base-are-belong-to-us>-WS2445.



FIGURE I.9. CATS as allegory. Creator unknown, made at MemeCaptain, July 10, 2015, http://memecaptain.com/gend_image_pages/cB52MA.





FIGURE 1.10. “All your data are belong to U.S.” Poster campaign created by Nils Knoblich. Kassel, Germany, August 24, 2013. According to the artist, “The slogan referenced the phrase ‘All your base are belong to us’ by the Japanese computer game *Zero Wing*. It is known to the Nerd community and became popular as a meme. The targeted anonymous online publication of photos of the poster started a brisk discussion. Within 48 hours the image received over 500,000 views and 174 comments on reddit.” Photograph by Nils Knoblich, <http://nilsknoblich.com/>. Reproduced by permission of the artist.

aimed to expose the financial ties between U.S. politicians and the intelligence community. Anonymous announced the operation with a dramatic video addressed to the NSA and its supporters: “OpNSA will be unforgiving in its work and will leave no stone unturned, just as you do for all of us. As of this moment, people around the world are beginning to wake up and, consequently, stand up to your data-mining agenda. You will soon understand for yourselves what it is like to be spied on and your personal information be stored, available for all to gaze upon” (fig. 1.13). Over the following months, Operation NSA gathered information on the voting histories of several U.S. lawmakers in relation to campaign donations from private intelligence agencies and defense contractors, drawing attention to these connections through a series of paperstorms, Twitterstorms, and rallies. Anonymous urged internet users to rise up in protest: “We are officially calling on all



FIGURE 1.11. Digitale Gesellschaft demonstration at Checkpoint Charlie. Berlin, Germany, June 18, 2013. Photograph by Digitale Gesellschaft. Highlighting the perils of mass surveillance and information capitalism, the demonstration also attended to the resiliencies of technogenic life—indicated, for example, by the protestor wearing an obfuscation visor and the “Pesthörnchen” pirate logo of the Chaos Computer Club: “The Chaos Computer Club is a galactic community of living entities, without regard to age, gender, race, or class, which works across borders for freedom of information, addressing the impact of technology on society as well as individual creatures” (“Satzung des ccc e.v.,” <http://ccc.de>). Technopolitical resistance—with a science fiction twist.

citizens of the internet, all Anonymous participants and all activists to take to their computers, take to their streets and take to all available outlets to let their voices be heard on this issue. . . . The NSA will lose the game. All your base will belong to us.”²² Such media operations blur the lines between the practices of surveillance and counterveillance, articulated through a shared vocabulary of video games.²³

Snowden himself has upheld the value of video games for shaping protest and political action. During his 2013 interviews with the journalist Glenn Greenwald in Hong Kong, as they developed plans to publish the NSA documents through the *Guardian*, Snowden revealed that his motivation for challenging the security state had developed partly through his lifelong interest in games. According to Snowden, video games frequently present interactive narratives about civil disobedience, social resistance, and transformation—becoming models for engagement: “The protagonist is



FIGURE 1.12. #StopWatchingUs Köln. Protest march heading toward the U.S. Dagger Complex military base in Darmstadt, Germany, March 29, 2014. Photograph by Fabian Keil. Reproduced under terms of a Creative Commons 1.0 Universal Public Domain Dedication.



FIGURE 1.13. Anonymous: “All your base will belong to us.” Operation NSA video, June 2013.

often an ordinary person, who finds himself faced with grave injustices from powerful forces and has the choice to flee in fear or to fight for his beliefs. And history also shows that seemingly ordinary people who are sufficiently resolute about justice can triumph over the most formidable adversaries.”²⁴ In interviewing Snowden, Greenwald was struck by the thoroughgoing way in which games had informed Snowden’s own sense of justice: “He wasn’t the first person I’d heard claiming video games had been instrumental in shaping their worldview. Years earlier, I might have scoffed, but I’d come to accept that, for Snowden’s generation, they played no less serious a role in molding political consciousness, moral reasoning, and an understanding of one’s place in the world than literature, television, and film. They, too, often present complex moral dilemmas and provoke contemplation, especially for people beginning to question what they’ve been taught.”²⁵

Moreover, video games provide mechanisms for further intervention, experimental technopolitics. In the aftermath of the *Guardian* reportage, with Snowden on the run and seeking refuge in Russia, a number of independent game developers created playable interpretations of the Snowden affair. For example, the 2013 German game *Eddy’s Run* asks players to help Snowden evade government agents and spy drones as he tries to release key documents to the public. For protection, Snowden can locate the Guy Fawkes mask of Anonymous to conjure a crowd of protestors: “You are not alone! Hide in the mob. Be invisible for cameras and save from agents and drones” (fig. 1.14). Talking to a reporter keeps the mission alive: “Head over to the reporter he will spread the word for you. . . . Because he keeps telling your story, he can also help you respawn upon death.” In *Eddy’s Run*, information freedom is a life-or-death matter—computers literally become bombs—and the fate of democracy hangs in the balance (a weeping Statue of Liberty looms over the opening scene). If Snowden fails, we are given the choice of “TRY AGAIN” or instead “TAKE ACTION.” Choosing the latter option directs our attention to a variety of international activist groups and protest opportunities. We are advised to do something, anything: “However best you could do, of course, would be to start your own actions. What ever this could be. Maybe a movie, a song, or a storie to get the attention. Everything you can thing of is great and better than not doing anything at all! The people of the world have to realize what is happenig! Stand with Edward ‘Eddy’ Snowden and take action.”²⁶

Likewise inspired by Snowden’s story, the 2018 Australian game *Need to Know* puts the player in the position of an intelligence agent whose job is to spy on citizens and make decisions about their private activities. The player



FIGURE 1.14. *Eddy's Run: The Prism Prison*: After clicking on the mask of Anonymous, Eddy can evade spies and surveillance drones by hiding in a crowd of protestors. Binji Games, 2013.

must choose whether to further the aims of the state or instead to periodically leak sensitive documents and assist underground resistance groups. There are several other games, including *Snowden's Leaks: The Game*, *Edward Snowden: Escape from Hong Kong*, *Snowden Run 3D*, and *Snowden Escape*, that refract certain elements of Snowden's adventure while foregrounding generic, repetitive gameplay mechanics—run, click, jump—as if to remind us that, under the protocols of the network society, our choices are often limited, the options determined in advance.

That video games might serve as cultural resources for political critique, resistance, and insurgency seems to have been a concern of the NSA as well. According to classified documents released by Snowden, the NSA and other American and British security agencies have long considered massively multiplayer online games (MMOs) as potential hotbeds for terrorism, cyberwar, and radical thought of all kinds—demanding thorough surveillance.²⁷ For example, a top-secret 2008 NSA document titled “Exploiting Terrorist Use of Games and Virtual Environments” indicates that enemies of the state are likely to be found everywhere in gaming environments. Felicitously, this situation presents unique opportunities for security agents to locate terrorist cells, analyze social patterns, intercept communications, infiltrate enemy computer networks, and even execute counterintelligence from inside the

games. For these reasons, the NSA, the FBI, the CIA, the Defense Humint Service, and the U.K. Government Communication Headquarters have carried out a variety of clandestine operations in popular gameworlds, including *World of Warcraft* and *Second Life*, as well as in gaming networks such as Xbox Live.²⁸ The stakes are high, it seems.

Of course, the entanglement of video games and other entertainment media with militarization and securitization, the so-called military-entertainment complex, extends in many directions.²⁹ In one direction, there are commercial game developers creating hyperrealistic war games, turning simulations of armed conflict into astonishingly lucrative commodities. In another direction, there are defense agencies using game technologies for recruiting and training soldiers or for enrolling civilians in security operations. In December 2013, for instance, the U.S. Defense Advanced Research Projects Agency (DARPA) announced the rollout of its Verigames project. In collaboration with several academic and industrial research teams, DARPA developed a set of puzzle games designed to perform formal verification tests on other software, checking for vulnerable code that might be exploited in cyberattacks.

“Unreliable software places huge costs on both the military and the civilian economy,” said Michael Hsieh, a former DARPA program manager. “Formal verification of software provides the most confidence that a given piece of software is free of errors that could disrupt military and government operations.”³⁰ The challenges of formal verification are significant, however, especially at the scale of software used for modern defense networks and weapons systems. But rendering the procedures of formal verification in the form of games would enable legions of nonexperts to participate, finding bugs with vastly greater speed. The first phase of the Verigames project included five games: *CircuitBot*, *Flow Jam*, *Ghost Map*, *StormBound*, and *Xylem: The Codes of Plants*. In 2015, five new-and-improved Verigames appeared: *Binary Fission*, *Dynamakr*, *Ghost Map: Hyperspace*, *Monster Proof*, and *Paradox*. As explained on the Verigames website, “Video games that represent the underlying mathematical concepts allow more people to perform verification analysis of software efficiently. We empower nonexperts to effectively do the work of formal verification experts—simply by playing and completing game objectives.”³¹ Transformed into *citizen scientists*, these gamers would help DARPA to identify weaknesses in the U.S. cyberinfrastructure, facilitating rapid response and containment. While most of the original Verigames quickly disappeared from the internet, pulled back for further research and development, they left behind a promise of things to come: something like Orson Scott Card’s novel *Ender’s Game*, or the films *WarGames* and *The Last*

Starfighter, where gamers playing apparently innocuous games might simultaneously participate in systems of defense and securitization, eagerly, joyously—and perhaps without realizing it.

The notion that games could link us to advanced projects of military science and cybersecurity, implicating us in covert operations and surveillance networks through our recreational diversions—politics by other means—has become commonplace, promoting an ambient paranoia. Even in his youth, for example, Snowden was sensitive to the risk of games being co-opted in this way. As a contributor to the *Ars Technica* forums from 2001 through 2012, Snowden participated in many conversations about games, anime, and computers under the username “TheTrueH00HA.” On May 19, 2006, another *Ars Technica* member indicated that strange clicking sounds were coming from his new Microsoft Xbox 360, and he asked the forum for an explanation. Snowden offered a wry diagnosis: “NSA’s new surveillance program. That’s the sound of freedom, citizen!”³² A joke about the ways in which game technologies might actually be ideological machines, tools of governance—a joke that is no joke, after all.

Replay

This book is about gamers, hackers, and emergent forms of life in digital culture. It explains how practices of high-tech play generate new modes of existence, as well as new parasites. It examines media networks as zones of social volatility and video games as objects of technopolitical conflict—devices for locking down the future, devices for opening it up.³³ The point is to show not only how gaming, hacking, and other forms of high-tech play contribute to the feature set of the present, but also how they can enkindle desires and aspirations for something different, a world transfigured through technical virtuosity—the future respawned.

This much was clear as early as 1958, when the nuclear physicist William Higinbotham created a game he first called “Cathode Ray Tennis,” now generally known as *Tennis for Two*. Higinbotham developed *Tennis for Two* with his colleague Robert Dvorak at the Brookhaven National Laboratory. As a tennis simulator run on a Donner Model 30 analog computer, the game enabled two players to knock an electronic ball—a small blip of light—back and forth across the CRT display of an oscilloscope. But if *Tennis for Two* somehow resembled the venerable sport of tennis, as a computer game it signified much more. As Higinbotham later recalled, the game was designed to encourage visitors at Brookhaven National Laboratory—scientists and

nonscientists alike—to think about high-tech research and its implications for the future: “It occurred to me that it might liven up the place to have a game that people could play, and which would convey the message that our scientific endeavors have relevance for society.”³⁴

In other words, the tennis game was really an exercise in science fiction, symbolizing the potential for scientific innovations to impact society, perhaps to transform the whole world. Today, gamers looking backward at this primordial moment in video-game history often affirm the speculative dimensions of *Tennis for Two*, overriding the superficial sense in which it might be understood as a representation of tennis. “While it was only a primitive tennis simulator, [Higinbotham’s] creation must have seemed like science fiction to the hundreds of visitors that lined up to play,” writes Andy McNamara, the editor in chief of *Game Informer* magazine. “In many ways, video games are science fiction come to life—a virtual reality we control,” he suggests. “Someone who played *Tennis for Two* in 1958 could never imagine opening up a portal to another world on a giant screen in your living room or a virtual-reality unit on your head, yet that is the world we live in today.”³⁵

Certainly, the video-game industry has vigorously promoted the future-ladenness of its own products, indexed by marketing slogans for everything from the Commodore Amiga (“The Future Is Here”) to the Nintendo 64 (“Welcome to the Future”) to the Microsoft Xbox One (“Beta Tested in the Future”). Everywhere we look, the culture of video games transforms computers into toys and toys into time machines, portals to another world.³⁶ It encourages players to engage in anticipation, foresight, and “what if” with every push of the button.

Video games are speculative media, science fiction to the core. They provide a grammar, a vocabulary, a regimen for dealing with rapid technoscientific change and its worldly ramifications—the conditions of technogenic life. They also represent a playful, experimental style of engagement, a *way of using* technical systems to make other futures imaginable. As the critical theorist Michel de Certeau has argued, “A *way of using* imposed systems constitutes the resistance to the historical law of a state of affairs and its dogmatic legitimations. A practice of the order constructed by others redistributes its space; it creates at least a certain play in that order, a space for maneuvers of unequal forces and for utopian points of reference.”³⁷ Experimenting with computer games and other forms of digital media can expose diagrams of power, revealing hardware and software as inherently political things. Learning to play with them introduces the possibility of playing otherwise—hacking, gaming the game.

To explain how such things work, this book traces the intersections of gaming with hacking and high-tech activism, the spawning of technopolitical communities. It examines the invention of early computer games such as *Spacewar!* and *Adventure* in the context of hacker networks and computer science labs, arguing that video games first emerged as experiments in *applied science fiction*. By transforming the attitudes and dispositions of science fiction into a playable format, video games became models of interacting with obstinate systems, the technologies, regulations, and institutions of digital culture. Ever since then, games and other kinds of applied science fiction have contributed to the self-fashioning of hackers and hacktivist groups, such as Anonymous and LulzSec. The book explores these developments across a series of stories, scenes, and snapshots of technogenic life: the repurposing of the game *Portal* as an apparatus for change, inspiring players to experiment and take action even while discovering the limits of individual agency; the saga of the 2011 PlayStation Network outage, an incident that revealed the intensive forms of technogenic life evolving in online game networks as well as the stakes of experimenting with game technologies; and the mobilization of gamer movements, such as the 2012 *City of Heroes* protests, considered as impassioned defenses of technogenic life and the media practices that give it meaning.

Of course, the speculative energies of video-game culture frequently collapse back into conservatizing behaviors, reactionary measures that reinforce the status quo. This is what happened during the GamerGate fiasco of 2014 when some gamers, allegedly concerned with ethics in media journalism, began a sustained harassment campaign against women in the tech industry, feminist activists, and other so-called social justice warriors: a venomous assault against diversity and the perceived threat of media transformation. It reproduced in concentrated form the same power structures and processes of exclusion that characterize the dominant ideological order.³⁸ But, other times, the respawn capacities of games and gamers, indicating not simply repetition but repetition with a difference (level up, reload, reboot, FTW!), provoke more diverse forms of participatory culture, along with new tactics of critique and intervention.³⁹ Attending to the conflicts and contradictions, this book ultimately turns to questions of ethics, asking how computer games can foster thoughtful, empathic perspectives on the consequences of our technogenic condition, including the impacts of computerization on our planet and its living ecosystems. Altogether, the book follows the practices of technogenic life from virtuality to materiality, from response to responsibility.

As *Zero Wing* indicates with an abundance of weirdly poetic insight, we are now caught between competing forces vying for control of the future, each struggling to possess the systems and the bases of high-tech civilization. But this same 16-bit narrative of conflict also inspires hope, especially when repurposed and replayed in ways that expose its latent meanings and critical affordances, conjuring the possibility of a future where all the base are belong to us—to all of us, in common.

“You know what you doing. Move ‘ZIG.’ For great justice.”

NOTES

Comment on sources: To preserve the flavor of contemporary discourse, quoted sources are presented verbatim, including any grammatical peculiarities or typographical errors, and without editorial intervention unless needed for clarity. For the sake of accuracy, citations of online materials are historically specific whenever possible, referring to original hosting websites, full URLs, and dates of first publication or appearance unless otherwise indicated. Although some websites may have disappeared or changed over time, for the most part, the specific materials cited here can still be accessed through the Internet Archive's Wayback Machine or other web-archiving initiatives. However, other materials—such as those hosted on sites that block web crawlers—have not been publicly archived. Copies of all cited documents and media materials are on file with the author.

Introduction

1. Developed by Toaplan in 1989, *Zero Wing* was originally an arcade game before it was ported to the Mega Drive in Japan in 1991. For the console version, Toaplan added the introductory scene to expand the narrative context. Sega published the English-language version for the European market in 1992.

2. Many gamers have noted that CATS bears an uncanny resemblance to the Borg from *Star Trek*, not only visually but also rhetorically, insofar as the CATS leader echoes the Borg's characteristic threats of total assimilation. As one *Zero Wing* fan explains, "The introduction shows the bridge of a starship in chaos as a Borg-like figure named CATS materializes and says, 'How are you gentlemen!! All your base are belong to us.' . . . Has many of the connotations of 'Resistance is futile; you will be assimilated.'" See Biohertz, "All Your Base Are Belong to Us," *Urban Dictionary*, January 30,

2003, <http://www.urbandictionary.com/define.php?term=all+your+base+are+belong+to+us&defid=27690>. The Borg first appeared in the 1989 “Q Who” episode of *Star Trek: The Next Generation*.

3. See Poster, *Information Please*; Jenkins, *Convergence Culture*; Krapp, *Noise Channels*; and Nunes, *Error*.

4. Around 1999, a GIF made from the English-language opening scene of *Zero Wing* began to replicate on the internet, hosted on the *Rage Games* forum, the *Zany Video Game Quotes* website (<http://zanyvg.overclocked.org>), and elsewhere. By 2000, remixes and dubs started to appear, such as the Zero Wing Dub Project on *OverClocked*, along with an explosion of image macros developed on *Something Awful* and the *TribalWar* forums. In 2001, Bad_CRC of the *TribalWar* forums created a music video for “Invasion of the Gabber Robots” by The Laziest Men on Mars—a hardcore techno song that samples liberally from the *Zero Wing* soundtrack—showcasing a variety of the joke macros and media pranks inspired by *Zero Wing*. As this video went viral, it triggered other remix experiments. Since then, the *Zero Wing* meme has continued to evolve and diversify—even if some of the ineffable humor of its early years has diminished over time. On the development of the meme, see Jeffrey Benner, “When Gamer Humor Attacks,” *Wired*, February 23, 2001, <http://www.wired.com/2001/02/when-gamer-humor-attacks/>; Chris Taylor, “All Your Base Are Belong to Us,” *Time*, February 25, 2001, <http://content.time.com/time/magazine/article/0,9171,100525,00.html>; and Triple Zed, Jamie Dubs et al., “All Your Base Are Belong to Us,” *Know Your Meme*, May 1, 2016, <http://knowyourmeme.com/memes/all-your-base-are-belong-to-us>. On the propagation and cultural effects of such internet memes, see Shifman, *Memes in Digital Culture*; W. Phillips, *This Is Why We Can't Have Nice Things*; and Milner, *World Made Meme*.

5. For key accounts of technogenesis, the emergence of technical beings and collectivities in relation to the technical production of the human itself, see Simondon, *On the Mode of Existence of Technical Objects*; Stiegler, *Technics and Time*, 1; Waldby, *Visible Human Project*; Hansen, *Bodies in Code*; Loeve, “About a Definition of Nano”; Denson, *Postnaturalism*; and Hayles, *How We Think*.

6. S. Mitchell, *Technogenesis*, 28, 94.

7. McCarthy, *Bloom*, 6, 100.

8. The philosophers Jacques Derrida and Bernard Stiegler have theorized this condition as *originary technicity* or *originary prostheticity*. See Derrida, *Of Grammatology*; Derrida, *Archive Fever*; Derrida and Stiegler, *Echographies of Television*; and Stiegler, *Technics and Time*, 2. For context, see Beardsworth, *Derrida and the Political*; Bennington, *Interrupting Derrida*; and Mackenzie, *Transductions*.

9. See Genosko, *When Technocultures Collide*; Beyer, *Expect Us*; Burkart, *Pirate Politics*; Dunbar-Hester, *Low Power to the People*; Hurley, *Geek Feminist Revolution*; Postigo, *Digital Rights Movement*; Sarkar, “Media Piracy and the Terrorist Boogeyman”; W. Phillips, *This Is Why We Can't Have Nice Things*; and Coleman, *Hacker, Hoaxer, Whistleblower, Spy*. Riffing on James Scott’s concept of “weapons of the weak” and forms of peasant resistance, Coleman describes such technopolitical practices as “weapons of the geek.” She writes that “weapons of the geek is a modality of politics

exercised by a class of privileged and visible actors who often lie at the center of economic life. . . . What they all have in common is that their political tools, and to a lesser degree their political sensibilities, emerge from the concrete experiences of their craft, like administering a server or editing videos. Often these skills are channeled into activities in order to bolster civil liberties, such as privacy. Unlike peasants who seek to remain inconspicuous and anonymous even as a group, geeks and hackers—even the anonymous Anonymous—explicitly call attention to themselves via their volatile, usually controversial, political acts” (107). See also Coleman, “From Internet Farming to Weapons of the Geek.” On technopolitics as the enactment of political processes through technological use and development, as well as the political qualities of technologies themselves, see Hecht, *Radiance of France*; T. Mitchell, *Rule of Experts*; Conway, *High-Speed Dreams*; and Edwards, *Vast Machine*.

10. Galloway, *Protocol*, 244.

11. On the history of cybernetics and its fashioning of self and other as mechanisms in extended feedback systems, blurring distinctions between human and technology, see Haraway, “Cyborg Manifesto”; Galison, “Ontology of the Enemy”; and Hayles, *How We Became Posthuman*.

12. Will Wright, “Spore, Birth of a Game,” TED, March 2007, http://www.ted.com/talks/will_wright_makes_toys_that_make_worlds. On video games as instruments that extend practices of experimentation and modes of scientific thinking, see Milburn, *Mondo Nano*.

13. *Doom* instruction manual (Mesquite, Tex.: id Software, 1993), 7. The “-RESPAWN” parameter is described in the *Doom* “README.TXT” file as follows: “-RESPAWN tells DOOM that, yes, you are a badass, and yes, you want all the monsters to respawn around 8 seconds after you kill them.” See “Welcome to v1.8 of DOOM!” README.TXT, *Doom* version 1.8 (id Software, 1995).

14. See Doyle, *On Beyond Living*; Helmreich, *Silicon Second Nature*; Kay, *Who Wrote the Book of Life?*; Thacker, *Biomedica*; Parikka, *Digital Contagions*; Parikka, *Insect Media*; Chun, *Programmed Visions*; Kember and Zylynska, *Life after New Media*; and M. Y. Chen, *Animacies*.

15. See Thacker, *Global Genome*; Sunder Rajan, *Biocapital*; Cooper, *Life as Surplus*; and Stevens, *Life out of Sequence*. As Stevens writes, “Biological databases are not like archives and museums—they are oriented toward the future more than the past” (138–39).

16. Massingham and Goldman, “All Your Base.” On the computerization of biology, see November, *Biomedical Computing*. On machinic vitalism and convergences with digital media, see Doyle, *Wetwares*; Johnston, *Allure of Machinic Life*; and Milburn, *Nanovision*.

17. See Weis, “Bio-Gaming”; Weis, “Assassin’s Creed and the Fantasy of Repetition”; and Parkin, *Death by Video Game*.

18. See Markey and Ferguson, *Moral Combat*.

19. On the ways in which games isolate themselves from normal life, crafting temporary spaces apart, see Huizinga, *Homo Ludens*; Caillois, *Man, Play and Games*; Suits, *Grasshopper*; and Salen and Zimmerman, *Rules of Play*. On modes of existence,

see Simondon, *On the Mode of Existence of Technical Objects*, and Latour, *Inquiry into Modes of Existence*.

20. See Jenkins, *Fans, Bloggers, and Gamers*; Taylor, *Play between Worlds*; Taylor, "Pushing the Borders"; Jones, *Meaning of Video Games*; and Consalvo, "There Is No Magic Circle." On wavedashing and other specialized practices that enable new emergent forms of play in and around existing game objects, see Boluk and LeMieux, *Metagaming*. As Boluk and LeMieux argue, the expansion of a game beyond itself into other games and gamelike practices (*metagaming*) always redefines the game, recursively producing and re-producing its conditions of playability, such that the game becomes less the origin than the effect of the metagame: "Before a videogame can ever be played—before software can be considered a game in the first place—there must be a metagame" (9).

21. See Bogost, *How to Do Things with Videogames*; McGonigal, *Reality Is Broken*; Walz and Deterding, *Gameful World*; Schrier, *Knowledge Games*; and Jagoda, "Gamification and Other Forms of Play."

22. Anonymous Network, "Message to NSA—Anonymous #OpNSA," YouTube, August 1, 2013, <http://www.youtube.com/watch?v=T1nLuKuSnaU>. This video was originally released in early June 2013. It was uploaded many times to YouTube and other websites over the following two years, along with several related Anonymous videos about OpNSA. For additional details about OpNSA activities, see the AnonOps website, *Operation NSA: Make Privacy Matter*, 2013, <https://anonops.com/opnsa/>. See also the @AnonymousOpNSA Twitter stream, <https://twitter.com/AnonymousOpNSA>, which helped to propagate the #OpNSA hashtag. Some members of Anonymous had previously tried to launch #OpNSA in January 2012, responding to emerging details about surveillance activities of the U.S. cyber-military-industrial complex that were already becoming known prior to the Snowden revelations. For example, NSA's secret Turbulence program (designed to monitor hackers around the world and launch preemptive cyberattacks) as well as some other electronic eavesdropping practices had been reported as early as 2007. See Bamford, *Shadow Factory*. Further indications of mass surveillance had come to light thanks to the Anonymous-affiliated Operation Metal Gear team coordinated by Barrett Brown, later rebooted as Project P.M. (Notably, the focus of Operation Metal Gear on exposing mysterious cybersecurity projects took a cue from the *Metal Gear* and *Metal Gear Solid* video game series.) These efforts had found evidence of various spying programs by analyzing email data from the Anonymous hack of the HBGary security firm in February 2011, as well as additional data gathered from other security contractors in the same year. The first Anonymous video to declare OpNSA explained:

Greetings Citizens of the World. We are Anonymous. For years, the NSA has been tasked with protecting the United States by gathering foreign intelligence of threats against its citizens and military. But this agency has unlawfully been monitoring civilian Internet and communications. The media and U.S. government has been frowning on our Operations when they themselves have done their fair share of what they call "hacking." The Nixon, George W. Bush, and Obama administration have been involved in wiretapping of the public.

Operation Turbulence is the current reincarnation of the NSA's programs that include data mining and malware injection into computers. Congress and politicians know of these programs and support them, even when they break our privacy. This is a formal message to the NSA, Congress, and the current administration . . . STOP! You have been warned. . . . We are Anonymous. We are Legion. We do not forgive. We do not forget. Expect us. (runmonkey75, #OpNSA.wmv, YouTube, January 26, 2012, <https://www.youtube.com/watch?v=u7LOWGmGXiE>)

Despite such early provocations, OpNSA was left simmering until the Snowden leaks happened. At that point, Anonymous turned it up to a full boil, organizing diverse protest actions.

23. See Raley, "Dataveillance and Countervailance."

24. Greenwald, *No Place to Hide*, 45–46.

25. Greenwald, *No Place to Hide*, 46. On the various ways that games can intervene in politics, including via content, narrative form, procedural rhetoric, and other means, see Bogost, *Persuasive Games*; Losh, *Virtualpolitik*; Dyer-Witthof and de Peuter, *Games of Empire*; Burak and Parker, *Power Play*; and Jagoda, "Videogame Criticism and Games in the Twenty-First Century."

26. *Eddy's Run: The Prism Prison*, Binji Games, May 8, 2013, <http://www.eddysrun.com>.

27. See James Ball, "Xbox Live among Game Services Targeted by US and UK Spy Agencies: NSA and GCHQ Collect Gamers' Chats and Deploy Real-Life Agents into *World of Warcraft* and *Second Life*," *Guardian*, December 9, 2013, <https://www.theguardian.com/world/2013/dec/09/nsa-spies-online-games-world-warcraft-second-life>. See also Justin Elliott and Mark Mazzetti, "World of Spycraft: NSA and CIA Spied in Online Games," *ProPublica*, December 9, 2013, <https://www.propublica.org/article/world-of-spycraft-intelligence-agencies-spied-in-online-games> (published simultaneously as Mark Mazzetti and Justin Elliott, "Spies Infiltrate a Fantasy Realm of Online Games," *New York Times*, December 9, 2013, <http://www.nytimes.com/2013/12/10/world/spies-drag-net-reaches-a-playing-field-of-elves-and-trolls.html>). The leaked documents include an NSA briefing, "Exploiting Terrorist Use of Games and Virtual Environments" (2008); a memo reporting work by the NSA's Menwith Hill Station and the British GCHQ, "MHS and GCHQ 'Get in the Game' with Target Development for World of Warcraft Online Gaming" (2008); and a report developed by the defense contractor Science Applications International Corporation, *Games: A Look at Emerging Trends, Uses, Threats and Opportunities in Influence Activities* (2007). Released by the *Guardian* in coordination with the *New York Times* and *ProPublica*, the documents are available on DocumentCloud at <https://assets.documentcloud.org/documents/889134/games.pdf>. On the racialized history of surveillance in online game worlds, see Nakamura, "Socioalgorithmics of Race."

28. NSA, "Exploiting Terrorist Use of Games and Virtual Environments," 2.

29. See Lenoir and Caldwell, *Military-Entertainment Complex*; Der Derian, *Virtuous War*; Kline, Dyer-Witthof, and de Peuter, *Digital Play*; Crogan, *Gameplay Mode*; Halter, *From Sun Tzu to Xbox*; Huntemann and Payne, *Joystick Soldiers*; Mead, *War Play*; Payne, *Playing War*; and Allen, *America's Digital Army*.

30. Michael Hsieh, "Crowd Sourced Formal Verification (CSFV)," Defense Advanced Research Projects Agency, 2015, <http://www.darpa.mil/program/crowd-sourced-formal-verification>. As the DARPA Information Innovation Office has elaborated, "This is particularly an issue for the Department of Defense because formal verification, while a proven method for reducing defects in software, currently requires highly specialized talent and cannot be scaled to the size of software found in modern weapon systems." See DARPA Information Innovation Office, "DARPA-SN-12-17: Crowd Sourced Formal Verification Proposers' Day—December 8, 2011," Federal Business Opportunities, November 22, 2011, https://www.fbo.gov/index?s=opportunity&mode=form&id=7568977f9618c969b17a6deddd73aa84&tab=core&_cview=0, p. 1.

31. "About Us," *Verigames*, September 16, 2013, <http://www.verigames.com/about-us.html>. As indicated on the FAQ page of the website, "If gameplay reveals potentially harmful code, DARPA will implement approved notification and mitigation procedures. . . . Prompt notification is essential to correct the software rapidly and mitigate risk of functional or security breakdowns." See "FAQ," *Verigames*, October 4, 2013, <http://www.verigames.com/faq.html>.

32. TheTrueHOOHA, response to Chickenlegs, "Clicking Power Supply on My Xbox 360," *Ars Technica*, May 19, 2006, <http://arstechnica.com/civis/viewtopic.php?p=6726096#p6726096>. On Snowden's history as TheTrueHOOHA, see Joe Mullin, "NSA Leaker Ed Snowden's Life on *Ars Technica*," *Ars Technica*, June 12, 2013, <http://arstechnica.com/tech-policy/2013/06/nsa-leaker-ed-snowdens-life-on-ars-technica/>.

33. On the ways in which new forms of life arise in technoculture as contests over structures of meaning and the rules of play, see Fischer, *Emergent Forms of Life and the Anthropological Voice*; Fischer, *Anthropological Futures*; Epstein, *Impure Science*; Juris, *Networking Futures*; and Choy, *Ecologies of Comparison*. On gaming as a zone of sociopolitical conflict, see Dyer-Witheford and de Peuter, *Games of Empire*, and J. Wright, Embrick, and Lukács, *Utopic Dreams and Apocalyptic Fantasies*.

34. W. A. Higinbotham, "The Brookhaven TV-Tennis Game," circa 1983, Brookhaven National Laboratory, 2013, https://www.bnl.gov/about/docs/Higinbotham_Notes.pdf. See also Higinbotham, "BNL Tennis Game," April 29, 1976, Brookhaven National Laboratory, 2013, https://www.bnl.gov/about/docs/Higinbotham_Deposition.pdf. On the development of *Tennis for Two* and its role in the history of gaming, see Guins, *Game After*.

35. Andy McNamara, "Games Are Science Fiction Come to Life," *Game Informer* 261 (2015): 4.

36. On the rhetoric of futurity that often adheres to gaming hardware, see Maher, *Future Was Here*; Milburn, *Mondo Nano*; and Altice, *I Am Error*. As Michael Newman shows, the early personal computer industry also pushed the idea of computers as toys while emphasizing their futuristic orientation, advertising them as serious high-tech devices that would transform both labor and leisure in the society of tomorrow. Ads for personal computers such as the Radio Shack TRS-80 and the Commodore VIC-20 featured Isaac Asimov, William Shatner, and other figures from the world of science fiction playing video games on home computers while indicating that these devices were capable of far more than mere entertainment. See M. Newman, *Atari Age*, 115–52.

By the time Apple launched the Macintosh in 1984 with its famous Orwellian Super Bowl ad, presenting the Macintosh as a sporty hacker weapon against technological authoritarianism, the science-fictional sheen of personal computing and video games had been well established. See Friedman, *Electric Dreams*, and Bukatman, *Terminal Identity*.

37. De Certeau, *Practice of Everyday Life*, 18.

38. On GamerGate, see Cross, “‘We Will Force Gaming to Be Free’”; Chess and Shaw, “Conspiracy of Fishes”; and Braithwaite, “It’s about Ethics in Games Journalism?” On the politics of diversity and representation in video-game culture, see Shaw, *Gaming at the Edge*; Anthropy, *Rise of the Videogame Zinesters*; Wysocki and Lauteria, *Rated M for Mature*; Russworm and Malkowski, *Gaming Representation*; A. Phillips, “Shooting to Kill”; and Ruberg and Shaw, *Queer Game Studies*.

39. See Jenkins, Ito, and boyd, *Participatory Culture in a Networked Era*; Jenkins et al., *By Any Media Necessary*; Raley, *Tactical Media*; Stokes and Williams, “Gamers Who Protest”; Schrank, *Avant-Garde Videogames*; Schleiner, *Player’s Power to Change the Game*; and Boluk and LeMieux, *Metagaming*.

ONE. May the Lulz Be with You

1. On *Spacewar!* and its role in the evolution of hacking, see Brand, “Spacewar”; Levy, *Hackers*; Barton and Loguidice, “History of *Spacewar!*”; and Turkle, *The Second Self*. The *Spacewar!* project and other hacker experiments indicate how computer programming is itself a form of play; see Wells, “Programmer as Player.” On ways that *Spacewar!* and university labs influenced the development of the games industry, see Lowood, “Videogames in Computer Space.” While *Spacewar!* has often functioned as an origin myth for hackers, the history of hacking actually reveals multiple genealogies and microcultures, especially in global context; see Coleman and Golub, “Hacker Practice,” and Kelty, *Two Bits*.

2. Russell, quoted in Brand, “Spacewar.”

3. Graetz, “Origin of *Spacewar!*,” 42.

4. Graetz, “Origin of *Spacewar!*,” 48.

5. See Frelík, “Video Games”; Jagoda, “Digital Games and Science Fiction”; and Tringham, *Science Fiction Video Games*. On the contrivances of video games that evert the unrealisms of virtual environments into ordinary human environments, re-framing the gaming apparatus and other material contexts through fiction, see Welsh, *Mixed Realism*. On video games as mixtures of technical rules and fictional worlds, see Juul, *Half-Real*.

6. Milhon (St. Jude), quoted in Jon Lebkowsky, “St. Jude Memorial and Virtual Wake,” *The WELL (Whole Earth ’Lectronic Link)*, August 1, 2003, <https://www.well.com/conf/inkwell.vue/topics/190/St-Jude-Memorial-and-Virtual-Wak-page01.html>. Partially quoted in Coleman, *Hacker, Hoaxer, Whistleblower, Spy*, 167. A similar definition of hacking appears in St. Jude, Sirius, and Nagel, *Cyberpunk Handbook*: “A hijack of The Way Things Are. A brilliant *détournement*. An elegant solution to a technical problem. A fiendishly clever circumvention of regulation reality” (52).