

ONLINE ARTICLE

3D Printed Speech: 3D-Printer Code Under Constitutional Scrutiny

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**Recommended Citation**

Andrew Huang, *3D Printed Speech: 3D-Printer Code Under Constitutional Scrutiny*,  
HARV. NAT'L SEC. J. ONLINE (Feb. 13, 2022), <https://harvardnsj.org/wp-content/uploads/sites/13/2022/02/3D-Printed-Speech-Constitutional-Scrutiny.pdf>.

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## I. INTRODUCTION

In May 2013, at a remote firing range deep in central Texas, there was silence. Then, a sharp crack reverberated across the prairieland as engineers led by then-25-year-old Cody Wilson successfully test-fired the world’s first entirely 3D-printed gun for the very first time.<sup>1</sup> “Fuckin’ A!” they exclaimed; not quite the *Bhagavad Gita* verse recalled<sup>2</sup> by Robert Oppenheimer after the Trinity nuclear test, but the euphoria was no less palpable.<sup>3</sup>

The small, single-shot pistol was dubbed the “Liberator,” named after the weapon manufactured by the US military and intended for use by resistance forces in occupied Europe during World War II.<sup>4</sup> This modern design was spearheaded by Wilson and Defense Distributed (DD), a Texas-based nonprofit that Wilson founded in 2012 in part to facilitate universal access to firearm 3D printing capabilities.<sup>5</sup> After successfully testing the Liberator, DD immediately released the blueprints on the Internet. Almost immediately, lawmakers expressed fears of untraceable, undetectable firearms produced en masse at home and renewed calls for more stringent regulations on 3D-printed firearms.<sup>6</sup> In May 2013, the U.S. Department of State ordered DD to take the blueprints down, citing potential violations of arms export controls.<sup>7</sup> By this point, the blueprints had already been downloaded over 100,000 times.<sup>8</sup>

Two years later, on May 6, 2015, DD sued the State Department to keep the Liberator blueprints online.<sup>9</sup> Most interestingly, the complaint advanced a First Amendment claim, arguing that the digital blueprints—the computer code itself—constituted protected speech and that the

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<sup>1</sup> See Andy Greenberg, *Meet the ‘Liberator’: Test-Firing the World’s First Fully 3D-Printed Gun*, FORBES (May 5, 2013), <https://www.forbes.com/sites/andygreenberg/2013/05/05/meet-the-liberator-test-firing-the-worlds-first-fully-3d-printed-gun/> [https://perma.cc/63AR-Q4W6]. Greenberg has interacted with Wilson on numerous occasions and written several articles on the Liberator subject.

<sup>2</sup> James Temperton, *‘Now I am become Death, the destroyer of worlds’. The story of Oppenheimer’s infamous quote*, WIRED (Sept. 8, 2017), <https://www.wired.co.uk/article/manhattan-project-robert-oppenheimer>.

<sup>3</sup> See Greenberg, *supra* note 1.

<sup>4</sup> See *id.*

<sup>5</sup> See Andy Greenberg, *‘Wiki Weapon Project’ Aims to Create a Gun Anyone Can 3D-Print at Home*, FORBES (Aug. 23, 2012), <https://www.forbes.com/sites/andygreenberg/2012/08/23/wiki-weapon-project-aims-to-create-a-gun-anyone-can-3d-print-at-home/> [https://perma.cc/SSR6-28Q3]. Wilson is no longer affiliated with the group.

<sup>6</sup> See Greenberg, *supra* note 1; see also Jordain Carney, *Senate Dems Introduce Bill to Block Release of 3D Printed Gun Blueprints*, THE HILL (July 31, 2018), <https://thehill.com/homenews/senate/399710-senate-dems-introduce-bill-to-block-release-of-3d-gun-blueprints> [https://perma.cc/FP2C-UPE9].

<sup>7</sup> See Andy Greenberg, *State Department Demands Takedown of 3D-Printable Gun Files for Possible Export Control Violations*, FORBES (May 9, 2013), <https://www.forbes.com/sites/andygreenberg/2013/05/09/state-department-demands-takedown-of-3d-printable-gun-for-possible-export-control-violation/> [https://perma.cc/6UM9-SVX7].

<sup>8</sup> See *id.*

<sup>9</sup> See Pls.’ Mot. for Prelim. Inj., *Defense Distributed v. U.S. Dep’t of State*, 121 F. Supp. 3d 680 (W.D. Tex. 2015) (No. 15-CV-372-RP), 2015 WL 11022446; see also Andy Greenberg, *3-D Printed Gun Lawsuit Starts the War Between Arms Control and Free Speech*, WIRED (May 6, 2015), <https://www.wired.com/2015/05/3-d-printed-gun-lawsuit-starts-war-arms-control-free-speech/> [https://perma.cc/VM9Z-8MY9].

Department's order was an impermissible prior restraint on that speech, meaning that the government was attempting to restrict DD's expression before it could take place—i.e., before the organization could even post its blueprints online.<sup>10</sup> After three years of litigation, the case settled, so whether the code is considered protected speech remains open for debate.<sup>11</sup>

This Article will pick up where the courts left off, focusing exclusively on the First Amendment as applied to computer code and 3D-printer blueprints. It begins in Part II by providing a brief overview of 3D printing's history and mechanics. This will provide context for an examination of the Liberator, its controversy, and the vigorous First Amendment debate between DD and the State Department in court. Part III examines the historical arguments over whether or not computer code is truly speech in other litigation. It will analyze prior challenges to regulating similar code before concluding that the Liberator design's functionality ultimately does not strip it of free speech protection. Part IV then argues that although code may be considered speech, it does not necessarily warrant the highest level of constitutional protection. Rather, 3D-printed code's potential security risks call for a less exacting level of judicial scrutiny over its prior restraint, at least for certain applications. This Part will justify this exception by analyzing precedents from related areas of speech. Finally, it will offer brief concluding remarks.

## II. SHOT HEARD 'ROUND THE WORLD?

### A. 3D Printing and the Liberator

Charles W. Hull is generally credited with developing the first working robotic 3D printer in 1984.<sup>12</sup> Yet consumer “desktop” 3D printers were not readily available for public use until the last decade, as lower costs and increased consumer knowhow have led to a boom in more casual use.<sup>13</sup> Instructions for these desktop 3D printers are generally created with computer-aided design (CAD) files using source code to define how an object will be designed.<sup>14</sup> These files are similar to any other type of blueprint.<sup>15</sup> A printer can use the machine-readable code to create

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<sup>10</sup> See *Defense Distributed v. U.S. Dep't of State*, 121 F. Supp. 3d 680 (W.D.Tex. 2015) [hereinafter *Defense Distributed I*].

<sup>11</sup> See Clif Burns, *Why Was the State Department Ever Involved with the Debate Over 3D-Printed Guns?*, SLATE (Aug. 2, 2018), <https://slate.com/technology/2018/08/defense-distributed-why-the-state-department-was-involved-with-3d-printed-guns.html> [https://perma.cc/SQ7S-T47F].

<sup>12</sup> Medhavi Kamran & Abhishek Saxena, *A Comprehensive Study on 3D Printing Technology*, 6 MIT INT'L J. MECH. ENG'G 63, 63 (2016).

<sup>13</sup> See *id.*

<sup>14</sup> See Josh Blackman, *The 1st Amendment, 2nd Amendment, and 3D Printed Guns*, 81 TENN. L. REV. 479, 484 (2014). Blackman presents an optimistic view towards 3D printing and strongly disfavors attempted restrictions on 3D-printed firearms as likely unconstitutional under both the First and Second Amendments. He points out that banning physical schematics or instructions on building firearms would be prohibited as a facially content-based prior restraint on speech and that 3D CAD files used to create 3D printed objects would constitute similar expressive information that enjoys strict scrutiny protection. See *id.*

<sup>15</sup> See *id.*

any object within its physical capability.<sup>16</sup> In essence, a digital model is transformed into a three-dimensional object.<sup>17</sup>

Various 3D printing techniques are now available, but most consumers use either fused deposition modeling or Hull's original stereolithography.<sup>18</sup> These processes can take anywhere from a few hours to a few days, depending on what the user is trying to make.<sup>19</sup> Complex designs often require significant post-processing and machining before they can be used.<sup>20</sup> 3D printing's "additive manufacturing" paradigm is still more time-intensive and expensive compared to traditional processes, but nevertheless shows great potential as the technology becomes more refined and efficient.<sup>21</sup>

Wilson, a former law student and radical libertarian, founded DD with this 3D printing technology in mind. DD sought to create open-source 3D-printed firearm designs, regardless of gun control regulations.<sup>22</sup> Under its initial "Wiki Weapons" project, DD was able to produce the lower receiver of an AR-15 using a 3D printer.<sup>23</sup> After receiving a federal license to manufacture firearms, Wilson successfully designed, made, and later test-fired the Liberator, the world's first single-shot, .380-caliber 3D-printed handgun.<sup>24</sup>

Unlike its stamped-metal namesake, this weapon was entirely made of plastic polymer melted down and layered into different components by a second-hand Stratasys Dimension SST 3D printer, in accordance with Wilson's computer design.<sup>25</sup> The process mirrors a traditional printer nozzle depositing ink onto paper.<sup>26</sup>

The only non-printed pieces are a common metal nail used as the gun's firing pin along with a small, nonfunctional metal cube, used to comply with the Undetectable Firearms Act of 1988.<sup>27</sup> This Act prohibits anyone from possessing or manufacturing any firearm that, "after removal of grips, stocks, and magazines," is not detectable "by walk-through metal detectors" or

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<sup>16</sup> See *id.* at 485.

<sup>17</sup> See *id.*; see also Nandi, Caspi, Grossman & Tatlock, *Programming Language Tools and Techniques for 3D Printing*, 71 LEIBNIZ INT'L PROC. INFORMATICS 10 (2017), <https://homes.cs.washington.edu/~ztatlock/pubs/incarnate-nandi-snap17.pdf> [https://perma.cc/HH9J-EFEF] (looking more closely at 3D printer code).

<sup>18</sup> See Blackman, *supra* note 14, at 485.

<sup>19</sup> See *id.*

<sup>20</sup> See *id.*

<sup>21</sup> *Id.*

<sup>22</sup> See Brian Doherty, *The Unstoppable Plastic Gun*, REASON (Dec. 2013), <https://reason.com/archives/2013/11/12/the-unstoppable-plastic-gun> [https://perma.cc/SUS2-TH4U].

<sup>23</sup> Greenberg, *supra* note 1.

<sup>24</sup> See *id.*

<sup>25</sup> See *id.*; see also Tony Rogers, *Everything You Need to Know About ABS Plastic*, CREATIVE MECHANISMS BLOG (July 13, 2015), <https://www.creativemechanisms.com/blog/everything-you-need-to-know-about-abs-plastic> [https://perma.cc/8VR2-DH7P].

<sup>26</sup> See Greenberg, *supra* note 1; see also Rogers, *supra* note 25.

<sup>27</sup> See 18 U.S.C. § 922(p) (2018). Presumably, any single piece within the frame can be metal so long as the gun is detectable after removal of grips, stocks, and magazines. The bullet presumably does not qualify.

“any major component of which, when subjected to inspection by the types of x-ray machines commonly used at airports, does not generate an image that accurately depicts the shape of the component.”<sup>28</sup> In its early design stages, the Liberator was not always reliable and required post-production “smithing” to avoid misfiring and other problems.<sup>29</sup> But DD made improvements, and after Wilson successfully hand-fired the Liberator for the first time, DD uploaded the gun’s design to its website, where it remained for several days before the State Department intervened.<sup>30</sup>

### B. Federal Legal Action Begins

Under federal law, it is legal to make homemade pistols and other guns, even without a license.<sup>31</sup> Any subsequent sale or sharing of the firearm is subject, however, to tight regulations: the Arms Export Control Act of 1976,<sup>32</sup> as well as its enacting regulatory regime, the International Traffic in Arms Regulations (ITAR).<sup>33</sup> ITAR restricts the import or export of “defense articles” listed in the U.S. Munitions List (USML), including firearms and their components, as well as technical data required for the manufacture of such defense articles, under the supervision of the Department of State’s Directorate of Defense Trade Controls (DDTC).<sup>34</sup>

In a letter dated May 8, 2013, the DDTC warned that DD’s technical specifications, including that of the Liberator, could be “ITAR-controlled”—that is, public access to such data would be prohibited without prior government authorization.<sup>35</sup> The letter described technical data under ITAR as “information required for the design, development, production, manufacture, assembly, operation, repair, testing, maintenance or modification of defense articles....”<sup>36</sup> Faced with this warning, DD reluctantly took down its Liberator blueprint. By this point, more than

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<sup>28</sup> *Id.*

<sup>29</sup> See Lucas Mearian, *Feds say 3D printed guns explode, can injure users*, COMPUTERWORLD (Nov. 14, 2013), <https://www.computerworld.com/article/2485929/feds-say-3d-printed-guns-explode--can-injure-users.html> [https://perma.cc/V3PT-5LWP].

<sup>30</sup> See Andy Greenberg, *A Landmark Legal Shift Opens Pandora’s Box for DIY Guns*, WIRED (July 10, 2018), <https://www.wired.com/story/a-landmark-legal-shift-opens-pandoras-box-for-diy-guns/> [https://perma.cc/8AVF-2REY].

<sup>31</sup> See Blackman, *supra* note 14, at 486.

<sup>32</sup> See International Security Assistance and Arms Export Control Act of 1976, 22 U.S.C. § 2778(a) (2018) (authorizing the President “to control the import and export of defense articles” to further U.S. “security and foreign policy,” after considering factors including whether export of such an article would escalate an armed conflict, support international terrorism, or prejudice arms control agreements).

<sup>33</sup> See 22 C.F.R. pts. 120–121 (2019); see also Greenberg, *supra* note 5.

<sup>34</sup> 22 C.F.R. § 121.1(b)(2).

<sup>35</sup> See Letter from Glenn E. Smith, Chief, Enf’t Div., Office of Def. Trade Controls Compliance, Bureau of Political Military Affairs, Dep’t of State, to Cody Wilson, Dir., Defense Distributed (May 8, 2013), <http://www.documentcloud.org/documents/698728-defense-distributed-ddtc.html#document/pl/a101955> [https://perma.cc/68NJ-XL63].

<sup>36</sup> *Id.*

100,000 people had already downloaded it, and some had reposted the design elsewhere on the Web.<sup>37</sup>

Despite this reluctant initial compliance, DD had not given up. On May 6, 2015, DD and the nonprofit advocacy group Second Amendment Foundation sued the State Department in the Western District of Texas, seeking to enjoin the takedown order and enforcement of any prepublication approval requirement under the ITAR.<sup>38</sup> That court declined to issue a preliminary injunction, however, finding that the plaintiffs failed to demonstrate a sufficient likelihood of success on their claims.<sup>39</sup> Upon appeal to the Fifth Circuit, DD elaborated on its free speech doctrines brought up at the district court, arguing that it had a right to facilitate information sharing, particularly with artistic and political utility.<sup>40</sup>

After asserting that the CAD files constituted protected speech, DD focused on several First Amendment claims: namely, that ITAR as applied to technical data was overly broad and vague and represented an unconstitutional prior restraint on lawful speech that would likely chill similar speech due to fears of liability.<sup>41</sup> DD stated that ITAR “does not meaningfully limit Defendants’ discretion,” forcing reasonable persons to guess at what is covered and what is not; furthermore, DDTC’s review process lacked meaningful procedural transparency or safeguards.<sup>42</sup> Citing *United States v. Brown*,<sup>43</sup> DD argued a prior restraint is upheld only if the government can establish either “a clear and present danger or a serious and imminent threat to a protected competing interest.”<sup>44</sup> Furthermore, the restraint must be “narrowly drawn” in the least restrictive manner possible.<sup>45</sup> In short, a prior restraint must overcome a “well-established” presumption against its validity.<sup>46</sup> Even if the State Department may have had a legitimate interest in controlling sensitive technical data related to defense articles, ITAR was not sufficiently narrowly tailored to survive scrutiny.<sup>47</sup>

The government, on the other hand, claimed that the regulations in question were designed to address weapons exportations without licenses or authorization, not to regulate the

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<sup>37</sup> See Doherty, *supra* note 22.

<sup>38</sup> See Greenberg, *supra* note 9; Pls.’ Mot. for Prelim. Inj., *Defense Distributed v. U.S. Dep’t of State*, 121 F. Supp. 3d 680 (W.D.Tex. 2015) (No. 15-CV-372-RP), 2015 WL 11022446.

<sup>39</sup> See *Defense Distributed I*, 121 F. Supp. 3d at 680.

<sup>40</sup> See Brief for the Appellants at 43, *Defense Distributed v. U.S. Dep’t of State*, 838 F.3d 451 (5th Cir. 2016) (No. 15-50759).

<sup>41</sup> See *id.* at 43, 46, 49. DD also noted that other federal laws criminalizing speech for materially aiding criminal activity required an explicit intent (*scienter*) to do so. See *id.* at 48.

<sup>42</sup> *Id.* at 53.

<sup>43</sup> 218 F.3d 415 (5th Cir. 2000) (upholding a gag order on an elected state official pending his indictment and prosecution).

<sup>44</sup> Brief for the Appellants, *supra* note 40, at 49–50.

<sup>45</sup> *Id.* at 50.

<sup>46</sup> *Id.* at 49 (quoting *Marceaux v. Lafayette City-Parish Consol. Gov’t*, 731 F.3d 488, 493 (5th Cir. 2013)).

<sup>47</sup> See *id.* at 58 (“[T]he Defendants’ regime censors vastly more speech than needed to advance the regulatory interest.”).

marketplace of ideas.<sup>48</sup> Without conceding that computer code was definitely speech, the government purported to regulate only non-speech conduct that incidentally affected speech—namely the reading of code by the 3D printers.<sup>49</sup> The government argued that the data was mostly functional, lacking any intended expressive purpose.<sup>50</sup> As a result, “laws of general application that are not aimed at conduct commonly associated with expression and do not permit licensing determinations to be made on the basis of ongoing expression . . . carry with them little danger of censorship.”<sup>51</sup> The government cited a powerful state interest in national security, fearing a deluge of undetectable, untraceable firearms easily making their way into the hands of criminals and insurgents abroad without meaningful restrictions on access to computer files regarding firearms components.<sup>52</sup>

The Fifth Circuit ultimately affirmed the district court’s denial of preliminary injunction on non-merits grounds, finding that the district court did not abuse its discretion in ruling on two non-merits factors—balance of harm and public interest.<sup>53</sup> Of note, the panel observed that, ordinarily, “the protection of constitutional rights would be the highest public interest at issue in a case. [But] [t]hat is not necessarily true here, however, because the State Department has asserted a very strong public interest in national defense and national security.”<sup>54</sup> The court denied rehearing en banc and remanded without conclusively ruling on the constitutional merits of DD’s claims.<sup>55</sup>

In January 2018, the U.S. Supreme Court denied certiorari and again remanded to the district court for a merits hearing.<sup>56</sup> Yet in July 2018, while the defendants’ renewed motion to dismiss was still pending, the State Department inexplicably reversed course and approved a settlement in DD’s favor: the agency agreed to relinquish regulatory authority over the Liberator and allow DD to freely publish technical data on the Liberator and other weapons designs online.<sup>57</sup> In accordance with this settlement agreement, the State Department has taken steps to transfer regulatory authority over certain ITAR-controlled items (including technical data that

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<sup>48</sup> See Brief for Federal Appellees at 21–24, *Defense Distributed v. U.S. Dep’t of State*, 838 F.3d 451 (5th Cir. 2016) (No. 15-50759).

<sup>49</sup> See *id.* at 22, 26. For a discussion on why the definition of “prior restraint” should not include systems of administrative preclearance that use threats of future sanctions to ensure compliance, see Marin Roger Scordato, *Distinction Without a Difference: A Reappraisal of the Doctrine of Prior Restraint*, 68 N.C. L. REV. 1, 31 (1989) (“Excluded from the scope of this proposed definition of prior restraint are schemes of government regulation that do not impose sanctions on a speaker until the offending communication in fact has taken place.”)

<sup>50</sup> See Brief for Federal Appellees, *supra* note 48, at 28.

<sup>51</sup> *Id.* at 33 (quoting *City of Lakewood v. Plain Dealer Publ’g Co.*, 486 U.S. 750, 760-61 (1988)).

<sup>52</sup> See *id.* at 23.

<sup>53</sup> See *Defense Distributed v. U.S. Dep’t of State*, 838 F.3d 451 (5th Cir. 2016), *cert. denied*, 138 S. Ct. 638 (2018) [hereinafter *Defense Distributed II*].

<sup>54</sup> *Id.* at 458.

<sup>55</sup> See *id.*

<sup>56</sup> See *id.*

<sup>57</sup> See Settlement Agreement, *Defense Distributed v. U.S. Dep’t of State*, 121 F. Supp. 3d 680 (W.D. Tex. 2015) (No. 15-CV-372-RP), 2015 WL 11022446. With this settlement, DD’s act of publishing the Liberator code online remains fully legal, although legislators have made several attempts to introduce bills that would criminalize such distribution. See, e.g., 3D Printed Gun Safety Act of 2021, H.R. 4225, 117th Cong. (2021).

presumably encompasses 3D printed firearms blueprints) to the Commerce Department, which does not have those same ITAR prepublication authorization requirements, thereby freeing the Liberator for export.<sup>58</sup> Twenty-one state attorneys general subsequently sued to block the settlement from going forward, leading a federal judge to issue a temporary restraining order on releasing the Liberator files until the proceedings are resolved.<sup>59</sup> So long as litigation remains open, so too does the status of 3D-printer code as speech. The First Amendment arguments raised by DD are left in legal limbo.

### III. IS CODE COVERED BY THE FIRST AMENDMENT?

#### A. *Is It Speech?*

Because the Liberator case settled, there remains no authoritative legal answer for whether 3D-printer code constitutes protected speech or even speech at all for First Amendment purposes. Nor has the government otherwise indicated how it will address such questions in the future. Even so, an answer may be found in previous challenges to legal restrictions involving computer code and national security.

For example, *Karn v. United States Department of State* in the D.C. Circuit involved a request to export the book *Applied Cryptography* to other countries.<sup>60</sup> The book contained the source code for an encryption algorithm in an attached computer diskette, which the State Department designated a “defense article” under ITAR.<sup>61</sup> There, the plaintiff argued that the diskette’s code should be considered “speech”:

[T]he computer language source codes contained on the diskette are comprehensible to human beings when viewed on a personal computer, because the diskette contains ‘comments’ interspersed throughout the source code which are useful only to a human and are ignored by the computer, and because the source code and comments taken together teach humans how to speak in code.<sup>62</sup>

As a threshold matter, the district court summarily assumed the code to be speech for First Amendment purposes without much discussion.<sup>63</sup> Eventually, the court ruled the ITAR export controls had met their constitutional burden as a content-neutral regulation.<sup>64</sup> In the end, pending arguments later became moot while on appeal after regulatory authority was transferred

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<sup>58</sup> See Michael Balsamo & Chris Grygiel, *Coalition of States Sue over Rules Governing 3D-Printed Guns*, AP NEWS (Jan. 23, 2020), <https://apnews.com/0a34a17d6ee5f9f77af6b51a3280f310> [https://perma.cc/55BS-8GWT]; see also Complaint for Declaratory & Injunctive Relief at 25, *Washington v. U.S. Dep’t of State*, (W.D. Wash. 2020) (No. 2:20-cv-00111-RAJ).

<sup>59</sup> See, e.g., *Washington v. U.S. Dep’t of State*, 318 F. Supp. 3d 1247 (W.D. Wash. 2018).

<sup>60</sup> See 925 F. Supp. 1 (D.D.C. 1996), *remanded on other grounds*, 1997 WL 71750 (D.C. Cir. 1997).

<sup>61</sup> *Id.* at 3.

<sup>62</sup> *Id.* at 9.

<sup>63</sup> See *id.*

<sup>64</sup> See *id.* at 10; see also *United States v. O’Brien*, 391 U.S. 367 (1968) (outlining the intermediate scrutiny analysis applied to content-neutral statutes, which is discussed at length in Part IV).

by Executive Order from the State Department to the Commerce Department,<sup>65</sup> which was then far less stringent about arms exports, national security, and 3D printer code.<sup>66</sup>

In the Sixth Circuit, *Junger v. Daley* firmly held that the licensing requirement for exporting an e-book containing encryption source code *did* implicate the First Amendment.<sup>67</sup> The court found the source code at issue to be an expressive means for communicating ideas about computers and cryptography between programmers, thus qualifying for free speech protection.<sup>68</sup> While acknowledging the difficulty of defining speech, given that “source code has both an expressive and a functional feature” (exchanging information on computer programming vs. instructing computers to perform tasks), the court rejected the idea that the functional aspects of the source code outweighed its expressive characteristics.<sup>69</sup> A mere functional element did not strip a medium of First Amendment protection, it said.<sup>70</sup> Before remanding to the district court, the Sixth Circuit noted that intermediate scrutiny under the *O’Brien* test should apply, additionally recognizing that the regulation might not be justified by national security interests on the given record.<sup>71</sup> Although not binding in the Fifth Circuit, this seems like another persuasive starting point for the Liberator case.<sup>72</sup>

Finally, the district court in *United States v. Elcom Ltd.* discussed an indictment for a software program that allowed users to remove use restrictions from Adobe Acrobat PDF and eBook Reader files, leading to possible copyright circumvention in violation of the Digital Millennium Copyright Act.<sup>73</sup> Despite denying the defendant’s motions to dismiss the indictment, the judge still found that computer software is expression protected by copyright laws and is therefore “speech at some level.”<sup>74</sup> Drawing from *Junger* and other prior case law, the judge added: “[o]bject code is merely one additional translation of speech into a new, and different, language.”<sup>75</sup> Thus, the district court found it was appropriate to consider Elcom’s constitutional claims, rejecting the government’s contention that computer code was not speech.

Case law aside, another way to view code is as expressive content for humans and pure functional content for machines. In other words, humans can create and share code with the

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<sup>65</sup> See Exec. Order No. 13,026, 61 Fed. Reg. 58,767 (Nov. 15, 1996).

<sup>66</sup> See Blackman, *supra* note 14, at 526; Burns, *supra* note 11. The outcome here mirrors DD’s settlement requirements.

<sup>67</sup> See *Junger v. Daley*, 209 F.3d 481 (6th Cir. 2000).

<sup>68</sup> See Blackman, *supra* note 14, at 529.

<sup>69</sup> *Id.*

<sup>70</sup> See *id.*; see also *Junger*, 209 F.3d at 485 (“Because computer source code is an expressive means for the exchange of information and ideas about computer programming, we hold that it is protected by the First Amendment.”).

<sup>71</sup> See Blackman, *supra* note 14, at 530.

<sup>72</sup> It was in fact cited, albeit spelled incorrectly, in DD’s 5th Circuit brief. See *Defense Distributed II*, 838 F.3d at 451.

<sup>73</sup> See 203 F. Supp. 2d 1111 (N.D. Cal. 2002) (notably taking place in Silicon Valley); see also Digital Millennium Copyright Act, Pub. L. 105-304, §1201, 112 Stat. 2860 (1998).

<sup>74</sup> *Elcom Ltd.*, 203 F. Supp. 2d at 1126.

<sup>75</sup> *Id.*

understanding that others can read it and know what the data intends to accomplish<sup>76</sup>—it becomes a form of speech or an idea even if only computers can actually execute a code’s function.<sup>77</sup> Perhaps, as Professor David Golumbia writes, code is not strictly speech, *per se*, but rather a concept with speech-like features that should be protected as speech in certain contexts.<sup>78</sup> If one accepts that code is a mixture of both function and speech, the expressive conduct test in *Spence v. Washington*<sup>79</sup> may apply: to decide if First Amendment protections apply, we ask if the act is intended to “convey a particularized message” and if “in the surrounding circumstances the likelihood [is] great that the message would be understood by those who viewed it.”<sup>80</sup> For example, in the controversial *Texas v. Johnson*,<sup>81</sup> the Court ruled that burning or desecrating an American flag was expressive conduct under *Spence* as the act occurred during a public demonstration with intentional and apparent political overtones.<sup>82</sup> The Supreme Court has in fact upheld First Amendment challenges to government regulations where the connection between the plaintiff’s act and message has been even less obvious. For example, in *Clark v. Community for Creative Non-Violence*,<sup>83</sup> the Court assumed without much explanation that sleeping in national parks (in this case, the National Mall) was a type of expressive conduct under the *Spence* test and that the public would sufficiently understand that the intended message of the act was to represent the plight of the homeless and tent cities.<sup>84</sup>

Computer code in a vacuum may or may not be intended to convey a message. Yet when thinking about the Liberator blueprint through *Spence*’s lens, it is hard to picture the source code without also evoking its ideological history with DD. Wilson’s very goal was to espouse his resistance to gun control by facilitating home manufacturing.<sup>85</sup> Creating the schematics was the first step toward fostering universal gun ownership. Thus, the code itself is intended as a

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<sup>76</sup> The Supreme Court in *Red Lion Broadcasting Co. v. FCC* acknowledged a “right of the public to receive suitable access to social, political, esthetic, moral, and other ideas and experiences” to further an “uninhibited” marketplace of ideas and self-government. 395 U.S. 367, 390 (1969). Similarly, in *Virginia State Pharmacy Board v. Virginia Citizens Consumer Council*, the Court reasoned that free flow of information central to the First Amendment involved just as much of the listeners’ right to receive information as it did a speaker’s reciprocal right to provide it. 425 U.S. 748, 757 (1976).

<sup>77</sup> *But see* Mark C. Bennett, *Was I Speaking To You?: Purely Functional Source Code as Noncovered Speech*, 92 N.Y.U. L. REV. 1494 (2017) (suggesting that source code is purely functional, not speech).

<sup>78</sup> *See* David Golumbia, *Code Is not Speech*, UNCOMPUTING (Apr. 13, 2016), <http://www.uncomputing.org/?p=1716> [https://perma.cc/E4FC-7AVE] (“Code clearly does have some speech-like qualities. In certain limited contexts, code can be used to express ideas between people.”).

<sup>79</sup> 418 U.S. 405 (1974) (per curiam).

<sup>80</sup> *Id.* at 411. A hallmark First Amendment case that paved the way for symbolic speech doctrine. *Spence* displayed an American flag with a peace symbol taped on it outside his home, in violation of a state statute forbidding attachment of any symbols on American flags. In considering whether this and any other conduct could be considered to be protected expression, the Court dictated what is now called the “*Spence* test.” *See id.* at 405–10.

<sup>81</sup> *See* 491 U.S. 397, 406 (1989) (“In these circumstances, Johnson’s burning of the flag was conduct ‘sufficiently imbued with elements of communication’ to implicate the First Amendment.” (quoting *Spence*, 418 U.S. at 409)).

<sup>82</sup> *See id.* Johnson’s conviction was overturned after the Court narrowly found that Texas’ flag desecration law violated the First Amendment.

<sup>83</sup> *See* 468 U.S. 288 (1984).

<sup>84</sup> The federal regulations in question were eventually upheld: the Court found them to satisfy intermediate scrutiny as reasonable time/place/manner restrictions leaving sufficient alternative channels to communicate. *See id.*

<sup>85</sup> *See* Greenberg, *supra* note 5.

symbolic act of defiance—perhaps not the clearest, but nevertheless sufficient given *Clark*. Its particularized message: showing how new technology can (and should) render government regulations obsolete.<sup>86</sup> As for *Spence*'s second prong, given DD's political orientation and its self-proclaimed intentions behind creating the *Liberator*, its message about gun proliferation seems clear to those most likely to see the *Liberator* schematics, some of whom may share the same anarcho-libertarian philosophy. In other words, *Spence* should dictate that the *Liberator* code contains a speech element worthy of First Amendment consideration alongside its functional element.

Ultimately, this Article supports an interpretation of computer code as speech under the First Amendment and will analyze it as such in Part IV.

### *B. If Code is Speech, Is It Categorically Unprotected?*

Over the years, the Supreme Court has recognized that certain types of speech are categorically unprotected by the First Amendment.<sup>87</sup> Yet code likely does not fall under any of these categorical exceptions, at least with regard to 3D-printed firearms and designs. The *Liberator* schematics are not “obscene”<sup>88</sup> (because they do not depict patently offensive sexual content lacking serious value), true threats<sup>89</sup> (they do not express a specific intent to commit violence against someone), child pornography,<sup>90</sup> or fighting words as defined by *Chaplinsky v. New Hampshire*<sup>91</sup> (they do not provoke an immediate violent response by the listener).

Could there possibly be a case for imposing prior restraints on incitement grounds? Seemingly not. Generally, speech that provokes immediate lawless behavior, such as a riot or other similar crimes, is not protected speech. The Supreme Court laid out the two-pronged test for incitement in *Brandenburg v. Ohio*: only advocacy “directed to inciting or producing

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<sup>86</sup> See Greenberg, *supra* note 1. Wilson himself explains: “It’s about creating the new order in the crumbling shell of the old order.” *Id.*

<sup>87</sup> See generally Daniel A. Farber, *The Categorical Approach to Protecting Speech in American Constitutional Law*, 84 IND. L. REV. 917 (2009).

<sup>88</sup> *Miller v. California*, 413 U.S. 15, 24 (1973). Miller was convicted under a state obscenity law after mailing sexually explicit material as part of an unsolicited advertising campaign. *Id.* The Court reiterated that the modern test for obscenity should be whether

the average person, applying contemporary community standards’ would find that the work, taken as a whole, appeals to the prurient interest; (b) whether the work depicts or describes, in a patently offensive way, sexual conduct specifically defined by the applicable state law; and (c) whether the work, taken as a whole, lacks serious literary, artistic, political, or scientific value.

*Id.* at 24 (internal citations omitted). *But see* *Cohen v. California*, 403 U.S. 15 (1971) (striking down a state law which sought to punish Cohen for wearing a jacket emblazoned with the words “Fuck the Draft” in a courthouse).

<sup>89</sup> See, e.g., *Virginia v. Black*, 538 U.S. 343 (2003) (defining true threats as serious expression of an objective intent to commit unlawful violence against persons).

<sup>90</sup> See generally *New York v. Ferber*, 458 U.S. 747 (1982) (upholding a state law that prohibited the distribution of materials depicting sexual performances by children under age 16).

<sup>91</sup> See 315 U.S. 568, 572–73 (1942) (defining “fighting words” as those that could injure or advocate an immediate breach of peace by provoking an individual to violence through their very utterance).

imminent lawless action” and that is “likely to incite or produce such action” can be prohibited under the First Amendment.<sup>92</sup> *Brandenburg* set a high threshold for impermissible speech, noting that “the mere abstract teaching . . . of the moral propriety or even moral necessity for a resort to force and violence is not the same as preparing a group for violent action and steeling it to such action.”<sup>93</sup> Furthermore, the Supreme Court has demonstrated particular scrutiny over what counts as “imminent” lawless action. In *Hess v. Indiana*, for example, the Court ruled that the statement “We’ll take the fucking street later/again,” uttered as police dispersed an antiwar protest, “amounted to nothing more than advocacy of illegal action at some indefinite future time.”<sup>94</sup> This proved insufficient justification for punishment because the speech was not directed at anyone in particular.<sup>95</sup>

Under *Brandenburg*’s first prong, it is not altogether clear that distributing weapons blueprints, whether for 3D printers or not, would qualify as inciting “imminent lawless action.” In DD’s instance, manufacturing most guns at home, whether with a 3D printer or from jerry-rigged household items, is not *per se* illegal.<sup>96</sup> They need no license, no registration, nor even a serial number or other tracing mechanisms so long as they are kept in the maker’s possession and not sold, traded, or gifted away.<sup>97</sup> Granted, it is illegal to manufacture an all-plastic firearm that is undetectable to x-ray machines and metal detectors, and compliance with all of these regulations is incumbent upon household manufacturers.<sup>98</sup> Even so, DD does not encourage immediate disregard for that law, despite its bombastic rhetoric.<sup>99</sup> The ostensible goal is to promote individual liberty through technological advances, not to advocate violent crimes or foreign terrorism.<sup>100</sup> Thus, it is not clear that distributing the Liberator design alone will incite crime, much less imminent crime, as envisioned by *Brandenburg*, since DD is not specifically instructing users to manufacture illegal firearms or engage in otherwise illegal action. It is perhaps foreseeable, even highly likely, that some would nevertheless fail to comply with applicable regulations when utilizing the Liberator blueprints. Even so, *Brandenburg* superseded

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<sup>92</sup> 395 U.S. 444, 447 (1969) (per curiam). Here, a prominent local Ku Klux Klan leader was convicted under a state criminal syndicalism law after he alluded to several future Klan marches upon major cities and possible “revengeance” [sic] against perceived Caucasian suppression. *Id.* at 446–7. The Court ruled that mere advocacy of doctrines without an actual likelihood of inciting immediate criminal acts was protected under the First Amendment. *See id.* at 448–9.

<sup>93</sup> *Id.* at 448 (quoting *Noto v. United States*, 367 U. S. 290, 297–98 (1961)).

<sup>94</sup> 414 U.S. 105, 107–8 (1973).

<sup>95</sup> *Id.*

<sup>96</sup> *See* Katie Zezima, *Despite Ruling on 3-D-Printed Guns, It Remains Legal to Make Your Own Guns at Home*, WASH. POST (Aug. 1, 2018), [https://www.washingtonpost.com/national/despite-ruling-on-3-d-printed-guns-it-remains-legal-to-make-your-own-gun-at-home/2018/08/01/581ca5a6-95c9-11e8-a679-b09212fb69c2\\_story.html](https://www.washingtonpost.com/national/despite-ruling-on-3-d-printed-guns-it-remains-legal-to-make-your-own-gun-at-home/2018/08/01/581ca5a6-95c9-11e8-a679-b09212fb69c2_story.html) [https://perma.cc/6WBG-KS2V].

<sup>97</sup> *See* 18 U.S.C. § 923 (2002).

<sup>98</sup> *See* Undetectable Firearms Act of 1988 § 2, 18 U.S.C. § 922(p) (2018).

<sup>99</sup> *See* Greenberg, *supra* note 1.

<sup>100</sup> *See id.*

the “clear and present danger” standard<sup>101</sup> so that speech which might present such dangers would no longer provide sufficient justification to override the First Amendment.<sup>102</sup>

The second *Brandenburg* prong is more ambiguous (though moot without satisfying the first prong), as any alleged advocacy by DD will need an actual likelihood of inciting imminent violence. If considered advocacy, uploading 3D-printed gun schematics seems unlikely to incite users to commit imminent lawless action unless DD specifically directs others to use the Liberators illegally. Making 3D-printed firearms also remains expensive, difficult, and time-consuming, a process that is ill-suited for most criminals.<sup>103</sup> Thus, the chances of advocacy actually leading to immediate crime probably will not meet the constitutional threshold. In any case, there has not yet been much discussion about incitement in relevant court cases.

Ultimately, this Article posits that the Liberator’s source code is not categorically unprotected speech.

#### IV. WHAT LEVEL OF SCRUTINY?

##### A. Content-Based Scrutiny

Assuming that computer code can be considered protected speech, one is then faced with the daunting task of deciding the level of judicial scrutiny to apply to their regulations, such as ITAR. Even before any constitutional analysis may begin, a court must first decide whether the speech regulation in question is content-based or content-neutral—that is, if the law targets specific speech because of its communicative content or subject matter.<sup>104</sup> Whether a law is content-based or content-neutral is central to its constitutionality. Courts have been ardent critics of legal regimes that burden speech that the government merely disapproves of, although it certainly has not always been easy to define what is “content-based.”<sup>105</sup> If the law does make content-based distinctions, then that regulation faces strict scrutiny, requiring the law to be

<sup>101</sup> *Schenck v. United States*, 249 U.S. 47, 52 (1919).

<sup>102</sup> *Brandenburg*, 395 U.S. at 454 (Douglas, J., concurring).

<sup>103</sup> See Dan Tynan, ‘I Wouldn’t Waste My Time’: *Firearms Experts Dismiss Flimsy 3D-Printed Guns*, THE GUARDIAN (July 31, 2018), <https://www.theguardian.com/us-news/2018/jul/31/3d-printed-guns-danger-problems-plastic> [https://perma.cc/5SLW-HME5].

<sup>104</sup> See *Reed v. Town of Gilbert*, 576 U.S. 155, 163 (2015) (imposing strict scrutiny on content-based restrictions for the first time—in this case, on a municipal sign ordinance with different display rules depending on the category of sign in question) (“Government regulation of speech is content based if a law applies to particular speech because of the topic discussed or the idea or message expressed.”).

<sup>105</sup> See, e.g., *Collin v. Smith*, 578 F.2d 1197, 1200 (7th Cir. 1978) (“Ideological tyranny, no matter how worthy its motivation, is forbidden as much to appointed judges as to elected legislators.”); *Rosenberger v. Rector & Visitors of Univ. of Va.*, 515 U.S. 819, 829 (1995) (“The government must abstain from regulating speech when the specific motivating ideology or the opinion or perspective of the speaker is the rationale for the restriction.”); *Texas v. Johnson*, 491 U.S. 397, 414 (1989) (“If there is a bedrock principle underlying the First Amendment, it is that the government may not prohibit the expression of an idea simply because society finds the idea itself offensive or disagreeable.”); *West Virginia State Bd. of Educ. v. Barnette*, 319 U.S. 624, 642 (1943) (“If there is any fixed star in our constitutional constellation, it is that no official, high or petty, can prescribe what shall be orthodox in politics, nationalism, religion, or other matters of opinion . . .”).

“narrowly tailored to serve compelling state interests”—an extremely high bar.<sup>106</sup> Otherwise, intermediate scrutiny generally applies to content-neutral laws.<sup>107</sup> Unsurprisingly, the threshold issue of whether ITAR was content-based was a key area of disagreement in the Liberator proceedings and will be examined at length below.

Initially, the Western District of Texas ruled that the ITAR pre-authorization scheme did not constitute a content-based regulation.<sup>108</sup> The district court acknowledged that any system of prior restraints warrants a heavy presumption against constitutional validity, although the presumption affords no tangible standard for review and other jurisdictions have analyzed prior restraints using different standards “depending on the particular restraint at issue.”<sup>109</sup> Instead of turning on prior restraints, the court based its level of scrutiny on whether the ITAR was content-based or content-neutral using *Reed v. Town of Gilbert*.<sup>110</sup> The court found that a regulation is not content-based merely because the regulation’s application depends on the content.<sup>111</sup> Rather, judges must consider whether that “regulation of speech ‘on its face’ draws distinctions based on the message a speaker conveys,” citing cases that found regulations on a “specific topic of speech” to be content-neutral (such as laws requiring licenses for tour guides to discuss landmarks and prohibiting closed government meetings when discussing relevant public policy).<sup>112</sup> Regarding ITAR, the court observed that the regulation clearly regulates technical data concerning specific topics (defense articles) but this was not enough to make the law content-based as it did not regulate defense articles based on any intended message.<sup>113</sup> The court stated: “The fact that Plaintiffs are in favor of global access to firearms is not the basis for regulating the ‘export’ of the computer files at issue.” Rather, in the court’s view, ITAR sought only to accomplish “a number of foreign policy and national defense goals,” making it a content-neutral regulation subject to the *O’Brien* test.<sup>114</sup>

This characterization of ITAR and the legal precedent offered by the district court is problematic for several reasons. First, it arguably confuses content-based regulation with

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<sup>106</sup> *Reed*, 576 U.S. at 171; Blackman, *supra* note 14, at 534. Government speech is a notable exception to strict scrutiny. See *Pleasant Grove City v. Summum*, 555 U.S. 460 (2009).

<sup>107</sup> See, e.g., *Heffron v. Soc’y for Krishna Consciousness*, 452 U.S. 640, 649, 654 (1981). The *Heffron* Court upheld the speech regulation in question, finding it to be content-neutral and thus needed only to serve a “significant government interest” and leave sufficiently clear “alternative forums for the expression of respondents’ protected speech.”

<sup>108</sup> See *Defense Distributed I*, 121 F. Supp. 3d at 692. In the context of a preliminary injunction analysis, this means DD was found to be unlikely to succeed on the merits, thus supporting a denial of such an injunction. Other courts have also upheld ITAR as content-neutral. See *Karn v. U.S. Dep’t. of State*, 925 F. Supp. 1, 9 (D.D.C. 1996); *United States v. Chi Mak*, 683 F.3d 1126, 1135 (9th Cir. 2012).

<sup>109</sup> *Id.* at 692–93 (citing several cases which refused to find a single overarching test for prior restraints); see also *Near v. Minnesota ex rel. Olson*, 283 U.S. 697 (1931); *G.K. Ltd. Travel v. City of Lake Oswego*, 436 F.3d 1064, 1082 (9th Cir. 2006).

<sup>110</sup> See *Reed*, 576 U.S. 155.

<sup>111</sup> See *Defense Distributed I*, 121 F. Supp. 3d at 693.

<sup>112</sup> *Id.* (citing *Renton v. Playtime Theatres, Inc.*, 475 U.S. 41 (1986); *Asgeirsson v. Abbott*, 696 F.3d 454 (5th Cir. 2012); *Kagan v. City of New Orleans*, 753 F.3d 560 (5th Cir. 2014)).

<sup>113</sup> See *Defense Distributed I*, 121 F. Supp. 3d at 694.

<sup>114</sup> *Id.*

viewpoint-based regulation, a related yet distinct issue. As an example, a content-based regulation might ban all speech on gun control legislation, while viewpoint-based regulations might only ban speech supporting or opposing gun control legislation. The district court asserted that a regulation is not content-based “merely because the applicability of the regulation depends on the content of the speech.”<sup>115</sup> Rather, it considered whether ITAR “draws distinctions based on the message a speaker conveys.”<sup>116</sup> This puzzling nuance seemingly overlooks the possibility that a regulation can be content-based without discriminating between particular messages.<sup>117</sup> Under *Reed*, regulations are considered content-based if they are applied to “particular speech because of the topic discussed or the idea or message expressed.”<sup>118</sup> Furthermore, a regulatory scheme “targeted at specific subject matter is content based even if it does not discriminate among viewpoints within that subject matter.”<sup>119</sup> In his Fifth Circuit dissent, Judge Jones made this very point, observing that while CAD files for various innocuous items are not generally restricted, the ITAR specifically covers only technical data that relate to “defense articles” listed in the USML.<sup>120</sup> DD would not have been subject to ITAR pre-publication approval had it posted 3D-printer designs for water guns or cap guns, and its Liberator design was subject to ITAR as a defense article regardless of whether DD supported strict gun control or total 2nd Amendment anarchy. The better conclusion would have been that the law is both content-based on its face and has a content-based purpose, consistent with *Reed*’s analysis. More than a mere restriction on non-speech aspects, ITAR distinguishes what technical data is subject to regulation based on their very subject matter.<sup>121</sup>

Examining *Universal Studios v. Reimerdes* from the Sixth Circuit is also helpful here. *Reimerdes* involved a preliminary injunction filed against the unlicensed distribution of DeCSS, a computer program capable of bypassing content encryption systems that prevent DVD copyright infringement.<sup>122</sup> The plaintiffs claimed the program violated the DMCA.<sup>123</sup> The defendants countered that DeCSS was protected speech and that the DMCA violated their First

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<sup>115</sup> *Id.* at 693 (quoting *Asgeirsson v. Abbott*, 696 F.3d 454 (5th Cir. 2012)).

<sup>116</sup> *Id.* The court ruled ITAR to be content-neutral because it was not applied to DD based on its support for global firearms access.

<sup>117</sup> *See Reed*, 576 U.S. at 164.

<sup>118</sup> *Id.* at 163.

<sup>119</sup> *Id.* at 169.

<sup>120</sup> *See Defense Distributed II*, 838 F. Supp. 3d at 469 (Jones, J., dissenting) (“Only because Defense Distributed posted technical data referring to firearms covered generically by the USML does the government purport to require prepublication approval or licensing. This is pure content-based regulation.”); *see also* Anthony M. Masero, *I Came, ITAR, I Conquered: The International Traffic in Arms Regulations, 3D-Printed Firearms, and the First Amendment*, 55 BOSTON COLLEGE L. REV. 1291, 1306 (2014).

<sup>121</sup> In addition, a prior restraint based on national security concerns should at least implicate *New York Times Co. v. United States*, the famous Pentagon Papers case. *See* 403 U.S. 713 (1971) (per curiam). While the facts are different, the underlying national security concerns are the same. *See id.* at 723. Justice Brennan urged caution when dealing with the government’s most central interest: “But the First Amendment tolerates absolutely no prior judicial restraints of the press predicated upon surmise or conjecture that untoward consequences may result.” *Id.* (Brennan, J., concurring).

<sup>122</sup> *See* 111 F. Supp. 2d 294 (S.D.N.Y. 2000).

<sup>123</sup> *See* Pub. L. No. 105-304, 112 Stat. 2860 (1988).

Amendment right to disseminate the code.<sup>124</sup> The district court ultimately applied intermediate scrutiny after finding the DMCA to be a content-neutral regulation on speech that targeted only the non-speech aspects of the code.<sup>125</sup> The court said, “[The DMCA] is focused squarely upon the effect of the distribution of the functional capability that the code provides.”<sup>126</sup> It asserted that the computer program in question was a “series of instructions that causes a computer to perform a particular sequence of tasks which, in the aggregate, decrypt CSS-protected files.”<sup>127</sup> The DMCA focused on the code’s functional capability—allowing persons to violate copyright protections—with only an incidental impact on the spread of ideas.<sup>128</sup> Importantly, the district court characterized a code’s functionality “as a proxy for the consequences of use.”<sup>129</sup> Because of the high risk of misuse inherent to DeCSS, its dissemination was tantamount to the harms from copyright violations.<sup>130</sup> Furthermore, “[DeCSS] particular functional characteristics [were] such that the Court would apply the same level of scrutiny even if [the DMCA] were viewed as content based.”<sup>131</sup> The court ultimately conceded that “[o]ne readily might imagine other circumstances in which a governmental attempt to regulate the dissemination of computer code would not similarly be justified.”<sup>132</sup> The Texas district court starkly mirrored the language in *Reimerdes* in its own analysis of the Liberator source code.<sup>133</sup> However, if employing the *Reimerdes* court’s reasoning, DD’s case should be distinguishable. Whereas DeCSS served no other purpose than to bypass DVD copyright protections in violation of the DMCA, the Liberator code does not serve to violate copyrights or perform other *per se* illegal activity. The functional harms present in *Reimerdes* find no analogue here because it is not inherently illegal to create a firearm at home.<sup>134</sup> Uploading and using 3D printer code to create a firearm is not tantamount to criminal harms. In addition, DD’s Liberator project was not merely a technical exercise in source code development, but rather the pinnacle of DD’s libertarian, anti-regulatory stance towards firearms. The code and its spread *is* the message. Thus, the First Amendment harms of an injunction against DD are not minimal, as in *Reimerdes*.<sup>135</sup>

Furthermore, the government’s position that ITAR is a content-neutral scheme because it focuses on managing harmful “secondary effects” fails to pass muster. In *City of Renton v. Playtime Theatres, Inc.*,<sup>136</sup> the Supreme Court upheld a city zoning ordinance restricting locations of “adult motion picture theaters” near school and residential areas as a content-neutral

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<sup>124</sup> See *Reimerdes*, 111 F. Supp. 2d at 328–29.

<sup>125</sup> See *id.* at 328–29. The Court explained that computer code was speech under the First Amendment, as it is a means of expressing ideas, but that threshold determination still left open the choice of which level of scrutiny to apply, depending on the type of regulation. *Id.* at 326–27.

<sup>126</sup> *Id.* at 329.

<sup>127</sup> *Id.*

<sup>128</sup> See *id.* at 329.

<sup>129</sup> *Id.* at 331.

<sup>130</sup> See *id.* at 332.

<sup>131</sup> *Id.*

<sup>132</sup> *Id.* at 333.

<sup>133</sup> See *Defense Distributed I*, 121 F. Supp. 3d 680 (W.D. Tex. 2015).

<sup>134</sup> See *Zeizima*, *supra* note 96.

<sup>135</sup> *Reimerdes*, 111 F. Supp. 2d at 335.

<sup>136</sup> See 475 U.S. 41 (1986).

restriction, since its justification aimed not at the film content but rather at adverse “secondary effects” on the community, such as lower property values or increased crime.<sup>137</sup> This case lays clear boundaries for what can be properly considered content-neutrality in terms of regulating secondary effects. In short, if a law is justified without specific reference to the content of the regulated speech, it is a permissible time/place/manner restriction, which only restricts when, where, and how one can speak, within general constitutional limits.<sup>138</sup> Two years later, *Boos v. Barry* reiterated this concept,<sup>139</sup> holding that so long as “the justifications for regulation have nothing to do with content . . . the regulation was properly analyzed as content neutral.”<sup>140</sup> However, *Boos* cautioned that regulations which focus on the “direct impact of speech on its audience” would not constitute secondary effects.<sup>141</sup>

Accordingly, a content-based government regulation should not suddenly become characterized as content-neutral merely because it purportedly seeks to address harmful “secondary effects.”<sup>142</sup> ITAR is not a reasonable time/place/manner restriction on such secondary effects. DD cites a useful clarification from the Supreme Court: “Speech can produce tangible consequences: It can change minds. It can prompt actions . . . Speech can also cause secondary effects, however, unrelated to the impact of the speech on its audience. A newspaper factory may cause pollution, and a billboard may obstruct a view.”<sup>143</sup> Here, the ITAR framework has everything to do with the content of the computer code and reactions of the viewers; the effects (downloading and executing computer code for 3D printers) do not just happen to be associated with that speech (posting the code online). The government may indeed possess a legitimate national security interest in slowing the proliferation of untraceable, undetectable, and easy-to-make firearms abroad. Yet a regulatory scheme for uploading technical data under ITAR must necessarily first consider the content of the 3D printer code in question, i.e., whether the code pertains to a “defense article” in the USML rather than some other innocuous item before deciding whether or not a prepublication restriction applies. Beyond the Liberator, the State Department imposed the same restriction on multiple DD data files based on their subject, such as a design for a 3D printed AR-15 lower receiver.<sup>144</sup> Those CAD files are targeted only because they serve as blueprints for 3D-printed firearms. There are no other justifiable secondary effects apparent in the government’s briefs. ITAR’s pre-authorization scheme is better understood as a total ban on attempted speech, at least until the government gives its seal of approval (a prior restraint). ITAR does not allow for 3D printer code to be *sometimes* posted online or only on

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<sup>137</sup> *Id.* at 47–8.

<sup>138</sup> *See id.* at 46. Time, place, manner restrictions are content-neutral regulations which can take many forms, but generally impose restrictions on what times speech can take place, their geographic confines, size and volume, etc. *See generally* *Ward v. Rock Against Racism*, 491 U.S. 781 (1989).

<sup>139</sup> 485 U.S. 312 (1988) (striking down a D.C. ordinance that criminalized congregating or displaying any sign that tends to bring a “foreign government into ‘public odium’ or ‘public disrepute’” within 500 feet of its embassy).

<sup>140</sup> *Id.* at 320.

<sup>141</sup> *Id.* at 321.

<sup>142</sup> *Id.* With the Liberator source code, its secondary effect would presumably be increased ease of access to illicit firearms by criminals or terrorists.

<sup>143</sup> Reply Brief for the Appellants at 19, *Defense Distributed II*, 838 F.3d 451 (5th Cir. 2016) (No. 15-50759) (quoting *City of Los Angeles v. Alameda Books, Inc.*, 535 U.S. 525 (2002)).

<sup>144</sup> Blackman, *supra* note 14, at 533; *see also* Letter from Glenn E. Smith, *supra* note 35.

some websites. Without such permission, the permitted time/place/manner for publishing technical data under ITAR is effectively nonexistent.

*B. A Different Standard for 3D Printer Code?*

Despite the conclusion that the ITAR scheme constitutes a content-based prior restraint,<sup>145</sup> the application of intermediate scrutiny for such regulations is nevertheless justified and should be adopted for computer code in free speech cases—in other words, to apply an exception to the ordinary strict scrutiny doctrine. Why? Consider a textbook, website, leaflet, seminar, or any written medium that describes how people can make their own firearms, bombs, or drugs; commit or contract murder; fool surveillance methods; or avoid capture. Consider detailed crime novels, or websites posting contact information or other details about classified entities. At what point should we more stringently regulate speech that can be said to facilitate or inspire crime? A departure from long-standing First Amendment doctrine should not be considered lightly, but a different analysis for computer code regulations is not without support. *Rice v. Paladin Enterprises*,<sup>146</sup> a Fourth Circuit wrongful death action against Paladin for publishing a hit-man manual used to commit contractual murder, hinted at liability for particularly dangerous speech.<sup>147</sup> We may one day require a forward-looking exception to strict scrutiny to deal with 3D-printer code and other technological advances that touch on public safety and national security in novel ways. Make no mistake: the courts have been steadfast and resolute in their application of strict scrutiny to prior restraints. Again, intermediate scrutiny in the First Amendment context historically covers only content-neutral regulations on speech and conduct with a substantial impact on speech.<sup>148</sup> Yet harking back to Justice Kennedy's warning in *Packingham v. North Carolina*,<sup>149</sup> courts should be mindful that the precedents they set will have long-lasting and often unforeseeable implications. This is especially true as we develop and refine new technologies. Yesterday, the controversial new form of expression was corporate political speech.<sup>150</sup> Today, it is computer code. It brings society little comfort to hamstringing the

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<sup>145</sup> See *supra* Part IV.A.

<sup>146</sup> See 128 F.3d 233 (4th Cir. 1997). This case involved a triple murder by a defendant who consulted two books published by Paladin Enterprises—a technical manual for “hit men” and for making disposable gun silencers. *Id.*

<sup>147</sup> David G. Savage, *Publisher of ‘Hit Man’ Manual Agrees to Settle Suit over Triple Slaying*, L.A. TIMES (May 22, 1999), <http://articles.latimes.com/1999/may/22/news/mn-39761> [https://perma.cc/FT9P-797A].

<sup>148</sup> See, e.g., *Heffron v. Int’l Soc’y for Krishna Consciousness, Inc.*, 452 U.S. 640 (1981) (upholding a ban on solicitation outside of approved county fair booths as a valid time/place/manner restriction under the *O’Brien* test).

<sup>149</sup> See *Packingham v. North Carolina*, 137 S. Ct. 1730, 1736 (2017). In the majority opinion striking down a state law criminalizing registered sex offender access to various commercial social networking websites, Justice Kennedy suggested that we may not yet truly realize the full dimensions of our current “Cyber Age” revolution. *Id.* at 1736.

<sup>150</sup> See, e.g., John C. Coates IV & Ron Fein, *Corporations Are Perverting the Notion of Free Speech*, NEWSWEEK, (Aug. 4, 2015), <https://www.newsweek.com/corporations-are-perverting-notion-free-speech-359785> [https://perma.cc/27ZE-7SK6]; see also *Burson v. Freeman*, 504 U.S. 191 (1992) (upholding a total ban on political campaigning within 100 feet of polling places, despite the strict scrutiny analysis).

federal government from reacting to emergent dangers, even from protected speech. Perhaps it is time for another doctrinal shift as we move further into a technologically advanced age.<sup>151</sup>

Notably, the content-based regulation of certain kinds of speech, such as alleged defamation and commercial speech, already invokes less than strict scrutiny.<sup>152</sup> *New York Times Co. v. Sullivan*,<sup>153</sup> for example, involved a lawsuit under state libel law against the *New York Times* for an allegedly inaccurate ad criticizing a city public figure.<sup>154</sup> Libel law is indisputably content-based, yet the *Sullivan* Court unanimously implemented a context-specific analysis for alleged libel against so-called “public figures,”<sup>155</sup> requiring plaintiffs to show “actual malice,” or that the statements were both false *and* made with knowledge of or reckless disregard for that falsity—on the part of the defendant.<sup>156</sup> In so doing, the Court devised a legal standard that remained protective of First Amendment rights without resorting to strict scrutiny.

Similarly, content-based regulations on commercial speech have received different treatment from the Court.<sup>157</sup> The seminal commercial speech case, *Central Hudson Gas & Electric Corporation v. Public Service Commission*,<sup>158</sup> involved a state regulation that permitted purely informational advertising of electric utilities while simultaneously banning promotional advertising.<sup>159</sup> In short, it was a content-based regulation.<sup>160</sup> Elaborating on *Virginia Pharmacy Board*, the Supreme Court replaced the traditional rational basis scrutiny afforded to commercial speech with a sequential four-part intermediate scrutiny test.<sup>161</sup> First, the speech “must concern lawful activity and not be misleading.” Second, the asserted governmental interest in regulating that speech must be “substantial.”<sup>162</sup> Third, the regulation must directly advance the asserted interest. Finally, the court must decide whether the regulation is more “extensive than necessary to serve that interest.”<sup>163</sup> Thus, the Court declined to apply strict scrutiny to another class of content-based regulations, noting its recognition of a “common sense distinction between speech proposing a commercial transaction, which occurs in an area traditionally subject to government

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<sup>151</sup> Cf. *Edwards v. Sims*, 24 S.W.2d 619, 621 (Ky. 1929) (Logan, J., dissenting) (“I may not be able to show, by any legal precedent, that the [majority] is wrong, yet having an abiding faith in my own judgment that it is wrong.”).

<sup>152</sup> See R. Randall Kelso, *The Structure of Modern Free Speech Doctrine: Strict Scrutiny, Intermediate Review, and “Reasonableness” Balancing*, 8 ELON L. REV. 291 (2016).

<sup>153</sup> See 376 U.S. 254 (1964).

<sup>154</sup> See *id.* at 256–59. The *New York Times* published a full-page ad soliciting donations to defend Martin Luther King, Jr. in court. The ad describes, with some inaccuracies, various police actions against civil rights protestors in Montgomery, Alabama and allegedly defamed the city’s Public Safety commissioner, Sullivan, who supervised the police department, although he was not actually named in the ad.

<sup>155</sup> For more discussion on public officials and figures, along with the rationale behind the *Sullivan* test, see *Curtis Publ’g Co. v. Butts*, 388 U.S. 13 (1967); *Gertz v. Robert Welch, Inc.*, 418 U.S. 323 (1974).

<sup>156</sup> See *Sullivan*, 376 U.S. at 279–80.

<sup>157</sup> See Kelso, *supra* note 152, at 370.

<sup>158</sup> See 447 U.S. 557 (1980).

<sup>159</sup> See *id.*

<sup>160</sup> See *id.*

<sup>161</sup> See *id.* at 561, 566.

<sup>162</sup> *Id.* at 566.

<sup>163</sup> See *id.*

regulation, and other varieties of speech. The Constitution therefore accords a lesser protection to commercial speech than to other constitutionally guaranteed expression.”<sup>164</sup>

Defamation and commercial speech regulations avoid strict scrutiny simply because they implicate unique speech-related public interests, like personal reputation and consumer protection. Though these categories generally do not encounter prior restraints, the same rationale might support an intermediate scrutiny exception for 3D-printed weapons code as well. If we accept that the Liberator code contains both functional and communicative aspects, it may be wise to allow the government more leeway to implement regulations on such items moving forward, rather than overly relying on national security justifications or other broad government interests when faced with the first prong of strict scrutiny. Additionally, notwithstanding a formidable government interest in maintaining national security, such an interest is only half of the equation. The regulation must still be narrowly tailored and no greater than necessary to further that interest.<sup>165</sup> The Fifth Circuit was not ready to grant a preliminary injunction to DD,<sup>166</sup> but another appellate court might find that ITAR’s prohibition on posting 3D-printed gun blueprints online—applied to anyone, anywhere, at any time, without prior authorization—would be too broad to meet the “narrowly tailored” prong.<sup>167</sup> Though ITAR applies to exports and imports (and says nothing on purely domestic activities),<sup>168</sup> one could not expect code uploaded within the United States to remain within the United States—that’s not how cyberspace works; once something is online, it is extraordinarily difficult to stop its dissemination.<sup>169</sup> Striking down ITAR’s restrictions on technical data using strict scrutiny could lead to a remote, yet definite risk of 3D-printed weapon proliferation that lawmakers have come to fear. While an entirely new test is unnecessary, the concerns above demonstrate a compelling need for courts to replace traditional strict scrutiny with intermediate scrutiny analysis against regulations like ITAR.

Apart from explicit categorical deviations, the Supreme Court has shown some flexibility when confronted with unique societal interests. In *FCC v. Pacifica Foundation*, the Court allowed for some content-based restrictions on an allegedly offensive radio broadcast.<sup>170</sup> Rather than applying strict scrutiny, the Court held that “the constitutional protection accorded to a communication containing such patently offensive sexual and excretory language need not be the same in every context,” likening the speech at hand to categorically uncovered speech, such as obscenity.<sup>171</sup> The majority reasoned that broadcasting receives the “most limited protection” under the First Amendment because it is uniquely pervasive in our lives, confronting us with possibly offensive or dangerous content both in public and within the privacy of our own homes,

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<sup>164</sup> *Id.* at 562–63 (internal citations and quotations omitted).

<sup>165</sup> See Timothy Zick, *The First Amendment, the Second Amendment, and 3D Firearms*, AM. CONST. SOC’Y: EXPERT F. (Aug. 8, 2018), <https://www.acslaw.org/acsblog/first-amendment-second-amendment-3d-firearms> [https://perma.cc/TFR8-B9KP].

<sup>166</sup> See *Defense Distributed II*, 838 F.3d at 461.

<sup>167</sup> See generally *Defense Distributed I*, 838 F. Supp. 3d at 470 (Jones, J., dissenting).

<sup>168</sup> See 22 C.F.R. § 121.1(b)(2) (2019).

<sup>169</sup> For an illustrative discussion, see *Reimerdes*, 111 F. Supp. 2d at 331–32.

<sup>170</sup> See 438 U.S. 726 (1978) (upholding the FCC’s censure of a radio station that aired comedian George Carlin’s aptly named “Filthy Words” routine during the daytime).

<sup>171</sup> *Id.* at 747.

particularly with children.<sup>172</sup> It may be the case that the internet shares a similar danger. As 3D printers become cheaper and programming tutorials more pervasive, 3D printer code is now widely accessible to all manners of people around the world at the touch of a button—each of whom can access the Liberator blueprints and learn how to make untraceable, undetectable firearms.

Finally, Justice Breyer’s concurrence in *Bartnicki v. Vopper*<sup>173</sup> suggested that a lower level of scrutiny is appropriate when a regulation involves constitutional interests competing with speech on matters of “unusual public concern,” such as “a threat of potential physical harm to others.”<sup>174</sup> Professor Eugene Volokh has expressed concern that this concurrence appears to use “unusual public concern” in a “normative sense,” referring to speech that the public *should* be unusually concerned about instead of what the public is *actually* unusually concerned about.<sup>175</sup> Granted, deciding how much the public should be concerned about something is generally not within the judiciary’s purview.<sup>176</sup> But presumably the public indicates what it considers to be an unusual public concern by lobbying their elected officials to pass laws addressing it.<sup>177</sup> Thus, determining what kind of speech is related to unusually heightened public interest will require no more legislative deference than the courts already give when weighing the government’s interest in public safety, order, security, etc.<sup>178</sup> A lower level of scrutiny would allow for effective regulation to withstand challenges even if not the most narrowly tailored.

To close this Section, evaluating the constitutionality of the ITAR preauthorization requirement is outside the scope of this Article, but I will offer some brief observations upon applying the *O’Brien* standard. According to the Supreme Court, government regulations of speech that are found to be content-neutral pass muster only if they are (1) “within the constitutional power of the Government”; (2) “if it furthers an important or substantial governmental interest”; (3) “if the governmental interest is unrelated to the suppression of free expression”; (4) and “if the incidental restriction on alleged First Amendment freedoms is not greater than is essential to the furtherance of that interest” (although the least restrictive means is

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<sup>172</sup> See *id.* at 748–49.

<sup>173</sup> See 532 U.S. 514, 535 (2001). This First Amendment case involved a radio station publishing comments from a private conversation that was secretly and unlawfully recorded. *Id.* Ultimately, the court found that the station had not illegally obtained the recording and could not be held liable for illegal acts of third parties. *Id.*

<sup>174</sup> *Id.* at 535–37 (Breyer, J., concurring) (“What this Court has called ‘strict scrutiny’—with its strong presumption against constitutionality—is normally out of place where, as here, important competing constitutional interests are implicated.”); see also *Reed v. Town of Gilbert*, 576 U.S. 155, 176 (2015) (Breyer, J., concurring) (“To use content discrimination to trigger strict scrutiny sometimes makes perfect sense . . . But content discrimination, while helping courts to identify unconstitutional suppression of expression, cannot and should not *always* trigger strict scrutiny.”).

<sup>175</sup> Eugene Volokh, *Crime-Facilitating Speech*, 57 STAN. L. REV. 1095, 1171 (2005) (discussing how First Amendment law should address crime-facilitating speech and various methods to distinguish within that category while balancing uses and harms).

<sup>176</sup> See *id.* at 1172.

<sup>177</sup> See *id.*

<sup>178</sup> The “Pentagon Papers” case is a notable exception. See *New York Times Co. v. United States*, 403 U.S. 713 (1971) (per curiam). The court overturned a prior restraint of information that was of high public concern despite the state’s pressing national security interests, one of the few times that this trump card failed to uphold a regulation under strict scrutiny. *Id.*

not always necessary).<sup>179</sup> First, regulating arms exports, including the ancillary technical data that enables their manufacture, is clearly within the government's power. In addition, the government has an undoubtable national security interest in preventing violent crime and terrorism, which is facially unrelated to regulating speech. But as discussed above, it is not certain that the current distribution of 3D-printed gun blueprints online is directly correlated with immediately elevated crime levels.<sup>180</sup> Restricting the code could therefore prohibit more speech than is essential under the *O'Brien* test. The restriction may also be vastly underinclusive, as producing untraceable, unregistered firearms at home is still legally permissible, whether through 3D printing or otherwise.<sup>181</sup> Therefore, ITAR's restraint on code might not be less restrictive than necessary to accomplish the government's goals. More concerning is the very nature of the internet: once something is online, can any law keep that information from spreading abroad without also impermissibly burdening our freedom of speech?

## V. CONCLUSION

In the end, it will be difficult to predict how courts will rule on the issue. Without guidance from the Supreme Court and with only sparse precedence that is neither binding nor consistent, it may be a long time before a circuit split or other pressing need encourages certiorari. DD will likely see more courtrooms in the coming years, though no First Amendment issues are on the horizon. But the winds of change are blowing towards an ever-expansive First Amendment doctrine, slowly but surely extending coverage towards nontraditional forms of speech, particularly as the Internet and other modern technologies make their way into our lives. Obviously, code as speech is not yet codified into law, but while the academic debate remains vigorous, courts have indeed demonstrated sympathy for the pro-speech argument.

The right question is not whether code will be ruled speech, but rather how we should apply judicial scrutiny when lawmakers inevitably introduce regulations to control its dissemination.<sup>182</sup> The government will need to strike a precarious balance even under a less exacting standard than strict scrutiny. We are unlikely to soon see a final resolution on whether 3D-printed gun regulations would survive whatever judicial standard is eventually applied. The law, unfortunately, rarely keeps pace with the technology it oversees. While courts can agree that public safety is a paramount concern, deciding how to uphold it is half the battle. Grappling with speech that is both expressive and functional is difficult. Nor is it clear how the proliferation of commercial 3D printers will affect our nation's security. While the thought of cheap, untraceable weapons produced en masse anywhere is terrifying for some and enthralling for others, that day is still a ways off. However, the way courts regulate the computer code that can create these guns

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<sup>179</sup> *United States v. O'Brien*, 391 U.S. 367, 377 (1968) (finding that federal regulations against burning or mutilating draft cards was content-neutral and applied only to symbolic conduct, thereafter establishing the seminal four-prong inquiry for symbolic speech).

<sup>180</sup> See generally Avi Reichental, *3D-Printed Guns Aren't as Threatening as You Think*, FORTUNE (Oct. 17, 2018), <https://fortune.com/2018/10/17/3d-printed-guns-defense-distributed/> [https://perma.cc/9JRW-M848]; Will Sommer, *The Biggest Problem with 3D-Printed Guns? They Blow Up*, DAILY BEAST (July 31, 2018), <https://www.thedailybeast.com/the-biggest-problem-with-3d-printed-guns-they-blow-up> [https://perma.cc/3WQ7-NRXX].

<sup>181</sup> See Zezima, *supra* note 96.

<sup>182</sup> See, e.g., THE PHILADELPHIA CODE § 10-2001 (2013).

is a problem we face today. The Fifth Circuit found that ITAR was not a content-based prior restraint. Other circuits in the future may decide otherwise. Even if we are to apply strict scrutiny to such regulatory schemes, the government is dealt an impressive hand when it invokes its national security interests in the equation—a hammer when perhaps a scalpel would be more appropriate.

Finally, 3D-printed firearms are not the only controversial technological innovations likely to fall under public scrutiny in the future. We may desire robust safeguards against the spread of dangerous information, but in doing so, we should be wary of allowing broad regulations to survive strict scrutiny in the name of national security. Society may instead be better off setting more comfortable precedents by employing intermediate scrutiny for 3D printer code litigation, even if the laws in question are content-based. By more easily upholding government regulations in the short-term, we can avoid an ever-prevalent national security “nuclear option” in the long term.