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## A Crypto-Anarchist Will Help You Build a DIY AR-15

*Cody Wilson's Ghost Gunner milling machine makes the most crucial element of an assault rifle. It costs just \$1,500 and there's a waiting list to get it.*

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During a recent visit to Defense Distributed, the mood is casual, with workers starting to trickle in between 10 and 11 a.m. The nonprofit's workspace takes up roughly 1,900 square feet in a bland office park in northeast Austin, and the only exterior marking is a sticker on the door advertising a small-business association. Inside, it looks like any other small-scale manufacturer, employing about 15 people, mostly male. Clever millennials with idiosyncratic political views, they swap observations about Donald Trump—viewed as so absurd that his ascendancy might result in perversely productive chaos—as they strip wires and screw machines together.

Cody Wilson, the mediagenic 28-year-old behind [Defense Distributed](#), paces around, multitasking: A detailed discussion of the high failure rate of a batch of couplings from a Chinese supplier gives way to phone calls to line up a new accounting firm. Occasionally he chimes in on the Trump speculation, but Wilson does not vote. To do so would acknowledge the legitimacy of a political system he doesn't believe in.

Defense Distributed is most famous for the Liberator, the world's first design code that can be fed into a 3D printer to create a complete, working gun. After Wilson released the code online in 2013, it was downloaded more than 100,000 times around the world. Then the Department of State ordered Wilson to remove the files. Posting the blueprint for an American audience is legal, but according to the State Department, because the web is global, he may have violated weapons-export regulations. The Liberator attracted a fusillade of press coverage and political backlash and landed Wilson on Wired's list of "the most dangerous people on the internet."

Wilson's journey since being "smashed" by the government—as he puts it—has been three years of nonstop stress as he scrambled to save his project. In May 2015, Defense Distributed filed suit against the State Department and related parties, alleging that its position on the Liberator files violated the First, Second, and Fifth Amendments and seeking to allow Wilson's organization to post its code again. It lost, then appealed. At the beginning of June, the Fifth Circuit court in New Orleans heard oral arguments from Wilson's and the government's lawyers. Its ruling,

which could be issued in a few weeks, will determine the future of Defense Distributed and, potentially, protect a burgeoning DIY tech weapons culture under free speech.

To fund his legal quest, Wilson has overseen the creation of a newer product called the Ghost Gunner. It's not a gun, it's a 50-pound, \$1,500 desktop machine, about the size of a microwave oven, that mills the most crucial element of a semiautomatic assault-style weapon. That means that anyone who buys it can build their own version of the AR-15—without a serial number. That's the same category of weapon as the Sig Sauer MCX used in the June 12 mass murder in Orlando. The magazine AR-15, a lush and hefty spinoff of *Guns & Ammo*, says the Ghost Gunner “will rewrite the future of firearms.” In the meantime, it's become a \$2 million-a-year business.

In the Austin shop, which Wilson rents for \$1,600 a month, his workers assemble more than 160 parts, from a range of American and Chinese suppliers, on a 13-station assembly line bordered by metal shelves holding boxes labeled “spindle mount” or “flushed arduinos” or “ballscrew blocks.” A stack of half-completed Ghost Gunners fills a long table in the front, and a row of finished models sits to one side, waiting to be shipped. In the back, there's another table where the machine's circuit boards get built, plus pallets loaded with casings and a smattering of heavy-duty equipment. On a good day they can produce 10 Ghost Gunners; there are currently more than 600 orders to fill.

“You're a dupe if you believe in reality; there's only the world as it is”

The tedious hustle of running a small startup—one that produces a controversial, potentially deadly product—has specific challenges, such as a constant churn in payment processors willing to do business. It's not the life that Wilson had in mind for himself. He's an idea guy. With a neatly trimmed beard and even features, Wilson resembles a 6-foot-tall G.I. Joe doll. In public appearances and on camera, he can be amusingly obnoxious, going out of his way to frame his points in the most provocative manner possible. He's fond of I-just-blew-your-mind references to Foucault and Baudrillard. It's “part of who I am,” he says—and partly an act. “You're a dupe if you believe in reality; there's only the world as it is,” he'll say, referencing the distinction French Continental philosophers draw between reality, viewed as a construct of language (in the service of capitalism, according to Baudrillard), and the real real—a state of being or perception nearly impossible to achieve for people caught up in the system. He doesn't articulate his theories for the unschooled, but he'll add with a grin, “This all sounds like nonsense, I know.”

Wilson grew up near Little Rock. As early as the ninth grade, he says, he was “attracted to radical politics,” reading up on the Russian revolution online. Still, he wasn't a rebellious kid; he was the student president of his high school. At the University of Central Arkansas, he took philosophy and economics courses, and read Derrida, Nietzsche, Habermas, Hans-Hermann Hoppe. “I remember telling my mom, ‘I'm pretty sure I'm an anarchist, actually.’ She was like, ‘I think you're gonna have a very difficult life,’ ” he says. “I guess she's right.”

Wilson started law school at the University of Texas at Austin, but he was restless there. It was more engaging to dream up grandiose schemes with Ben Denio, a good Facebook friend with whom he was an undergrad. For a time they toyed with starting what sounds like a gonzo variation of a super PAC to fund “disruptive” causes such as extreme advertising with outlandish attacks on candidates “to ruin the discourse.” (Wilson notes: “Trump has now realized the whole thing.”) Then, during a phone call one evening in the summer of 2012, Denio mused aloud: “What about printable guns?”

Wilson liked that. He resists labels but more or less accepts the designation of crypto-anarchist: one who believes in the supremacy of individual political and ideological freedom and seeks to achieve these goals through digital encryption and decryption. An early movement manifesto ends with a rallying cry: “Just as a seemingly minor invention like barbed wire made possible the fencing-off of vast ranches and farms, thus altering forever the concepts of land and property rights in the frontier West, so too will the seemingly minor discovery out of an arcane branch of mathematics come to be the wire clippers which dismantle the barbed wire around intellectual property. Arise, you have nothing to lose but your barbed wire fences!”

Wilson is sneeringly dismissive of a traditional notion of government that he believes technology is making irrelevant. For someone looking to disrupt public discourse on the implications of new technology and contemporary society, there could be no better conversation-starter (or -stopper) than a lethal weapon.

The walls of Wilson’s north Austin apartment are bare. Apart from a bed and a book-strewn desk, the furniture consists of two folding chairs and a crate with a drone inside that doubles as a table. The place is somewhere to sleep, he explains with a shrug. He has a girlfriend whom he visits regularly in Arkansas.

Growing up, Wilson says, he wasn’t particularly interested in guns. He knew people who hunted, and his father owned a shotgun. But that’s not unusual in the South, and by the time he was in law school, Wilson had gone shooting “maybe once.” He also wasn’t exactly a geek or a budding entrepreneur. He never formally studied design, engineering, business, or anything else that might have been useful to an aspiring inventor.

But in 2012, 3D printing was becoming a broadly available technology. The open source RepRap project (a collaborative effort to build a machine that makes its own parts) had just spawned the press-friendly MakerBot, a machine, guided by software, that laid down successive layers of melted plastic to form an object. Originally, 3D printing was intended to speed up industrial prototyping, but the technology took on new implications with this desktop machine printer, which sold for around \$2,000 and required software knowhow but no coding. Evangelists argued that 3D printers were more than gadgets—they were the next great chapter in the history of technology, giving people greater autonomy to produce on their own terms.

Wilson taught himself how to use a range of 3D-printing-related hardware and software. In 2012, Wilson, Denio, and two Arkansas friends, Sean Kubin and Daniel Bizzell, founded Defense Distributed and launched a weapons wiki. They modified existing printable gun-component models and invited others to help create a homemade handgun. Viewed romantically, their project was a way to harness the internet to resurrect an American Revolution-era vision of local smithies adapting European firearm technology to arm pioneers. But this adventure in innovation wasn't embraced by a growing maker scene motivated by an ethos of social progress. (Successes include an affordable 3D-printed prosthetic hand.) A Defense Distributed crowdfunding campaign was kicked off Indiegogo; and Thingiverse, MakerBot's platform for open source object designs, booted off all gun-related files. Stratasys, manufacturer of an early, heavy-duty 3D printer, took back a high-end unit the group had leased.

The maker scene, Wilson says, turned out to be "just another cathedral-based culture. Like, to invoke Baudrillard here—there's no real intention for Luciferian rebellion, OK? They're selling you the approved revolution. They'll give you a little kit, so you can cut your name into some wood." He continues, with deadpan sarcasm, "Isn't that great? Look at all you've learned!" He adds, "They won't actually give you capability." Defense Distributed wanted to "enact the actual real of our idea."

Wilson converted each setback into an opportunity for more attention, through interviews with the tech press or his own YouTube videos. When Thingiverse ejected gun content, he created DefCad.org, a new home for downloadable weapon files. Over time, this attracted talented sympathizers.

One of them was a gifted engineer named John Sullivan, now 30, who was then working for National Instruments, an Austin-based maker of high-tech equipment and software. He's also a gun enthusiast—the licensed owner, he says, of an M16. Sullivan was concerned that in the wake of the December 2012 Sandy Hook slaughter, the U.S. might adopt a strict gun-control regimen. (Many gun-rights advocates have a similar reaction to mass shootings, which invariably boost sales of weapons that some believe will be banned or restricted.) "How," he recalls wondering, "can I contribute to this social argument?"

Sullivan saw a Defense Distributed video and got in touch with Wilson, who seemed to think he was a government plant. "Who's this dweeb that has a machine gun?" Sullivan says. "He thought he was walking into a trap." An electrical engineer by training, Sullivan taught himself computer-assisted-design rendering, bought a broken Stratasys printer for about \$6,000 on EBay—roughly one-fifth the price of a new one—and fixed it with a friend's help. He says he devised a working version of the Liberator in a matter of weeks. "I facilitate technology. Cody Wilson sells it. Very cool," he says. In May 2013, Wilson demonstrated the Liberator for a Forbes reporter, released a promotional video that quickly went viral, and made the design files freely downloadable at DefCad.org.

It was a short-lived triumph for Defense Distributed. Within days, the State Department sent Wilson a letter directing his group to remove the files, citing possible export-permit violations. The penalties could include a decade or more in prison and six-figure fines. Wilson complied but pointed out in interviews that the files had already been downloaded more than 100,000 times. (They can also still be found at file-sharing venues such as The Pirate Bay.) “We win,” he declared, claiming victory over what he imagines as the forces of government suppression of personal freedoms.

“Look, man,” Wilson says now. “Did I get smashed, or did I get smashed? No one knows how smashed I got smashed.” Sitting in a booth at a north Austin Jim’s Restaurant, a chain he prefers to the city’s numerous independent coffee shops, Wilson recounts the rocky period after the Liberator crackdown.

To offset costs, Defense Distributed had intended to support its file-sharing DefCad.org site with advertising. Now unable to use its marquee files, the organization’s revenue plummeted. For months, Wilson waited to learn whether he would be prosecuted. Much of the “support network” of technical contributors and advisers he’d built evaporated. With a few exceptions, he says, “nobody wanted the heat.”

Physically spent, Wilson dropped out of law school. His lease was ending, and he retreated to Arkansas. “No money, no prospects,” he says. “I was like, wow, we did what we wanted to, but—my God—that’s all I get to do?”

Still, Wilson had become a minor celebrity in radical circles and beyond. He connected with Amir Taaki, a British-Iranian technologist with an enthusiasm for bitcoin. They worked together on Darkwallet, a piece of software designed to enable untraceable monetary transactions, and bounced around Europe, raising money and meeting, among others, Julian Assange and the musician M.I.A., who at the time was using 3D-printed gun imagery in one of her videos. He attended a private retreat in Wyoming hosted by PayPal co-founder and tech libertarian Peter Thiel. He kept fielding media and speaking requests. He got a \$250,000 book deal with Simon & Schuster. *Come and Take It*, his account of the Liberator story (much of it written at Jim’s), is scheduled to be published this fall.

Wilson was never prosecuted, and he became convinced that the State Department’s actions against him were legally untenable. Getting the best possible lawyers to advance his argument would be pricey, but Sullivan, Wilson’s faithful engineer, had an idea.

The Gun Control Act of 1968 and associated legislation restrict the buying and selling of weapons. This still leaves the possibility of legally making your own weapon. That doesn’t just mean crude zip-guns made from basement parts: It turns out that it’s easy to buy most of an assault-style rifle—the upper receiver, barrel, and stock—prefabricated. The tricky bit is the lower receiver, which is where the most complicated mechanisms of such a firearm reside. A cottage industry supplies blocks of metal that are 80 percent finished lower receivers. It’s up to

the aspiring DIY gunmaker to machine mill the final 20 percent of the piece so that it can accommodate the functional guts of an automatic rifle, including the trigger mechanism.

This requires high-end technical equipment and specialized skills. The typical method of finishing a lower receiver involves a shop-grade computer numerical controlled (or CNC) milling machine capable of precisely cutting aluminum. John Zawahri used a semiautomatic rifle completed in this manner in a 2013 mass shooting in Santa Monica, Calif., killing five people. The Bureau of Alcohol, Tobacco, Firearms and Explosives has acknowledged that such guns, with no serial number or registration requirement, are difficult to track or regulate. Politicians who argue such weapons should be banned call them ghost guns.

“I wouldn’t mind living on the street and eating garbage if I knew our Second Amendment was protected”

Sullivan knew that the expensive and complicated CNC milling tools used for this process existed in machine shops, operated by experts. But, he wondered, “what if the people owned the CNC machine? What if it was on your desk?” He studied more modest consumer-directed CNC milling machine variations that could cut metal, including one called ShapeOko. He concluded that he could design a single-purpose variation that would make carving the lower receivers relatively easy. The goal, he says: “You can take it right out of the box and start using it.”

Wilson was open to Sullivan’s scheme—and really, at the time, would probably have been open to almost anything that would fund his legal battle. Leery of crowdfunding sites after their earlier experiences, the two decided to offer the device for pre-sale, before it actually existed. Wilson devised a spooky promotional video, juxtaposing clandestine-looking footage of a mysterious machine operated by anonymous figures in shadowy locales with excerpts from a California politician’s ominous descriptions of “ghost guns.” The politician’s assertions that “the threat is real” and “no one knows that [these guns] exist” came across as titillating selling points, as did converting what was meant as a warning into the name of the product: The Ghost Gunner.

This was brassy, given that their prototype needed a total redesign. “Cody likes to work under immense pressure,” Sullivan says. For the initial seed capital, Wilson converted Liberator-era bitcoin donations into dollars—the exchange rate had spiked from \$10 or \$12 to more than \$1,000. They began accepting pre-orders, at \$1,000 apiece, on Oct. 1, 2014. “It just had to work,” Wilson says. He figured if they got 300 buyers, he could afford a lawyer.

Most people can purchase a pretty good factory-built gun for \$1,000. Even so, Wilson got 10 orders on Day One and started raising the price, soon cutting off pre-orders at 500. Sullivan submitted redesigned specs to suppliers by mid-December, with Wilson, Sullivan, and Denio building the earliest units themselves. They started shipping in April 2015.

Gradually, Wilson put together an assembly team—contacts from his network, random supporters who reached out via Twitter, and so on. “It’s torture man, getting going,” he says.

“But here we are. It’s been a full year of Ghost Gunner shipping.” The enterprise just surpassed 2,000 units shipped. (An upgraded Ghost Gunner 2 debuted on June 21 at \$1,500; you can get on a waiting list for \$250.)

Sullivan has since transitioned to a “consulting role.” He spoke to me, somewhere en route to Oklahoma City, from his van, which is where he and his fiancée essentially live, having sold most of their possessions. He’s opted for a low-expense, permanent-vacation lifestyle, he says, and can now pick and choose the projects that interest him.

Back at Jim’s, Wilson says the Ghost Gunner business could expand, even internationally—or could be snuffed out by regulatory caprice. His partner Denio has taken an interest in a few orders from engineering educators and now imagines a spinoff business—thoroughly rebranded—bringing desktop CNC machines to that market. (That said, Denio underscored to me that his ideological goals trump his entrepreneurial ones: “I wouldn’t mind living on the street and eating garbage if I knew our Second Amendment was protected.”)

Wilson says he wants the product to succeed and satisfy the customers who’ve supported him. In May, Defense Distributed had its first trade-show booth, at a survivalist expo in Dallas. But it’s pretty clear that engineering and business aren’t a rush for him but a means to an end. “I’m just trying,” he says, “to win my lawsuit.”

On June 6, the notorious crypto-anarchist put on a suit, and, along with more than a dozen of his Defense Distributed colleagues, made his way to the John Minor Wisdom U.S. Court of Appeals Building in downtown New Orleans. Wilson didn’t have much confidence that his ideas about the radical individual freedoms technology should enable would ever get a fair hearing from the government he’s so noisily opposed.

Defense Distributed v. U.S. Department of State, et al, argues that while government rules require weapon makers to obtain advance permission to export products, there’s no such obligation for sharing weapon-design information—and that Department of Justice guidance dating back several decades suggests that such a requirement would likely amount to a curb on free speech. So when the government sent Wilson a letter telling him to obtain specific permission to post the Liberator files because they might be accessible to “a foreign person,” it was, the suit argues, demanding a vague and wide-ranging pre-approval of speech as well as violating gun rights.

A group of 16 Republican congressional representatives filed a supportive brief, as did the Cato Institute and a couple of other conservative groups. So did the Reporters Committee for Freedom of the Press and the Electronic Frontier Foundation. Kit Walsh, an EFF attorney, says the Defense Distributed argument is consistent with the organization’s belief that “publishing information describing technology is protected speech.” While the EFF has no particular policy on gun rights, Walsh says the “aggressive” response “gives the government a veto on any speech it deems not to be advisable that relates to the technology at issue.” The government may have

legitimate interests that butt against speech rights, she continues. But the law should be clear and specific about where those lines are and how to negotiate them—matters perhaps better addressed legislatively. (New York Congressman Steve Israel has unsuccessfully attempted to introduce laws banning weapons that could get through a metal detector, which would include 3D-printed guns because they can be made entirely of plastic. The Liberator’s design includes a metal shank, but it’s not necessary for the gun to function.)

The government’s response has emphasized the need “to prevent the dissemination of undetectable firearms to foreign nationals”—essentially a national security argument. At the hearing, Defense Distributed was represented by Alan Gura, a 45-year-old lawyer with a resemblance to Perry Mason who was included in the National Law Journal’s 2013 100 Most Influential Lawyers in America list. Based in Washington, D.C., he successfully argued before the Supreme Court in the 2008 case *District of Columbia v. Heller*, a landmark 5-4 ruling that was seen as the high court’s strongest statement to date that the Second Amendment gives individuals the right to own firearms for self-defense.

While the three-judge panel asked Gura pointed questions (“What practical and legal use is there for a single-shot printed plastic handgun?”), Gura held his own, insisting that his clients have a right to “express themselves” with computer files just as they would by publishing a book. The government’s lawyer, Daniel Tenny, had a tougher time. One of the three judges, Edith Jones, a Reagan appointee who’s questioned the reasoning behind legal abortion and invalidated a federal ban on machine guns, repeatedly complained that the regulatory language was “vague” and could be read to bar the publication of any computer-assisted manufacturing technology. Echoing a point Wilson likes to make, she noted that factory-made American guns are already easily acquired by drug cartels. “I’m sorry,” she said to Tenny in an unfriendly Southern drawl after an exchange about the government’s position on the distinction between a “gun” and the Liberator files, “but you’re being, in my view, somewhat evasive.” Wilson and his allies in the courtroom were “trying not to stare at each other and guffaw,” he says. Tenny sounded rattled and afterward left as quickly as possible. Wilson and his posse lingered, pausing for a group photo on the courthouse steps. “They sent that lawyer here to die,” Wilson gloated. Everyone laughed, and later they had a celebratory dinner at Arnaud’s, a swanky French Quarter stalwart.

If Wilson loses, he’ll appeal. Ghost Gunner sales seem capable of funding a trip to the Supreme Court, if necessary. The Orlando tragedy caused a spike in traffic to the company’s site, and fear of a new Clinton administration will be good for sales, too.

But if Wilson wins, he says, Defense Distributed has plenty of material it’s never been able to share—a backlog of homespun, open source weapon innovations, ready to upload. His view on the Orlando massacre, which happened six days after his hearing, is one of cynical spectator. “Western modernity, right? The clash of civilizations, in microcosm.” It was the sort of event that “doesn’t cut clean,” and so “it forces everyone to come to the table,” he said, a state of chaos he thinks the mind-numbed masses need. But he was fazed enough to search his records to see if



Defense Distributed had sold the murderer, Omar Mateen, anything. It had not. “Once I saw that it wasn’t an AR-15, I was out,” he says, meaning he stopped thinking about the direct implications for him.

He remains focused on his court battle. “It’s very satisfying,” he says later. “You gotta bust your ass for two years and humiliate yourself—just so the government can have a hard time for a couple minutes. But it’s very satisfying.” He pauses for a beat. “It’s almost worth it, man.”