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DON'T BRING A CAD FILE TO A GUN FIGHT: A TECHNOLOGICAL SOLUTION TO THE LEGAL AND PRACTICAL CHALLENGES OF ENFORCING ITAR ON THE INTERNET

Catherine Tremble*

INTRODUCTION

“[I]nformation should be free,”¹ or rather, information will be free if someone wants it to be. That someone is Cody Wilson. Wilson was listed as one of *Wired*'s fifteen most dangerous people in 2012 not because he co-opted a decades-old freedom-of-information mantra,² but because the information he wants free enables the creation of 3D-printed guns. Wilson is dangerous because he wants to live in a world where every citizen can print a gun, and because he started an organization to realize that vision. He is dangerous not only because his vision is attainable, but because it might be inevitable.

The U.S. government, using trade regulations from the 1970s, attempted to forestall Wilson's idea for the future by restricting the information he shares, but the application of those regulations is uncertain in light of the First Amendment argument that their enforcement constitutes a prior restraint on Wilson's speech.³ The U.S. government ultimately settled with Wilson in 2018, and, even though some state attorneys general continue to fight his

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1. Alan Feuer, *Cody Wilson, Who Posted Gun Instructions Online, Sues State Department*, N.Y. TIMES (May 6, 2015), <https://www.nytimes.com/2015/05/07/us/cody-wilson-who-posted-gun-instructions-online-sues-state-department.html> [<https://perma.cc/X7YM-YCMG>] (quoting Cody Wilson).

2. See The Staff of Danger Room, *The 15 Most Dangerous People in the World*, WIRED (Dec. 19, 2012, 6:30 AM), <https://www.wired.com/2012/12/most-dangerous-people/> [<https://perma.cc/ASP9-2HE2>] [hereinafter Danger Room]; see also Janus Kopfstein, *Guns Want To Be Free: What Happens When 3D Printing and Crypto-Anarchy Collide?*, VERGE (Apr. 12, 2013, 09:30 AM), <https://www.theverge.com/2013/4/12/4209364/guns-want-to-be-free-what-happens-when-3d-printing-and-crypto-anarchy> [<https://perma.cc/JB53-2V9C>] (noting that “Stewart Brand’s famous notion that ‘information wants to be free’ has been an almost ubiquitous refrain” since the 1980s).

3. See Feuer, *supra* note 1.

ability to post files containing blueprints for 3D-printed guns,⁴ those efforts are likely to result in the same unsuccessful end.⁵

This Essay begins by outlining Wilson's motivation to found his organization, Defense Distributed, and the organization's progress toward its goals. Then, Part II provides a brief overview of the protracted legal battle between Wilson and the State Department over the right to publish Computer-Aided Design (CAD) files on the internet that enable the 3D printing of guns and lower receivers. Part III.A takes a brief look at whether these CAD files are rightly considered speech at all and, if so, what level of protection they might receive. Part III.B then addresses the problem of even asking whether the files are speech subject to regulation. Part III.B also highlights the similarities between regulating internet speech and regulating public-order crimes, focusing on the impact that enforcement problems in both areas can have on government credibility. It ultimately questions whether these legal battles provide any utility to society.

In Part IV, this Essay argues that the State Department is utilizing old and incongruent regulations to enforce practically unenforceable laws to little or no effect, ultimately hurting the credibility of the State and martyring people like Wilson. This Essay advocates for a solution that focuses on 3D printer manufacturers as a control point for gun manufacturing. This solution avoids First Amendment issues and makes import and export control a physical reality, rather than an unbounded problem relegated to an open internet. This Essay looks beyond a judicial solution to practical solutions that stem the growth of in-house manufacturing of weapons.

I. AN ANARCHIST'S UTOPIA: CODY WILSON'S DREAM (AND THE REALITY) OF DISTRIBUTING DEFENSE ARTICLES

Cody Wilson, a self-described crypto-anarchist, is the founder of Defense Distributed, a non-profit organization created to “‘promot[e] popular access to arms guaranteed by the United States Constitution’ by ‘facilitating global access to, and the collaborative production of, information and knowledge related to the 3D printing of arms; and by publishing . . . such information . . . on the Internet at no cost to the public.’”⁶ The non-profit exists for the specific purpose of disseminating CAD files that contain instructions for printing guns and gun parts, which are readable by 3D printers.

Wilson's personal mission moves beyond Second Amendment rights into theories of breaking down governmental monopolization of force and fighting surveillance tactics.⁷ His “whole goal in starting this company” is

4. Emily Dreyfus, *3-D Printed Gun Blueprints Are Back, and Only New Laws Can Stop Them*, WIRED (Aug. 29, 2018, 3:25 PM), <https://www.wired.com/story/3-d-printed-gun-blueprints-return-laws-injunction/> [<https://perma.cc/8K4X-NUUX>].

5. *See id.* (“[B]ecause the case against the blueprints has always hinged on export law, Wilson could have sold them legally within the United States all along” so long as he verified the file was being downloaded by U.S. citizens).

6. *Def. Distributed v. U.S. Dep't of State*, 838 F.3d 451, 454 (5th Cir. 2016).

7. Andy Greenberg, *3D-Printed Gun's Blueprints Downloaded 100,000 Times in Two Days (With Some Help From Kim Dotcom)*, FORBES (May 8, 2013, 5:12 PM),

to demonstrate “the pathway to defeating a certain idea of technical control,”⁸ and show that any free citizen can create technology and share it with the commons without the interference of the State or any corporate entity.⁹ The goals of both the man and the organization can be reduced to one driving force: the political motivation to take some power from the government. Understandably, it is a goal that the government, and much of society, has fought against since the founding of Wilson’s organization.

Defense Distributed, founded in 2012, faced substantial pushback getting off the ground from both the internet and 3D printing communities. Wilson’s initial funding campaign was kicked off of Indiegogo,¹⁰ and later his first rented printer was repossessed after the company who owned it got wind of his plans.¹¹ But with the help of alternate funding sources (including Bitcoin donations) Wilson was able to provide CAD files to the public to print anything from the lower receivers of AR-15s (the only part of a gun technically considered a “firearm”) to a fully plastic weapon known as the “Liberator.”¹² He also created a file-sharing platform so that other designers could share their CAD files with the public.¹³ Wilson’s files were downloaded all over the world and copies were posted on other file-sharing websites within days. The CAD was out of the bag.

II. THE STATE ENTERS THE FRAY: WILSON’S OFFENSIVE MOVE TO CONTINUE FILE-SHARING

One thing Wilson did not anticipate while fulfilling his vision for the future was the government’s enforcement of the International Traffic in Arms Regulations (ITAR). In May 2013, shortly after posting the CAD file for the Liberator, Wilson received a letter from the State Department requiring him to take down ten files pending evaluation by the State Department of whether they were defense articles required to comply with ITAR approval and

<https://www.forbes.com/sites/andygreenberg/2013/05/08/3d-printed-guns-blueprints-downloaded-100000-times-in-two-days-with-some-help-from-kim-dotcom/#53ba669a10b8> [<https://perma.cc/A629-8U3Q>] (“Call me crazy, but I see a world where contraband will pass underground through the data cables to be printed in our homes as the drones move overhead.”).

8. Cyrus Farivar, *Does it Violate Federal Export Law if a Website Publishes CAD Files of Firearms?*, ARS TECHNICA (Feb. 22, 2016, 7:00 AM), <https://arstechnica.com/tech-policy/2016/02/does-it-violate-federal-export-law-if-a-website-publishes-cad-files-of-firearms/> [<https://perma.cc/ENE5-3YYH>] (quoting Cody Wilson).

9. *Id.*

10. *See, e.g.*, Fidel Martinez, *Indiegogo Shuts Down Campaign to Develop World’s First Printable Gun*, DAILY DOT (Aug. 27, 2012, 12:36 PM), <https://www.dailydot.com/news/indiegogo-3d-printed-gun-campaign/> [<https://perma.cc/G7LC-AT8F>].

11. *See* Danger Room, *supra* note 2.

12. *Def. Distributed v. U.S. Dep’t of State*, 838 F.3d 451, 455 (5th Cir. 2016).

13. *See* Kopfstein, *supra* note 2.

licensing.¹⁴ Noncompliance with ITAR may result in criminal fines and imprisonment.¹⁵

ITAR is a set of rules promulgated by the State Department under the Arms Export Control Act.¹⁶ The Arms Export Control Act designates that the President shall “control the import and the export of defense articles” and those “defense articles” shall be designated by the President in the “Munitions List.”¹⁷ “Defense articles” expressly include “technical data . . . stored in any physical form” including “blueprints, drawings, photographs, plans, instructions or documentation” about “the design, development, production, manufacture, assembly, operation, repair, testing, maintenance or modification of defense articles.”¹⁸ According to the State Department, the regulations required Wilson to be a licensed arms exporter in order to share his mockups on the internet, as the internet was undoubtedly a place in which files were going to be accessed abroad or “exported.”¹⁹ The regulations also required that no files be shared with foreign nationals located domestically or abroad.²⁰

Ultimately, “[b]ecause Defense Distributed didn’t seek an export license [before posting the files] there [was] a problem.”²¹ The letter directed Wilson to remove the files and to refrain from posting more while the Department reviewed whether he needed the license.²² But, because of the political nature of Wilson’s actions and unsettled case law surrounding ITAR, the “letter sparked First Amendment concerns” that this constituted a prior restraint on speech, as well as the criminalization of political speech.²³ Wilson stated that he had no desire to break the law and spent the next two years “fill[ing] paperwork in an effort to comply with the regulations.”²⁴ When the State Department withheld its decision past the designated review period, Wilson “came to believe he was being singled out for scrutiny.”²⁵

14. Letter from Glen E. Smith, Chief, Enforcement Division, U.S. Dep’t of State, to Cody Wilson, Founder, Defense Distributed (May 8, 2013), <https://www.scribd.com/document/140471313/Letter-from-Department-of-State-to-Defense-Distributed> [<https://perma.cc/N9QF-M34M>].

15. Pub. L. No. 90-629, § 38, 82 Stat. 1320 (codified as amended at 22 U.S.C. § 2778(c) (2012)).

16. 22 U.S.C. § 2778(a)(1) (2012).

17. *Id.*

18. *See* *Def. Distributed v. U.S. Dep’t of State*, 838 F.3d 451, 454, 464 (5th Cir. 2016) (first quoting 22 C.F.R. § 120.6; then quoting 22 C.F.R. § 120.10(a)(1)).

19. Brief for Federal Appellees at 16–18, *Def. Distributed*, 838 F.3d 451 (No. 15-50759), 2016 WL 614088, at *16–18.

20. *See id.* at 36 (citing 22 C.F.R. § 120.17(a)(4)).

21. Ansel Halliburton, *The Constitution and the 3D Printed Plastic Pistol*, TECHCRUNCH (May 16, 2013), <https://techcrunch.com/2013/05/15/the-constitution-and-the-3d-printed-plastic-pistol/> [<https://perma.cc/XGL3-WR3F>].

22. *See* Feuer, *supra* note 1.

23. Julia Cosans, *Between Firearm Regulation and Information Censorship: Analyzing First Amendment Concerns Facing the World’s First 3-D Printed Plastic Gun*, 22 AM. U. J. GENDER SOC. POL’Y & L. 915, 918 (2014).

24. *See* Feuer, *supra* note 1.

25. *Id.*

“Worried that he was being thrust into a kind of legal limbo,” Wilson filed for a preliminary injunction in order to continue posting.²⁶

Wilson’s motion for a preliminary injunction was denied in the district court.²⁷ On appeal, that decision was upheld in the Fifth Circuit.²⁸ Finally, Wilson’s application for certiorari on the issue of preliminary injunction was denied. The district court denied the preliminary injunction, stating national security concerns outweighed free speech concerns. It noted that a preliminary injunction was an extraordinary remedy, and that while the violation of First and Second Amendment rights is an irreparable harm, ultimately, “the State Department’s stated interest in preventing foreign nationals—including all manner of enemies of this country—from obtaining technical data on how to produce weapons and weapon parts is not merely tangentially related to national defense and national security; it lies squarely within that interest.”²⁹

The Fifth Circuit, in evaluating the district court’s balancing of the public interest in maintaining freedom of speech for private parties with the public interest in national security, recognized an especially prescient point, holding that

[b]ecause those files would never go away, a preliminary injunction would function, in effect, as a permanent injunction as to all files released in the interim. Thus, the national defense and national security interest would be harmed forever. The fact that national security might be permanently harmed while [Defense Distributed’s] constitutional rights might be temporarily harmed strongly supports our conclusion that the district court did not abuse its discretion in weighing the balance in favor of national defense and national security.³⁰

This holding did not address the merits of the case, such as whether the files were in fact protected speech, what standard of scrutiny they deserved, and whether ITAR was constitutional as applied. Those issues were remanded back to the lower court³¹ and left unresolved after a settlement was reached in 2018.

III. ARE CAD FILES SPEECH AND DOES IT MATTER?

Part III.A of this Essay explores the possible ruling on the free speech questions that, before settlement, were at issue on remand. Part III.B outlines two reasons why the problems posed by 3D printing guns are likely unsuitable for judicial resolution. Part III.B also highlights concerns about the logical construction and modern application of ITAR, as well as problems with its practical enforcement.

26. *Id.*

27. *Def. Distributed v. U.S. Dep’t of State*, 121 F. Supp. 3d 680, 701 (W.D. Tex. 2015).

28. *Def. Distributed v. U.S. Dep’t of State*, 838 F.3d 451 (5th Cir. 2016), *cert. denied*, 138 S. Ct. 638 (2018).

29. *Id.* at 456.

30. *Id.* at 460.

31. *Id.* at 461.

A. *Are CAD Files Speech?*

The State Department's letter constitutes the prior restraint of speech—courts' most hated form of censorship—only if the files that it seeks to silence are “speech.” Furthermore, even if they are speech, the State Department's licensing scheme and export restrictions may still stand under two circumstances. First, if the CAD files (or the posting thereof) are considered “pure speech” and are evaluated under strict scrutiny, ITAR may be constitutional if a court determines it is sufficiently narrowly tailored to achieve a compelling government interest.³² Second, if the CAD files are considered expressive conduct, they will be evaluated under a more lenient First Amendment standard—intermediate scrutiny³³—and it is more likely that the regulations are constitutional as applied.

The strict scrutiny analysis is not one that the court is likely to spend time on, as the files are so demonstrably functional that they cannot feasibly be considered “pure speech.”³⁴ The next area to evaluate is whether the CAD files constitute “expressive conduct,” which is also given First Amendment protection. Where CAD files combine both “speech and non-speech elements yet still contain[] sufficient elements of communication, then the restriction can only survive intermediate scrutiny if it furthers a substantial government interest unrelated to the suppression of free speech.”³⁵

As to whether CAD files are both functional and expressive, a related case, *Universal City Studios v. Corley*,³⁶ is illustrative. In *Corley*, the court held that source code exhibits both functional and expressive attributes. The court reasoned that “when executed by a computer, [code] carries out functions and performs tasks,” but “functionality does not necessarily preclude” the conveyance of information found in expressive activity, specifically noting that the source code was a type of written language that held expressive value to other coders.³⁷

Under this analysis, CAD files certainly are properly classified as functional for their “ability to instruct a printer to create a real, 3-d object from an online design.”³⁸ But the issue of whether their source code is useful as expressive on its own is less clear. It is likely that CAD files do not hold expressive value in their source code where that code is computer generated. However, the court will likely deem CAD files protectable under the First Amendment because these files are “expressive for [their] more traditional aspects of speech, the [files'] blueprint design.”³⁹ In fact, the functionality

32. *See, e.g.*, *Burson v. Freeman*, 504 U.S. 191, 221 (1992) (finding this threshold was not met).

33. *See Cosans, supra* note 23, at 925 (citing *United States v. O'Brien*, 391 U.S. 367, 377 (1968)).

34. *See id.* at 930 (citing *Universal City Studios v. Corley*, 273 F.3d 429, 445 (2d Cir. 2001) for the holding, narrowly, that computer code is speech).

35. *See id.* at 923.

36. 273 F.3d 429 (2d Cir. 2001).

37. *See Cosans, supra* note 23, at 927.

38. *Id.* at 930.

39. *Id.*

of the CAD file “depends on the existence of an expressive blueprint design and, therefore, the file contains sufficient elements of communication to classify the file as a type of speech that warrants a First Amendment analysis.”⁴⁰ Considering that courts typically treat blueprints as “pure speech,” it is highly unlikely that the functional aspects of CAD files will rob them of First Amendment protection.⁴¹

One argument that the expressive characterization of blueprints should not apply to the blueprints in CAD files is that this characterization was created on “the assumption that it is impossible to yield any functional result without the participation and interpretation of a live human being,” and that “modern technology does not necessitate the same level of human involvement in the comprehension of a blueprint, sometimes requiring as little as the single click of a mouse to achieve functional results.”⁴² But this argument fails where the CAD files only produce pieces of a larger object. No firearm can be assembled without significant human engagement, thus reinvigorating the blueprint argument. The characterization of the CAD file and the action of posting it as expressive conduct is bolstered by the fact that “the First Amendment does not require the articulation of a narrow and isolated message to classify expressive activities as speech, but instead it defines this type of speech by its general ability to convey ideas and information.”⁴³

In light of the above, courts will likely find CAD files deserve intermediate scrutiny because of their expressive and functional characteristics. But, certain scholars posit that, even under intermediate scrutiny, CAD files are subject to ITAR regulations and the constitutional challenge will fail due to the significant interest in national security and the narrow scope of ITAR.⁴⁴ However, a judge considering the larger problems of ITAR outlined in Part III.B below, might be unwilling to overcome the remaining interpretive hurdles required to allow ITAR’s enforcement.

B. *Does It Matter?: The Problems with a Government Win or Draw*

The above analysis of whether CAD files constitute expressive conduct worthy of First Amendment protection begs the question: does the answer matter? What does enforcement of such prior restraint look like in reality? This section explores how the battles to enforce ITAR tend to go unresolved, and then looks at what legal interpretations an actual government win under ITAR would require. It then asks whether, at the end of the day, those strained judicial interpretations are worth it where the enforcement of prior restraint may be minimally effective at controlling information.

The issue of whether ITAR constitutes a prior restraint on speech has made its way through the courts in one other notable instance—albeit in a convoluted and still unresolved manner. In *Bernstein v. U.S. Department of*

40. *Id.*

41. *See id.* at 930–31.

42. *Id.* at 931.

43. *Id.* at 924.

44. *See id.* at 935.

State,⁴⁵ Daniel Bernstein, a computer scientist doing research at University of California, Berkley, brought suit against the State Department in order to secure the right to publish his encryption code on the internet without facing criminal prosecution. This code was considered a defense article included on the Munitions List. The district court “found that it was unconstitutional for the government to prevent Bernstein from publishing his crypto software,” holding “that blocking Bernstein’s publication amounted to a prior restraint on his speech that violated the First Amendment.”⁴⁶ The court further held that the ability to gather foreign intelligence in “furtherance of world peace and the security and foreign policy of the United States, are clearly insufficient [rationales to justify prior restraint] without more.”⁴⁷

This ruling was upheld in the Ninth Circuit, but because the government moved control of encryption code to the jurisdiction of the Department of Commerce, the case was decided as to commercial export regulations rather than ITAR.⁴⁸ The opinion held that “because the prepublication licensing regime challenged here applies directly to scientific expression, vests boundless discretion in government officials, and lacks adequate procedural safeguards, it constitutes an impermissible prior restraint on speech.”⁴⁹ These issues exist under ITAR as well, but the government interest is more compelling.

This opinion was withdrawn when the court granted a rehearing en banc. The en banc hearing never occurred, however, because the government introduced an interim rule that exempted “‘publicly available’ encryption source code from license requirements.”⁵⁰ Bernstein amended his complaint to allege the new regulations still created a prior restraint, but the government moved for summary judgment, stating that Bernstein no longer had standing to bring suit because he now had the right to publish. The district court granted that motion and the case was dismissed in 2003.

The government avoided an outright loss on ITAR and prior restraint in the Ninth Circuit by moving the regulation of computer code to different administrative agencies and allowing certain exemptions that effectively lifted the prior restraint on Bernstein’s speech. This was a learning opportunity for the State Department; it functioned as a tour of the pitfalls inherent in using ITAR to enforce prior restraints on speech—even where that speech is functional. The speech issues are far from resolved. Some scholars believed “Defense Distributed [would] likely follow *Bernstein’s* path,” that “[t]he State Department’s takedown demand probably qualifies as a prior restraint,” noting courts’ hostility to that type of restriction.⁵¹

45. 945 F. Supp. 1279 (N.D. Cal. 1996).

46. See Halliburton, *supra* note 21.

47. *Bernstein*, 945 F. Supp. at 1288 (citations omitted) (internal quotation marks omitted) (quoting 22 U.S.C. § 2778(a)(1)).

48. *Bernstein v. U.S. Dep’t of State*, 176 F.3d 1132 (9th Cir. 1999).

49. *Id.* at 1145.

50. *Bernstein v. U.S. Dep’t of Commerce*, No. C 95-0582 MHP, 2004 WL 838163, at *2 n.2 (N.D. Cal. Apr. 19, 2004).

51. Halliburton, *supra* note 21.

Defense Distributed's recent legal engagement with the State Department has pattered out in a similar manner.⁵² The government settled with the company on June 29, 2018.⁵³ The settlement stated that the government would "change the export control rules surrounding any firearm below .50 caliber—with a few exceptions like fully automatic weapons and rare gun designs that use caseless ammunition—and move their regulation to the Commerce Department, which won't try to police technical data about the guns posted on the public internet."⁵⁴ The settlement also stated the government would pay \$40,000 of Defense Distributed's legal fees⁵⁵ and gives it "a unique license to publish data about those weapons anywhere."⁵⁶

On the most basic level, this victory for Defense Distributed perfectly demonstrates the additional difficulty of maintaining an action based on executive enforcement of regulations: political change. As administrations change, lawsuits will continue to crop up and fade away—a poor model of enforcement for keeping information, of all things, under government control.⁵⁷

But even an outright win presents problems for the government. To find ITAR constitutional, the court would need to perform some interpretive gymnastics that might hurt its credibility. Namely, the court would need to interpret the term "public domain," to not include the internet.⁵⁸ "Under ITAR, something that is 'public domain' is merely something that is 'generally accessible or available to the public'"—but, because it was written in the 1970s, those places where "information can be 'generally accessible'" were considered physical bookstores and libraries.⁵⁹ That is no longer the case. Further, the reality of a government win is unlikely to have much practical effect on the dissemination of this information, as even when Defense Distributed was prevented from sharing their files, the same files were hosted by other sites.⁶⁰

52. Andy Greenberg, *A Landmark Shift Opens Pandora's Box for DIY Guns*, WIRED (July 10, 2018, 1:29 PM), <https://www.wired.com/story/a-landmark-legal-shift-opens-pandoras-box-for-diy-guns/> [<https://perma.cc/7VRC-4GXU>] (noting that the State Department "essentially surrenders to [the blended First and Second Amendment] argument").

53. Tiffany Hsu & Alana Feuer, *'Downloadable Gun' Clears a Legal Obstacle, and Activists Are Alarmed*, N.Y. TIMES (July 13, 2018), <https://www.nytimes.com/2018/07/13/business/downloadable-gun-allowed-alarming-activists.html> [<https://perma.cc/Q33U-STY7>].

54. Greenberg, *supra* note 52.

55. Hsu & Feuer, *supra* note 53.

56. Greenberg, *supra* note 52.

57. Hsu & Feuer, *supra* note 53 ("Some critics said it suggested close ties between the Trump administration and gun-ownership advocates, this week filing requests for documents that might explain why the government agreed to settle.").

58. See Farivar, *supra* note 8.

59. *Id.*

60. Derek Mead, *With 3D-Printed Gun Files Safely on the Pirate Bay, What's Next?*, MOTHERBOARD BLOG (May 10, 2013), https://motherboard.vice.com/en_us/article/z44de3/with-3d-printed-gun-files-safely-on-the-pirate-bay-whats-next-1 [<https://perma.cc/4RYQ-B42M>].

Even more bizarre, ITAR is violated if a foreign national sees the information. Meaning that even if the file is shared within the United States, but a foreign national sees it, the law has been broken. In its brief to the Fifth Circuit, the State noted that “the regulations at issue do not prohibit Defense Distributed from sharing technical data with fellow U.S. citizens on American soil,” suggesting this “be accomplished by verifying the citizenship status of those interested in the files, or by any other means adequate to ensure that the files are not disseminated to foreign nationals.”⁶¹ This ignores the practical reality that those files will likely pass through servers in several countries before reaching their intended target. While it is possible that the files may not be viewed by others, that cannot be guaranteed.

Assuming that a court makes those interpretations and the holding permits the government to legally prohibit Defense Distributed from distributing CAD files: what effect flows from the ruling? The files are in the open and anyone can download them. The government will have won the legal battle, but will lose a public information war.

Publicly-acknowledged unenforced laws are problematic. Where law enforcement is made difficult by the hidden nature of crimes—such as gambling or drug use (so called “public-order” crimes)—the State’s enforcement authority is brought into question and unpunished illegal behaviors are normalized. To call Wilson’s conduct criminal but to be unable to effectively stop what he put in motion makes the term “criminal” mean less,” and therefore makes it less powerful, eroding any deterrent or expressive value of a criminal sanction.”⁶² Where the State seeks to impose laws that are impossible to enforce effectively, it loses credibility as the enforcer of justice.

Further, some scholars argue that legal process costs involved in arresting, processing, and incarcerating criminals whose guilt or innocence is never determined or effectively punished leads to large costs on the justice system with little benefit. Here, where protracted legal battles result in settlements—either as the result of political change or lack of belief in the ability to alter First Amendment law—legal process costs are high and the results are, at best, unsettled (with respect to Defense Distributed) and, at worst, nonexistent (with respect to the files shared on other platforms). As such, judicial methods for resolving issues of information dissemination are both ineffective at maintaining faith in criminal justice and economically inefficient means by which to maintain order.⁶³

61. Brief for Federal Appellees at 20, *Def. Distributed v. U.S. Dep’t of State*, 838 F.3d 451 (5th Cir. 2016) (No. 15-50759), 2016 WL 614088, at *20.

62. Charlie Gerstein & J.J. Prescott, *Process Costs and Police Discretion*, 128 HARV. L. REV. F. 268, 277–78 (2015).

63. *See id.* at 269.

IV. TAKING THE REGULATIONS OFFLINE: REGULATING 3D PRINTER MANUFACTURERS

The internet presents many unique challenges, but the creation of guns via the quick and efficient means of 3D printing does not have to be an unresolvable one. This Essay contends that regulation in this area should not begin by limiting the dissemination of “technical data” produced by citizens. There is evidence to suggest that the more secure people are with their government, the more information flows freely.⁶⁴ A governmental crackdown that implicates controlling data flows at the expense of First and Second Amendment rights could be seen as embodying the insecurity of governing officials. The point of Wilson’s endeavor was to show that the government cannot control the flow of information, and he has been proven right by downloads that still occur today.⁶⁵

Utilizing ITAR to prosecute people like Wilson—while tempting—will expose itself as a misguided effort when, time and time again, the information breaks free. This is not a copyright scenario in which the owner seeks to protect the information; it is functional political speech, intended to be subversive. While many consider the political philosophy of anarchism absurd, the point of the First Amendment is not to agree with the speech of others, but to allow others the freedom to speak.

The main goals that current federal gun laws—such as the Undetectable Firearms Act,⁶⁶ and the U.S. Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) regulations on manufacturing and licensing of guns⁶⁷—seek to attain are twofold: First, current law makes having undetectable firearms illegal;⁶⁸ second, it makes the distribution and sale of lower receivers with no serial numbers illegal.⁶⁹ To address these goals in the 3D printing sphere, Congress should look to the manufacturers of 3D printers to monitor and limit the potential manufacturing of physical guns. This Essay proposes that instead of criminalizing the distribution or possession of CAD files, the government should work with the manufacturers of at-home 3D printers to create firmware that would recognize when the file being printed has the capability of becoming an undetectable weapon or a lower receiver.

The approach would begin with the creation of firmware that prevents offline printers from printing shapes used in gun manufacture. Thus, any printing of guns would require a printer to be online.

64. Cf. Roman Mars, *The Giftschränk*, 99 PERCENT INVISIBLE (Mar. 8, 2016), <https://99percentinvisible.org/episode/the-giftschränk/> [https://perma.cc/YN2T-3C7X] (describing the German practice of keeping books deemed “subversive” away from the general public in locked rooms in public libraries). The practice of keeping subversive books locked away faded after the Cold War ended and people were less afraid of subversive ideas. *Id.*

65. See Feuer, *supra* note 1 (“I’ve always led with the rhetoric that information should be free,” he said, “but there was also an attitude of rote defiance, an allergy to authority, that I think is authentically American.”) (quoting Cody Wilson).

66. 18 U.S.C. § 922(p) (2012).

67. See 27 C.F.R. § 478.92.

68. 18 U.S.C. § 922(p) (2012) (making it illegal to “manufacture, import, sell, ship, deliver, possess, transfer, or receive any firearm” that is undetectable by metal detectors).

69. See 27 C.F.R. § 478.92.

For undetectable weapons, which are assembled by the user from printed pieces, the printer could be configured to refuse to print these items unless, at a certain point in the process, a piece of metal is embedded in a critical piece of the design. This limitation of the production of an integral part of the gun mimics modern printers' inability to copy currency. The firmware in modern copying machines and scanners in the United States and other nations has been configured to reject a certain pattern found on currency. As a result of this firmware, many copiers cannot read and copy bills.⁷⁰ Certainly, these configurations can be hacked⁷¹ but that would present a far greater hurdle than finding a firearm CAD file online. It also presents no free speech issues. Additionally, this firmware solution could be altered depending on which country the printer is going to and could be regulated through customs. The manufacturing company could be required to guarantee the printers' firmware under ITAR and liability would result if the firmware were inconsistent with a nation's gun laws.

To counter the problem of the undetectable manufacture and sale of lower receivers without serial numbers, companies could create firmware that requires personal identification to use the device when lower receiver shapes are detected for printing. This solution mimics the regulatory regime that governs pseudoephedrine, wherein purchasers are required to provide identification to the store to ensure they have not purchased more than a specific amount of the drug.⁷² Here, the printer companies would be responsible for maintaining the records, which would be available to law enforcement where proper channels are used. Requiring users to upload a photo taken by the computer or device and uploading a matching identification card to the 3D printer online portal would create another step in printing that would result in either proper identification or identity theft. This liability scheme would act as a further deterrent to the average person. Finally, manufacturers could impose numeric limits on the number of lower receivers producible within a certain time frame. Since, fundamentally, these regulations would be aimed at printer manufacturers and not at speech, there would likely be no First Amendment concerns or political wavering in enforcement.

CONCLUSION

This two-pronged solution focuses on 3D printer manufacturers as a control point for the production of undetectable guns, and for monitoring

70. Vaishnavi Patil, *Why Can't You Photocopy Currency Notes*, SCIENCE ABC (Apr. 26, 2016), <https://www.scienceabc.com/eyeopeners/cant-photocopy-scan-currency-notes.html> [<https://perma.cc/DF72-869Q>].

71. Jacob Silverman, *A Gun, a Printer, an Ideology*, NEW YORKER (May 7, 2013), <https://www.newyorker.com/tech/elements/a-gun-a-printer-an-ideology> [<https://perma.cc/6VB9-24T9>].

72. *Legal Requirements for the Sale and Purchase of Drug Products Containing Pseudoephedrine, Ephedrine, and Phenylpropanolamine*, U.S. FOOD & DRUG ADMIN., <https://www.fda.gov/Drugs/DrugSafety/InformationbyDrugClass/ucm072423.htm> [<https://perma.cc/5GQG-CUN2>] (last visited Mar. 6, 2019).

illegal gun manufacturing. This solution avoids free speech issues, enables gun control to the extent that the legislature has already come to a consensus, and gives the U.S. government control over the capabilities of 3D printers coming into and leaving the country. This solution also avoids the controversial application of ITAR to CAD files and the damage any ruling against long standing free speech principles could do to the credibility of government control; because the information will be free, but on whose terms?