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Between Firearm Regulation and Information Censorship: Analyzing First Amendment Concerns Facing the World's First 3-D Printed Plastic Gun

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BETWEEN FIREARM REGULATION AND INFORMATION CENSORSHIP: ANALYZING FIRST AMENDMENT CONCERNS FACING THE WORLD'S FIRST 3-D PRINTED PLASTIC GUN

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I. INTRODUCTION

Early this May, law student Cody Wilson fired by hand the world's first fully printed three-dimensional (3-d) plastic gun.[1] This novel weapon, deemed "The Liberator," represents the dawn of a new industrial revolution – a technology enabling the average consumer to instantaneously create new or existing products in real time from the comfort of one's own home.[2] 3-d printing carries the potential for improvements and innovation, such as the ability to cut waste and increase the number of products available to consumers; however, criminals will also undoubtedly begin to discover their own capabilities.[3] While 3-d printers are not yet fixtures in the typical household, they will become increasingly available and affordable to the general public as the technology improves.[4]

As 3-d printers become more obtainable, the printable and undetectable

1. *See generally* Andy Greenberg, *Meet the 'Liberator': Test-Firing the World's First Fully 3D-Printed Gun*, FORBES (May 5, 2013, 5:30 PM), http://www.forbes.com/sites/andygreenberg/2013/05/05/meet- the-liberator-test-firing-the-worlds-first-fully-3d-printed-gun/ [hereinafter Greenberg, *Meet the 'Liberator*'] (describing the 3- d printed gun's first successful shot).

2. *See* Mitch Free, *3D-Printed Gun Fires a New Shot Heard 'Round the World'*, FORBES (May 12, 2013, 3:28 PM), http://www.forbes.com/sites/mitchfree/2013 /05/12/3d-printed- gun-fires-a-new-shot-heard-round-the-world/ [hereinafter Free, Round the World] (noting the changes in product manufacturing).

3. *See* Dennis Draeger, *Future Tech: How 3D Printing will Change the World*, ALTERNET (May 9, 2012), http://www.alternet.org/story/ 155254/future _tech%3A_how_3d_printing_will_change_the_world [hereinafter Draeger, Future Tech] (explaining that the future of 3-d printing includes the good, the bad, and the grotesque).

4. *See* Christopher J. Ferguson, *3-D Printed Guns are a Boon for* Criminals, CNN (May 7, 2013, 7:28 AM), http://www.cnn.com/2013/ 05/07/opinion/ferguson-printable-gun [hereinafter Ferguson, Boon for Criminals] (recognizing that 3-d gun models will improve).

gun will likely become the "realm of the criminal."[5] Further, the 3-d printed gun will render today's gun laws ineffective as it will become nearly impossible to keep these weapons out of a criminal's reach, an inevitable consequence of posting 3-d gun blueprints on the Internet for anyone to download.[6] These types of concerns prompted the State Department to send Mr. Wilson a letter demanding that he remove computer files containing the plastic gun's blueprint from the Internet.[7] The State Department's letter sparked First Amendment concerns over whether the government can prevent citizens from publishing these types of computer files, focusing on reaching the proper balance between national security and citizens' First Amendment rights.[8]

This Comment argues that the regulation of 3-d gun blueprints on the Internet serves a government interest in harm regulation that justifies limitations on First Amendment freedoms.[9] Part II discusses 3-d printing and the absence of specific laws designed to focus on the implications of modern technology, such as 3-d printing.[10] Part II also summarizes the basic principles and tenets of the First Amendment and the case law that shapes a First Amendment analysis of 3-d gun regulations.[11] Part III argues that, under a First Amendment analysis, computer files containing the 3-d gun blueprint should be classified as both expressive and functional.[12] Part III also argues that controlling the dissemination of 3-d gun blueprint files on the Internet serves an important government interest and, therefore,

5. *See id.* (arguing that while law-abiding citizens should enjoy the right to own weapons, access should be limited for some).

6. *See id.* (quoting Senator Chuck Schumer, who argues that the 3-d printable gun allows anyone to create an undetectable firearm).

7. *See* Todd Sperry, *U.S. Requires Group to Remove 3-D Gun Instructions from its Website*, CNN (May 13, 2013, 10:51 AM) http://cnn.com/2013/05/09/politics/3-d-guns (explaining that the State Department believes this is a national security issue).

8. *See* Devin Long, *Censoring Firearms: Gun Laws and Censorship Clashing in the World of 3-d Printing*, OASIS OF THOUGHT (June 7, 2013), http://devinlong.wordpress.com/2013/06/07/censoring- firearms-gun-laws-and-censorship-clashing-in-the-world-of-3-d- printing/ (questioning the government's ability to censor these files).

9. *See* United States v. O'Brien, 391 U.S. 367, 376 (1968) (holding that limitations on First Amendment freedoms may be justified).

10. *See infra* Part II (explaining how 3-d printing works, the creation of the 3-d gun, and its applicable legal framework).

11. *See infra* Part II (analyzing how a speech's classification affects possible restraints under the First Amendment).

12. *See infra* Part III (arguing that these computer files deserve a unique analysis under the First Amendment because of their expressive and functional aspects).

limitations on First Amendment freedoms are reasonable and justified.[13] Part IV moves beyond the First Amendment and argues that there is a pressing public policy need to reach a consensus on the best way to regulate 3-d gun blueprints before this new technology outpaces the law.[14] Finally, Part V concludes by reiterating that limiting the publication of 3-d gun blueprints on the Internet is justified under the First Amendment, regardless of whether regulation is called for because of export control violations or for other reasons, because the restriction serves an important government interest.[15]

II. BACKGROUND

A. What is 3-d Printing?

3-d printers produce three-dimensional objects from a digital file through a technique called additive manufacturing.[16] Computer Aided Design (CAD) software creates digital 3-d models, outlining the dimensions and details of a desired object.[17] The software breaks up the model into thin, 0.1 mm tall horizontal cross-sections, directing the printer to lay down molecules layer by layer.[18] Through this process of additive manufacturing, materials are joined together to make objects that, when complete, resemble the digital model.[19]

Compared to more conventional manufacturing processes, 3-d printers and the software they utilize are more accessible and easier to use.[20] In

13. *See infra* Part III (asserting that the restraint serves important interests in national security and harm prevention).

14. *See infra* Part IV (noting that the regulation of 3-d printing must be tackled at the forefront).

15. *See infra* Part V (recognizing the continuing need to analyze new technology for potential First Amendment restraints).

16. *See* Draeger, *Future Tech*, *supra* note 3 (explaining that additive manufacturing builds products from the bottom up, by adding resources, instead of through a more conventional process known as subtractive manufacturing where materials are removed).

17. *See id.* (asserting that a CAD file contains a blueprint and communicates to a 3-d printer how to build an object).

18. *See* Peter Jensen-Haxel, Comment, *3D Printers, Obsolete Firearm Supply Controls, and the Right to Build Self-Defense Weapons Under Heller*, 42 GOLDEN GATE U.L. REV. 447, 450 (2012) [hereinafter Jensen-Haxel, *3D Printers*] (noting that layers fuse with the layers below).

19. *See* Terry Wohlers, *Additive Manufacturing 101: Part I*, MTADDITIVE (Jan. 11 2010), *available at* http://www.mtadditive.com/ articles/additive-manufacturing-101-part-i (stating that some additive manufacturing systems produce parts in thermoplastics, a plastic that melts into molten liquid at high temperatures).

20. *See* Jensen-Haxel, *supra* note 18, at 452 (explaining that users can create their

fact, 3-d printers have already successfully printed a multitude of products using a variety of plastics and metals.[21] Now, a functional gun stands amongst these products.[22]

B. 3-d Printing, 3-d Guns, and the Current Legal Framework

Although 3-d printing already has created an impressive array of products, unexpected dangers resulting from this far-reaching technology will also undoubtedly present challenges.[23] Several of these challenges will stem from the lack of a substantive legislative framework that deals with these emerging issues.[24] Indeed, many of these issues may fit within the contours of pre-existing laws, particularly encompassing areas of the law focused on gun control and information censorship.[25] However, technological advancements will inevitably continue to pose novel and challenging questions.[26] For example, the International Traffic in Arms Regulations (ITAR) ostensibly pertains to 3-d gun printing because this set of government regulations controls the export and import of defense-related articles and information in the interest of national security.[27] Accordingly, the State Department ordered Mr. Wilson to remove files containing the 3-d gun's blueprints from his website in order to determine whether Mr. Wilson violated ITAR by posting files on the Internet, which allowed users worldwide to download and print functional firearms with the help of a 3-d printer.[28]

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own designs or download free models online).

21. *See id.* at 451 (listing examples of 3-d printed products from edible chocolate sculptures to aerospace parts).

22. *See* Free, *Round the World*, *supra* note 2 (discussing how the 3-d printed gun successfully fired a bullet at lethal velocity).

23. *See* Jamie Chandler, *How to Regulate 3-D Printed Guns*, U.S.NEWS (May 11, 2013), http://www.usnews.com/opinion/blogs/jamie-chandler/2013/05/11/how-to-regulate-3-d-guns [hereinafter Chandler, *How to Regulate*] (recognizing unforeseen dangers).

24. *See id*. (arguing that currently only vague laws exist that do not focus on the more complex problems of modern technology).

25. *See* Farhad Manjoo, *Don't Fear the 3-D Gun*, SLATE MAGAZINE (May 8, 2013, 5:30 AM), http://www.slate.com/articles/technology/technology/2013/05/_3_d_printed_gun_yes_it_will_be_possible_to_make_weapons_with_3_d_printers.html (suggesting that information control around 3-d printed guns is not beyond the government).

26. *See* Greenberg, *Meet the 'Liberator*,*' supra* note 1 (commenting that the 3-d gun blurs the line between firearm regulation and information censorship).

27. *See* 22 C.F.R. §§ 120-130 (2012) (regulating technical information required for the design or manufacture of defense articles, including information in the form of blueprints).

28. *See* Letter from Glenn E. Smith, Chief of the Enforcement Div. of the U.S.

The State Department's action shifts the gun control debate into a new legal arena, focusing on the First Amendment rather than the Second Amendment.[29] Specifically, it raises the issue of whether the State Department's letter demanding that Mr. Wilson and his non-profit group, Defense Distributed, remove the CAD files from the Internet violated Mr. Wilson's right to freedom of expression under the First Amendment.[30] In turn, the issue of whether the letter violates the First Amendment depends on whether the First Amendment right to speech includes posting CAD files on the Internet, and, if so, the scope of First Amendment protection that the files should receive.[31]

C. Basic Principles and Tenants of the First Amendment

1. Overview of the First Amendment and Scope of First Amendment Protection

The First Amendment to the United States Constitution provides strong protections for citizens' freedom of speech, specifically protecting the right to freedom of expression from government interference.[32] Although the First Amendment literally applies only to speech, the Supreme Court recognizes that its protection extends beyond pure speech, an area traditionally encompassing only the spoken and written word.[33] Nevertheless, pure speech enjoys the highest degree of First Amendment protection, unless it falls under one of the judicially-recognized exceptions.[34]

Dep't of State, to Mr. Wilson, Defense Distributed (May 8, 2013), *available at* http://www.forbes.com/sites/ andygreenberg/2013/05/09/state-department-demands-takedown-of- 3d-printable-gun-for-possible-export-control-violation/ [hereinafter U.S. Dep't of State, Letter] (stating that Mr. Wilson likely did not get the proper approval to post the file online).

29. *See* Ferguson, *Boon for Criminals*, *supra* note 4 (presenting legal issues that 3-d guns pose, including whether a restriction on a 3-d gun blueprint is a restriction on guns or information).

30. *See* U.S. CONST. amend. I (guaranteeing the right to free speech).

31. *See* Universal City Studios v. Corley, 273 F.3d 429, 445 (2d Cir. 2001) (analyzing a series of preliminary issues to the First Amendment challenge, including whether computer code is speech and its appropriate level of protection).

32. *See* U.S. CONST. amend. I (guaranteeing five freedoms: speech, press, religion, assembly, and petition).

33. *See, e.g.*, Texas v. Johnson, 491 U.S. 397, 404 (1989) (acknowledging conduct with sufficient elements of communication as speech).

34. *See* United States v. Stevens, 599 U.S. 460, 470 (2010) (identifying categories of speech outside the First Amendment's protection where social interest and morality outweigh the expressive interests, such as child pornography).

The category of pure speech has expanded so that now purely expressive activities, in addition to the spoken and written word, can qualify as pure speech.[35] Therefore, expressive activities also enjoy full First Amendment protection, meaning that regulations on protected speech are constitutional only if they regulate time, place, or manner and not content.[36] Reasonable restrictions on time, place, or manner are justified provided that they are content-neutral interests that are narrowly tailored to achieve a significant government interest.[37]

Conduct that expresses an idea ("expressive conduct") combines speech and non-speech elements.[38] Since expressive conduct has non-speech elements, it must be "sufficiently imbued with elements of communication" to fall within the First Amendment's scope.[39] Regulations on conduct that satisfy this standard are subject to a less stringent standard of review than that for restrictions on pure speech.[40] Specifically, if conduct contains sufficient elements of communication, restrictions or regulations are justified if: (1) it is within the constitutional powers of the government; (2) it furthers an important or substantial government interest; (3) the interest is unrelated to the suppression of free speech; and (4) the incidental restriction on alleged First Amendment freedoms is no greater than needed to further the interest.[41] However, if the conduct does not sufficiently demonstrate elements of communication to bring the First Amendment into play, the government has even more freedom to regulate as the regulation must only rationally relate to a legitimate governmental

35. *See* Anderson v. City of Hermosa Beach, 621 F.3d 1051, 1055 (9th Cir. 2010) (holding that tattooing is fully protected by the First Amendment because it is a purely expressive activity).

36. *See id.* at 1058 (concluding that because tattooing is pure expression, regulation must pose a reasonable time, place, or manner restriction to survive constitutional scrutiny).

37. *See* Ward v. Rock Against Racism, 491 U.S. 781, 798 (1989) (noting that the narrowly tailored test is met if the interest would be achieved less effectively without the regulation).

38. *See* Spence v. Washington, 418 U.S. 405, 409 (1974) (acknowledging that speech elements may exist in conduct even if ideas are not expressed through printed or spoken words).

39. *See id.* (articulating the "sufficiently imbued with elements of communication" standard to determine whether an activity merits First Amendment analysis).

40. *See Anderson*, 621 F.3d at 1058 (explaining that the government has less freedom in restricting written or spoken words because courts employ a different level of judicial scrutiny).

41. *See* United States v. O'Brien, 391 U.S. 367, 376 (1968) (outlining the four-part test for analyzing the regulation of a conduct that combines non-speech and speech elements).

interest.[42]

Therefore, under this complex legal framework, CAD files must first classify as speech to bring them within the scope of the First Amendment.[43] If deemed speech, how the speech is characterized will ultimately decide the level of scrutiny courts will apply when analyzing laws that restrict the use of a CAD file.[44] Specifically, if a CAD file is pure speech, restrictions will be subject to a higher degree of scrutiny and the speech will generally enjoy full First Amendment protections.[45]

If a CAD file combines speech and non-speech elements yet still contains 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.[46] Finally, if a CAD file does not sufficiently contain elements of communication to bring it within the First Amendment's protection then regulation will be subject to the lowest level of scrutiny where the regulation need only rationally relate to a legitimate government interest.[47] Although courts have carved out this framework for First Amendment analysis, CAD files and other modern technologies pose new questions, particularly focusing on whether their new functional capabilities replace elements of communication traditionally required to bring the First Amendment into play.[48]

2. How Courts Classify Speech for First Amendment Purposes

a. Expressive Activity

Expressive activities or conduct generally represent information and

42. *See Anderson*, 621 F.3d at 1058 (explaining that the district court erroneously employed the rational basis test based on its incorrect conclusion that tattooing lacked sufficient elements of communication to receive First Amendment protection).

43. *See id.* (determining first what type of speech tattooing is).

44. *See id.* (distinguishing different types of speech and their appropriate levels of scrutiny).

45. *See id.* (asserting that the First Amendment clearly applies to pure speech and affords it the highest protection).

46. *See O'Brien*, 391 U.S. at 376 (outlining the four-part test to use when analyzing conduct combining speech and non-speech).

47. *See Anderson*, 621 F.3d at 1058 (explaining that if the speech does not implicate the First Amendment, courts may apply the rational basis test).

48. *See* Universal City Studios v. Corley, 273 F.3d 429, 445 (2d Cir. 2001) (asserting in its constitutional inquiry that communication does not lose its constitutional protection as speech merely because of its computer code language and the presence of functional, non-speech elements).

communicate ideas.[49] Whereas courts classify written and spoken words as pure speech, expressive activities move beyond this pure speech categorization because they combine elements of both speech and conduct.[50] Further, 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.[51] However, the First Amendment in no way offers absolute protection for all forms of expressive speech; rather, courts agree that the government generally has more leeway in restricting expressive conduct than it does in restricting pure speech.[52]

In fact, the Supreme Court has explicitly recognized that conduct intending to express an idea cannot conclusively be labeled as speech without first considering its context and the government's interest.[53] Thus, in *O'Brien*, the Supreme Court found that although a communicative element may exist in the burning of a Selective Service registration certificate, it does not imply that the activity is therefore constitutionally protected.[54] Specifically, when a process does not produce pure expression and on its face does not necessarily convey a message, such as wearing a black armband or burning a draft card, courts must determine whether the activity is sufficiently imbued with communicative elements before beginning a First Amendment analysis.[55]

In *Spence*, the Supreme Court engaged in this exact type of analysis when determining whether displaying a flag upside-down with a peace

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49. *See* Junger v. Daley, 209 F.3d 481, 484 (6th Cir. 2000) (noting that the encryption source code qualifies as speech because of its ability to convey information and ideas).

50. *See* Commonwealth v. Oakes, 551 N.E.2d 910, 912 (Mass. 1990) (classifying the semi-nude photographing of minor as expressive because the photographing and photos mixed speech and conduct).

51. *See* Hurley v. Irish-American Gay Grp. Of Boston, 515 U.S. 557, 568 (1995) (concluding that a parade is a form of expression because it makes a collective point in the same way that saluting a flag or wearing an armband to protect a war does).

52. *See Oakes*, 551 N.E.2d at 912 (acknowledging that the Government has less power to regulate written or spoken word); *see also* Perry Educ. Ass'n v. Perry Local Educators' Ass'n, 460 U.S. 37, 55-61 (1983) (explaining that courts will employ different levels of scrutiny in public and non-public forums).

53. *See* United States v. O'Brien, 391 U.S. 367, 376 (1968) (refusing to define speech, as applied in the First Amendment, as any conduct intending to express an idea).

54. *See id.* at 376 (finding that Congress has a substantial interest in preventing the destruction of these certificates).

55. *See* Anderson v. City of Hermosa Beach, 621 F.3d 1501, 1061 (9th Cir. 2010) (asserting that some types of activities may be done for reasons having nothing to do with expression)

symbol on it qualified as First Amendment protected speech.[56] After considering the appellant's overall purpose in protesting the then-recent actions in Cambodia and fatal events at Kent State University, the Supreme Court held that the appellant's display of the flag qualified as a form of protected expression because it contained sufficient elements of communication.[57] Further, even if communicative elements sufficiently exist to bring the First Amendment into play, conduct or speech may still be limited if, for example, the regulation is content-neutral and furthers a substantial governmental interest.[58] Thus, the Supreme Court has explicitly tolerated incidental limitations on the First Amendment for expressive activities in cases where the regulation survives intermediate scrutiny.[59]

b. Functional Activity

Wholly functional activities do not communicate an idea or message as expressive activities do, but exist solely for their functional purpose; therefore, the First Amendment does not apply.[60] For example, in *Tenafly*, the Court found that an eruv, or an area designed to allow Orthodox Jews to engage in outdoor activities during the Sabbath, did not send a discernible message, but rather stood for its purely functional purpose, similar to a fence's purpose in enclosing a yard.[61] Sufficient elements of communication did not exist in the eruv and thus, it did not warrant First Amendment protection.[62]

Likewise, courts have recognized the functionality of modern technology, such as the Internet's domain name system.[63] In *Name.Space*,

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56. *See* Spence v. Washington, 418 U.S. 405, 405-06 (1974) (analyzing whether the Washington statute, under which the appellant was charged, contravened the First Amendment).

57. *See id.* at 408 (noting the appellant's stated purpose of trying to associate the American flag with peace instead of war when considering whether sufficient elements of communication existed to bring the First Amendment into play).

58. *See* O'Brien, 391 U.S. at 377 (holding that sufficient governmental interest justified the conviction for burning Selective Service registration certificates).

59. *See id.* (explaining that a limitation on the First Amendment is just if it furthers an important interest unrelated to free expression that is no greater than necessary).

60. *See* Tenafly Eruv Ass'n v. Borough of Tenafly, 309 F.3d 144, 164 (3d Cir. 2002) (arguing that an eruv was neither designed to nor does communicate an idea or message).

61. *See id.* (describing the functional purpose of the eruv while recognizing its lack of communicative elements).

62. *See id.* at 162, 164 (noting that an eruv is not so intertwined with speech because it is a boundary, not a symbol).

63. *See* Name.Space, Inc. v. Network Solutions, Inc., 202 F.3d 573, 577 (2d Cir. 2000) (explaining the structure of domain names, focusing on the Top Level Domain

the court again recognized only the functional feature of gTLDs for their ability to direct traffic through the Internet, finding that the First Amendment did not apply because the three-letter gTLDs lacked expressive content.[64] However, functional work may still warrant First Amendment protection if, for example, it has both functional and expressive features.[65] Nonetheless, when a medium combines speech and non-speech elements, a regulation that targets only the functional aspects, rather than the expressive aspects, will likely withstand a First Amendment challenge.[66]

c. Potential for Both an Expressive and Functional Classification

Expressive speech containing functional elements may still qualify as pure speech.[67] For example, the Ninth Circuit held that speech deserves the same protection afforded to pure speech when a speech's functionality is so intertwined with the purely expressive end-product.[68] However, courts also recognize processes as expressive conduct distinct from their resulting pure speech end-products.[69] Specifically, the court in *Oakes* distinguished between the actual production of pornographic material and the ultimate dissemination of the photographs when considering the defendant's argument that the posing and photographing of a nude minor should qualify as pure speech.[70]

Courts have also recognized activities with both seemingly expressive

(TLD) comprised of two groups: seven generic TLDs (gTLDs) e.g. ".com," and about 250 two-letter country code TLDs (ccTLDs) e.g. ".us").

64. *See id.* at 585 (arguing that the district court correctly held that the existing gTLDs did not constitute protected speech while noting that the court did not address the possibility of more expressive gTLDs, such as ".jones_for_president").

65. *See* Robert Plotkin, Comment, *Fighting Keywords: Translating the First Amendment to Protect Software Speech*, 2003 U. ILL. J.L. TECH. & POL'Y 329, 340-41 (2003) (asserting that functionality does not necessarily preclude First Amendment protection).

66. *See* Universal City Studios v. Corley, 273 F.3d 429, 442 (2d Cir. 2001) (finding the injunction on the program survived intermediate scrutiny because it targeted its functionality).

67. *See* Anderson v. City of Hermosa Beach, 621 F.2d 1051, 1068(9th Cir. 2010) (recognizing the process of tattooing and the tattoo as pure speech despite the process's functionality).

68. *See id.* at 1062 (explaining that the tattooing process directly relates to the tattoo and that because both are expressive, the entire process qualifies as pure speech).

69. *See* Commonwealth v. Oakes, 551 N.E.2d 910, 912 (Mass. 1990) (rejecting the defendant's argument that the posing and photographing of a nude minor constituted pure speech).

70. *See id.* at 913 (comparing the defendant's expressive conduct to the dissemination of photographs, which would be pure speech).

and functional elements as speech when analyzing computer code.[71] First, computer code, although expressed in a less familiar language, may still qualify as expressive speech because of its ability to communicate information.[72] Second, computer code performs functional activities because it essentially instructs computers to execute a task or series of tasks.[73] This trait merely distinguishes code from other protected forms of First Amendment speech, but does not exclude it from the category of speech meriting potential First Amendment protection.[74]

In *Corley*, the court explained that computer code exhibits both expressive characteristics because it qualifies as a type of program language as well as functional characteristics because a code, when executed by a computer, carries out functions and performs tasks.[75] As a result, although computer code has this distinguishing functional trait, the court acknowledged that this functionality does not necessarily preclude it from conveying information, which is characteristic of expressive activity.[76] Accordingly, computer code and computer programs constructed from code may too warrant First Amendment protection if sufficient elements of communication exist.[77]

3. Balancing Test

Although the Supreme Court has tolerated incidental limitations on speech or expression protected under the First Amendment, the government bears a heavy burden of showing justification for prohibiting speech or expression before it actually takes place; this is commonly referred to as "prior restraint."[78] Thus, in cases involving prior restraint, the analysis

71. *See Corley*, 273 F.3d at 445-46 (conceding that communication does not lose constitutional protection as speech simply because it is expressed as code and explaining the need to tailor familiar constitutional rules to novel circumstances).

72. *See id.* (reasoning that the symbolic notations in math formulas and musical scores communicate to specific audiences).

73. *See id.* at 446 (observing that code may give instructions, such as to perform a task when initiated by a click of a mouse).

74. *See id.* at 447 (analogizing computer code to other forms of protected speech, such as a recipe requiring an oven).

75. *See id.* at 449 (concluding that code qualifies as speech while still recognizing a code's functional purpose).

76. *See id.* at 448 (concluding that just as instructions are First Amendment speech because of their ability to convey information, computer code should also qualify as speech because it too conveys information by instructing a computer to perform tasks).

77. *See id.* at 449 (agreeing with other courts that computer code may merit First Amendment protection while still acknowledging that the exact scope of protection is yet to be determined).

78. *See* New York Times Co. v. United States, 403 U.S. 713, 714 (1971) (holding

often begins with the presumption that the restraint is unconstitutional.[79] For example, In *New York Times Company*, two newspapers sought to publish classified information on activities in Vietnam against the Nixon administration's argument that prior restraint was essential in protecting national security.[80]

In its analysis, the Court weighed the central purpose of the First Amendment in prohibiting governmental suppression of speech against the government's main interest in national security.[81] In analyzing the First Amendment speech interest against the government interest, the Court found that the government did not overcome the heavy presumption against prior restraint.[82] Thus, even when a sufficient governmental interest presumably exists, such as national security, courts must weigh this interest against the speech interest as it relates to the First Amendment.[83]

4. ITAR and the First Amendment

The State Department's request to remove the CAD files from the Internet for possible violations of the ITAR did not present a novel constitutional question because others have previously challenged the ITAR's constitutionality on First Amendment grounds.[84] Specifically, in *Bernstein v. U.S. Department of State*, the State Department partially restrained a graduate student who sought to publish an encryption algorithm he developed.[85] In this case, the plaintiffs argued that the

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that the government did not meet this heavy burden when seeking to enjoin the newspapers from publishing portions of a study on the Vietnam war).

79. *See id*. at 726 (Brennan, J., concurring) (explaining the heavy presumption against a prior restraint's constitutional validity because of the First Amendment's chief purpose in preventing prior restraints).

80. *See generally id*. (majority opinion) (holding that the government did not meetthe requisite burden of proof to justify preventing the publication of a classified Defense Department study).

81. *See id.* at 719-20 (Black, J., concurring) (balancing the interests to determine whether the Government met its burden as required in prior restraint cases).

82. *See id.* at 724 (Douglas, J., concurring) (arguing that the vague use of the word "security" should not undermine the First Amendment's goal of prohibiting the suppression of information).

83. *See id.* at 730 (Brennan, J., concurring) (concluding that the speech interest outweighed the government's interest because disclosing the information would not "surely result in direct, immediate, and irreparable damage to our Nation or its people").

84. *See* William A. Hodkowski, Comment, *The Future of Internet Security: How New Technologies Will Shape the Internet and Affect the Law*, 13 SANTA CLARA COMPUTER & HIGHT TECH. L.J. 217, 240-41 (1997) (noting that cases have tested the boundaries of the ITAR, specifically attacking its licensing requirements).

85. *See generally* Bernstein v. U.S. Dep't of State, 945 F. Supp. 1279 (N.D. Cal.

licensing scheme under the ITAR imposed an unconstitutional prior restraint on the cryptographic speech.[86]

A California district court acknowledged both the purpose of the ITAR as controlling the dissemination of defense-related commodities abroad, as well as the First Amendment's application to code as speech.[87] However, the court also recognized that regulation in the interest of national security does not alone justify prior restraint.[88] Thus, the court held that there was a prior restraint on speech that violated the First Amendment.[89] Although it remains unlikely that courts will entirely eliminate export controls on encryption technology, subsequent lawsuits may continue to loosen government regulations.[90]

III. ANALYSIS

The framers of the First Amendment neither could fathom the technological innovations of today's world nor foresee the intricate legal questions that would result.[91] Just as the introduction of prior inventions such as film and television presented novel First Amendment issues for courts to tackle, the world's first 3-d printed gun presents similarly unique and complex issues.[92] Perhaps some of the more challenging questions regarding new technological advancements and the law focus not on whether a power to regulate exists, but on whether the regulation fits within the contours of the First Amendment.[93] As discussed above, this

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1996) (arguing that licensing requirements under the ITAR are unconstitutional).

86. *See id.* at 1285 (noting the immediate and irreversible sanction prior restraints place on speech).

87. *See id.* at 1287 (recognizing First Amendment arguments against the licensing scheme).

88. *See id.* at 1288 (expressing concern over the uncertainty regarding what types of speech are subject to ITAR regulation).

89. *See id.* at 1290 (concluding that the ITAR licensing scheme of cryptographic software operates as an unconstitutional prior restraint because it fails to impose a time limit on the licensing decision which may prevent a prompt judicial review).

90. *See* Hodkowski, *supra* note 84, at 242 (noting that while courts are hesitant to question the Executive on national security issues, these cases may still bear some significance).

91. *See* Universal City Studios v. Corley, 273 F.3d 429, 434 (2d Cir. 2001) (recognizing that the framers of the First Amendment did not draft it with today's digital world in mind).

92. *See id.* (explaining past significant First Amendment issues raised by new inventions and the more modern issues involving various aspects of computer technology).

93. *See* Bernstein v. U.S. Dep't of State, 974 F. Supp. 1288, 1303 (N.D. Cal. 1997) aff'd sub nom. Bernstein v. Dep't of Justice, 176 F.3d 1132 (9th Cir. 1999), reh'g

determination will first turn on whether a CAD file qualifies as speech despite its functionality.[94] If defined as speech, the speech's particular characterization will dictate the appropriate level of judicial scrutiny that laws regulating a CAD file should receive, ultimately determining whether regulating a CAD file violates the First Amendment.[95]

A. A CAD File Should be Classified as Speech Under the First Amendment Because Although It Does Not Qualify as Pure Speech, It Contains Sufficient Elements of Communication.

Although expressive, a CAD file moves beyond a pure speech categorization because it relies on modern-day aspects of functionality.[96] In fact, a CAD file is both expressive for its more traditional aspects of speech, the file's blueprint design, and functional for its ability to instruct a printer to create a real, 3-d object from an online design.[97] The CAD file's functionality 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.[98]

1. The Blueprint of the 3-d Printable Gun Incorporates New Technology, Creating a Modern Blueprint That No Longer Qualifies as Pure Speech Under the First Amendment.

Courts generally accept blueprints with instructional value as pure speech, meaning speech that lacks a non-speech component.[99] However,

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granted, withdrawn, 192 F.3d 1308 (9th Cir. 1999) (asserting that the lack of a clear line between communication and its consequences created the issue).

94. *See Corley*, 273 F.3d at 451 (analyzing whether a computer code's functionality rids it of its expressive value).

95. *See* Anderson v. City of Hermosa Beach, 621 F.3d 1051, 1058 (9th Cir. 2010) (distinguishing amongst pure speech, non-pure speech containing sufficient speech elements, and non-pure speech not containing sufficient speech elements).

96. *See Corley*, 273 F.3d at 447 (asserting that computer programs are not exempted from the category of First Amendment speech merely because they require the use of a computer).

97. *See id.* at 448 (concluding that instructions communicating information qualify as speech regardless of whether the instructions are designed for execution by a human, a computer, or both).

98. *See id.* at 451 (requiring a First Amendment analysis for code that combines non-speech and speech elements).

99. *See id.* (stating examples of pure speech, such as blueprints designed to instruct engineers and recipes designed to instruct cooks); *see also Anderson*, 621 F.3d at 1062 (concluding that the process of tattooing is akin to writing down words or drawing a picture and so, the process and the tattoo are pure speech).

courts classifying blueprints as pure speech premise this categorization on the assumption that it is impossible to yield any functional result without the participation and interpretation of a live human being.[100]In today's world, 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.[101] Indeed, functional capability cannot be realized without at least a "momentary intercession of human action."[102] Although this lack of, or minimal, human involvement does not rid the speech of its expressive value, it nonetheless pushes this modern blueprint beyond the pure speech category.[103]

2. Accordingly, the CAD File of the Blueprint for the 3-d Printable Gun Should be Characterized as Expressive Conduct Because It Combines Expressive and Functional Conduct.

A CAD file encompasses a novel area of speech, combining both non-speech and speech elements.[104] Courts evaluating the First Amendment's applicability to software most recently navigated through this non-traditional First Amendment analysis.[105] Specifically, a CAD file is both expressive in its ability to convey a plethora of complex ideas and functional for its critical role in the performance of certain tasks, including the production of 3-d digital models such as the recently printed functional 3-d gun.[106]

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100. *See Corley*, 273 F.3d at 451 (explaining that a blueprint or recipe requires not only human comprehension of the instructions or design, but also human thought and action).

101. *See id.* (emphasizing that computer code can instantly cause a computer to accomplish tasks and produce intended results).

102. *See id.* (acknowledging that for code to achieve its intended results, a human must at least, for example, consciously decide to insert the disk containing the code into the computer).

103. *See id.* (asserting that the differences in new types of media justify a different First Amendment application).

104. *See id.* (arguing that code requires a First Amendment analysis that combines the function-expression dichotomy).

105. *See id.* (emphasizing that the realities of what code is and what it is designed to do justify a First Amendment analysis that treats code as combining non-speech and speech elements).

106. *See id.* (explaining how source code is an example of the changes new technology brings, particularly for its ability to embody both highly expressive and functional attributes).

a. Specifically, a CAD File Is a Type of Expressive Conduct Becauseof Its Ability to Integrate Design and Manufacturing by Creating Printable Electronic Blueprints That Bring to Life a Designer's Information and Ideas.

A CAD file moves a step beyond the traditionally recognized forms of speech protected under the First Amendment such as a painting by Jackson Pollock or the Jabberwocky verse of Lewis Carroll.[107] Nonetheless, a CAD file and the printable blueprint it contains also communicate information and ideas.[108] Although an average computer user may not fully understand the mechanisms behind how a CAD program assists in the design and creation of a CAD file containing a 3-d printable blueprint, unintelligibility does not void the file of its expressive features.[109]

Further, courts recognize expressive activities that combine elements of speech and conduct as speech for First Amendment purposes.[110] In *Oakes*, the Massachusetts court held that the photographing of a semi-nude female minor constituted expressive conduct because the posing and photographing of the minor combined elements of both speech and conduct.[111] Specifically, in *Oakes*, the combination of a traditionally recognized form of speech, photography, with conduct, the posing of a nude minor, became the determining factor that the defendant engaged in an expressive activity.[112] Likewise, a CAD file also combines a traditionally recognized form of speech, instructional blueprints, with the more functional aspects of printing; therefore, a CAD file also qualifies as

107. *See* Junger v. Daley, 209 F.3d 481, 484 (6th Cir. 2000) (recognizing the versatile scope of the First Amendment by identifying untraditional forms of protected speech).

108. *See id.* (implying that speech does not require universal comprehension, for example, a musical score qualifies as First Amendment speech even though it can only be fully interpreted and understood by fellow musicians).

109. *See id.* at 485 (concluding that computer source code qualifies as speech because it exchanges information and ideas).

110. *See* Hurley v. Irish-American Gay Grp. Of Boston, 515 U.S. 557, 568 (1995) (classifying parades as an expressive activity); *see also* United States v. O'Brien, 391 U.S. 367, 376 (1968) (classifying the burning of certificates as an expressive activity); Commonwealth v. Oakes, 551 N.E.2d 910, 912 (Mass. 1990) (classifying photographing as an expressive activity).

111. *See Oakes*, 551 N.E.2d at 912 (distinguishing the posing and photographing of the minor as mixed speech from the dissemination of such photographs, which would be pure speech).

112. *See id.* at 913 (establishing that the posing of the minor and subsequent photographing was not pure speech but expressive conduct because it mixed elements of speech and conduct).

expressive.[113]

Further, because a CAD file does not automatically convey a message on its face as pure speech does, it becomes necessary to engage in an analysis of whether sufficient elements of communication exist to bring the First Amendment into play.[114] Accordingly, because a CAD file does not outwardly convey a message, a court must discern the presence of any potential expressive elements.[115] For example, in *Spence*, the Supreme Court analyzed whether sufficient communicative elements existed before holding that displaying a United States flag upside-down with a peace symbol qualifies as speech and therefore falls within the contours of the First Amendment.[116] Likewise, a CAD file contains sufficient elements of communication to justify a First Amendment analysis, specifically, because a CAD file enables a designer to convey his or her ideas and information through a CAD design.[117]

b. Courts Should Classify a CAD File as Functional Because the File Essentially Exists For Its Ability to Instruct a 3-d Printer.

The functionality of a CAD file stems from its existence and purpose in translating an electronic 3-d model into a printable, functional object.[118] In *Name.Space*, the United States Court of Appeals for the Second Circuit held that domain names served the functional purpose of directing traffic through the Internet.[119] Likewise, a CAD file, created for its ability to

113. *See id.* (rejecting the defendant's argument that the photography qualified as pure speech because the posing and photographing of the minor combined conduct with speech).

114. *See* Anderson v. City of Hermosa Beach, 621 F.3d 1051, 1061 (9th Cir. 2010) (explaining that because some activities do not clearly convey a message, courts must engage in a further interpretive step to determine the presence of expressiveness).

115. *See* Spence v. Washington, 418 U.S. 405, 409 (1974) (reasoning that it was necessary to determine whether the appellant's activity contained sufficient elements of communication to fall within the scope of the First Amendment because the appellant articulated his view not through words but by using a flag).

116. *See id.* at 415 (concluding that because the flag sent a direct message aimed at promoting peace over war it deserved protection as speech under the First Amendment).

117. *See id.* (explaining that when determining whether sufficient speech elements exist, the court should consider the conduct's context to decide whether it conveyed information or ideas).

118. *See* Tenafly Eruv Ass'n v. Borough of Tenafly, 309 F.3d 144, 164 (3d Cir. 2002) (explaining that a functional object or activity serves a purely functional, as opposed to expressive, purpose).

119. *See* Name.Space v. Network Solutions, Inc., 202 F.3d 573, 587 (2d Cir. 2000) (recognizing a wholly functional activity for its purpose in carrying out tasks and its lack of expressiveness).

design printable blueprints, rather than simply for discussion, serves a similar functional purpose in directing a printer on how to successfully print an electronic 3-d model.[120] However, a CAD file cannot be classified exclusively for its functional features because its functionality entirely depends on the design and creation of an expressive 3-d blueprint.[121] In fact, the CAD file's chief functional purpose in translating the 3-d blueprint into a printable object relies on the existence of this detailed blueprint.[122] Whereas a CAD file depends on an expressive blueprint, the domain names analyzed in *Name.Space* and the eruv analyzed in *Tenafly* do not depend on such an expressive element of speech; thus, the court only recognized their functionality in holding that the First Amendment did not apply.[123]

3. A CAD File Combining Expressive and Functional Conduct Still Qualifies as Speech Under the First Amendment Because Sufficient Elements of Communication Exist.

Indeed, a CAD file exhibits expressive features and contains sufficient communicative elements to bring the First Amendment into play.[124] However, a CAD file's functional features serve an arguably greater purpose and so these functional elements should be viewed as distinct from a CAD file's speech elements.[125] Nonetheless, other courts have viewed this type of combination as purely expressive speech, for example, in the case of tattooing, because of the functionality's inextricable intertwinement with the purely expressive end product, a tattoo.[126] In *Anderson*, the court distinguished between the tattooing process and the tattoo itself before

120. *See id.* at 577 (classifying the directing of traffic through the Internet as functional).

121. *See* Draeger, *Future Tech*, *supra* note 3 (asserting that a CAD file uses a 3-d digital blueprint to instruct the 3-d printer on how to construct that object).

122. *See Name.Space*, 202 F.3d at 585 (explaining that domain names do not qualify as speech under the First Amendment because they embody only non-speech, functional elements).

123. *See id.* (asserting that domain names are not speech because their generic, three-letter combinations lack expressiveness); *see also Tenafly*, 309 F.3d at 164 (classifying the building of an eruv as functional for its purpose in acting as a boundary).

124. *See* Spence v. Washington, 418 U.S. 405, 409 (1974) (recognizing expressive conduct with sufficient elements of speech as First Amendment speech).

125. *See* Universal City Studios v. Corley, 273 F.3d 429, 451 (2d Cir. 2001) (asserting that the functionality of a computer code properly affects the scope of its First Amendment protection).

126. *See* Anderson v. City of Hermosa Beach, 621 F.3d 1051, 1068 (9th Cir. 2010) (holding that the tattoo, the process of tattooing, and the business of tattooing are all forms of pure expression fully protected by the First Amendment).

holding that both a tattooist and the person receiving the tattoo equally contribute to the creative process.[127] This conclusion is not uncommon, as traditional processes of expression through a medium have never been so distinct from the expression itself to justify a separate analysis of the functional and expressive attributes.[128] However, in today's modern world, processes are no longer always intertwined with this type of expression because modern technology carries the potential for anyone to navigate through a process without ever actually contributing to the overall expressiveness.[129] Specifically, unlike tattooing, printing a blueprint from a CAD file does not require one to actually design the blueprint or otherwise engage in an expressive process.[130] Therefore, although the functional elements do not entirely void the CAD file of its expressiveness, courts must recognize the CAD file for its distinct expressiveness and functionality.[131]

Under a traditional First Amendment analysis, courts would likely define a blueprint that does not require the use of technology as pure speech.[132] However, the introduction of technology and the Internet allows for the potential combination of traditional elements of First Amendment speech, such as those found in pure speech with more functional attributes requiring minimal human activity.[133] For example, the CAD file blends aspects of modern functional technology with the traditional blueprint, a combination that enables the average computer user to access a gun simply by downloading the file and clicking print.[134]

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127. *See id*. at 1062 (reasoning that the tattoo process is entitled to the same First Amendment protection as the tattoo because the process is also expressive and directly relates to the purely expressive end-product).

128. *See id.* (acknowledging that courts have never questioned the First Amendment's applicability to processes involved in creating speech, including writing words on a paper, painting a picture, and playing an instrument).

129. *But see id.* (explaining that both the tattooist and the person receiving the tattoo engage in expressive conduct to bring about the pure speech element, in this case, the tattoo).

130. *See* Jensen-Haxel, *3D Printers*, *supra* note 18, at 452 (noting that 3-d printers allow users to download free 3-d models to print from their computers without participating in the design process).

131. *But see Anderson*, 621 F.3d at 1062 (finding that tattooing is pure speech because a tattoo artist undoubtedly contributes to the overall creative process).

132. *See* Universal City Studios v. Corley, 273 F.3d 429, 451 (2d Cir. 2001) (classifying blueprints as pure speech because of their instructional value and the human involvement required to interpret and understand the blueprint).

133. *See id.* (asserting that differences in new media justify differences in the First Amendment standards applied to them).

134. *But see id.* (reasoning that traditional blueprints and recipes deserve more First Amendment protection because they require human interaction and comprehension to

Notably, in *Corley*, the court faced this 21st century combination of expression and functionality when analyzing computer code and found that the presence of the functional features did not abrogate the code's expressive value.[135] Similarly, although a CAD file also exhibits both expressive and functional features, it nonetheless contains sufficient elements of speech to trigger First Amendment protection.[136] The distinctive nature of this type of speech, specifically pertaining to both the expressiveness and functionality of the CAD file and the presence of sufficient communicative elements, draws parallels to the similar characteristics found in computer code and software, thus prompting a comparable analysis under the First Amendment.[137]

B. Because a CAD File Contains Both Speech and Non-Speech Elements, the Appropriate Test For Whether Restrictions on the CAD File Violate the First Amendment Should be Whether a Sufficiently Important Government Interest Exists in Regulating the Non- Speech Elements.

Generally, the government has more liberty to restrict expressive conduct, meaning conduct combining non-speech and speech elements, than it does in restricting pure speech.[138] Nonetheless, courts will consider the context and the government's interest when analyzing potential speech elements and the applicability of the First Amendment.[139] Specifically, a court should consider the individual characteristics of a speech's functionality when weighing the government's interest in regulation.[140]

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transform the drawing or words into a real object or meal).

135. *See Corley*, 273 F.3d at 451 (recognizing that computer code may be expressive, but that it also has a functional, non-speech aspect because of its ability to allow recipients to circumvent an encryption system).

136. *See id.* (concluding that a First Amendment analysis is justified because computer code is a type of speech despite the presence of its functional characteristics).

137. *See id.* (calling for a different application of the First Amendment for new media).

138. *See* Commonwealth v. Oakes, 551 N.E.2d 910, 912 (Mass. 1990) (asserting that the First Amendment protects the traditional written or spoken word more than it protects other speech).

139. *See* United States v. O'Brien, 391 U.S. 367, 377 (1968) (finding that the presence of expressive elements does not necessarily prohibit regulation under the First Amendment).

140. *See Corley*, 273 F.3d at 451 (explaining the importance of the decryption code's functionality in concluding that minimal human involvement should neither diminish the non-speech component of code nor classify it as a type of pure speech).

1. The Functionality of the CAD File for the 3-d Gun Blueprint Should Limit the First Amendment's Reach Despite the File's Expressiveness.

The *Corley* court argued that functionality should limit the scope of the First Amendment because of potential consequences resulting from the functional features, especially given the unique capabilities of the Internet.[141] In this respect, functionality stands as a "proxy for effects or harm" because the limitless reach of the Internet makes it only rational to assume that the decryption program's publication on the Internet will inevitably lead to the program's use.[142] Likewise, if made available online, one would also rationally assume that Internet users will download the CAD file containing the 3-d gun blueprint with the intention of actually printing a gun.[143]

The potential for a substantial risk of imminent harm created by the worldwide dissemination on the Internet of files containing blueprints for printable, workable guns is real.[144] Particularly, components of a gun typically requiring a license to purchase may now be printed in the privacy of one's own home, license-free.[145] This justifies a consideration of the impact and potential for harm stemming from the file's functional features when determining the regulation's constitutionality.[146] Therefore, because the file's functionality remains distinct from its expressive elements, courts should apply intermediate scrutiny instead of strict scrutiny when analyzing

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141. *See id.* (quoting Universal City Studios, Inc. v. Reimerdes, 111 F. Supp. 2d 294 (S.D.N.Y. 2000)(explaining that society depends upon technological means of controlling access to digital files and systems because of the potential far-reaching implications if left uncontrolled).

142. *See id.* at 452 (asserting that Internet users who access the decryption program will use it for the program's ability to bypass an access control system, a system designed to control access to a network by, for example, limiting a user's ability to use certain resources on a computer system).

143. *See* Ferguson, *Boon for Criminals*, *supra* note 4 (cautioning that criminals who cannot legally access guns are more likely to use 3-d gun blueprints than are law-abiding homeowners).

144. *See* Navneet Alang, *3-D Printed Guns and the End of the Internet's Wild West*, THE GLOBE AND MAIL (May 8, 2013, 7:00 AM), *available at* http://www.theglobeandmail.com/technology/digital-culture/3-d-printed-guns-and-the-end-of-the-internets-wild-west/article11754916/(recognizing the implications of the 3-d gun and the increasingly accessible 3-d printer).

145. *See* Draeger, *Future Tech*, *supra* note 3, (cautioning that 3-d printers utilizing metals or polymers can privately print out the necessary parts for a functional, unregistered gun).

146. *See Corley*, 273 F.3d at 452 (arguing that the link between the dissemination of harmful code and its improper use justifies selecting a level of scrutiny based on its functionality).

the constitutionality of restrictions on CAD files.[147]

C. A Restriction on a CAD File Survives Intermediate Scrutiny and Does Not Violate the First Amendment Because It Advances an Important Government Interest Unrelated to the Suppression of Free Speech.

The restriction on a CAD file does not violate the First Amendment because it survives intermediate scrutiny, the appropriate standard of judicial review.[148] Specifically, because a CAD file contains sufficient elements of communication to bring it within the purview of the First Amendment, the *O'Brien* test governs the constitutionality of the restriction.[149] As discussed below, a restriction on a CAD file containing a 3-d gun blueprint satisfies this test because it falls within the government's constitutional power, it furthers the important government interest of harm regulation, it relates to the CAD file's functionality, and it does not burden substantially more speech than necessary to achieve its end goal.[150]

1. The CAD File's Functional Capabilities Sparked the State Department's Request For Its Removal From the Internet, Thus Classifying the Restriction as Content-Neutral.

When speech and non-speech elements are combined, as in a CAD file, government regulation may be constitutional if the government's interest relates to the regulation of the non-speech elements.[151] Specifically, the scope of protection for speech under the First Amendment hinges on whether the restriction targets the content of the speech.[152] For example, in

147. *See* United States v. O'Brien, 391 U.S. 367, 377 (1968) (using intermediate scrutiny without specifically labeling the level of scrutiny because the burning of the registration certificate combined speech and non-speech elements); *see also Corley*, 273 F.3d at 456 (applying *O'Brien's* intermediate scrutiny).

148. *See Corley*, 273 F.3d at 454 (employing intermediate scrutiny for content-neutral regulation); *see also O'Brien*, 391 U.S. at 382 (justifying the conviction through the use of intermediate scrutiny).

149. *See* Anderson v. City of Hermosa Beach, 621 F.3d 1051, 1058 (9th Cir. 2010) (asserting that the intermediate scrutiny test applies when sufficient speech elements exist).

150. *See O'Brien*, 391 U.S. at 377 (employing this four-part test when analyzing the constitutionality of criminalizing the destruction of a Selective Service System certificate).

151. *See id*. (explaining that government regulation is sufficiently justified if, among other reasons, the government interest is unrelated to the suppression of free expression); *see also Corley*, 272 F.3d at 451 (remarking that this approach applies whether the regulation targets expression, conduct, or any activity combining both non-speech and speech elements).

152. *See Corley*, 273 F.3d at 450, 454 (asserting that the court must first decide whether the restriction classifies as content- based or content-neutral, a classification

Corley, the United States Court of Appeals for the Second Circuit affirmed the district court's decision enjoining the appellants from posting a decryption system, designed to circumvent the encryption technology on DVDs, on their website by holding that the restriction targeted only the non-speech component relating to its ability to instruct a computer to decrypt an encryption system.[153]

As in *Corley*, where the targeting of the code's functional capabilities defined the restriction as content-neutral, the restriction of the CAD file does not target the blueprint; rather, it targets the file's functionality, or its ability to communicate to the printer how to create the blueprint into a real, functional product.[154] Similarly, a restriction on the CAD file does not target the blueprint's expressive qualities, but applies because of the file's purpose and capability in directing the 3-d printer, with the single click of a mouse, to print a workable and untraceable gun.[155] The controlling consideration becomes the government's purpose in restricting the dissemination of a CAD file on the Internet for its potential to enable anyone in the world to arm themselves with the click of a button.[156] Indeed, the restriction might have an incidental effect on some speech elements; however, the regulation targets the file's functional capacity, and, therefore, it becomes a content-neutral regulation.[157]

Specifically, the State Department's letter targets the CAD file because the State Department believes that the file qualifies as ITAR-controlled technical data.[158] The ITAR regulates technical data because of its paramount role in producing defense articles.[159] The CAD file transforms

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that will determine the applicable level of scrutiny that courts will employ).

153. *See id.* (reasoning that the code's targeted functional capability does not qualify as speech under the First Amendment).

154. *See id.* (observing that the code's ability to convey information created the First Amendment speech component).

155. *See id.* at 454 (contending that restricting the code's publication relates to its capacity to instruct a computer to decrypt the encryption used to prevent DVD data from being copied, which is a functional or non-speech characteristic).

156. *See id.* at 450 (quoting Ward v. Rock Against Racism, 491 U.S. 781, 791 (1989) (finding that a regulation unrelated to the speech elements is neutral even if it has "an incidental effect on some speakers or messages but not others").

157. *See id.* at 450 (reasoning that government regulation of expressive activity is content neutral if the government's interest does not relate to the content of regulated speech).

158. *See* U.S. Dep't of State, Letter, *supra* note 28 (explaining that the ITAR imposes certain requirements on the transfer of, and access to, controlled defense articles and related technical data).

159. *See id.* (asserting that ITAR-regulated data includes information required to design or produce defense articles).

an expressive blueprint into this type of technical data because of the file's functional purpose in producing a defense article, a workable gun.[160] The targeting of this functionality justifies the conclusion that the regulation should be classified as content-neutral.[161]

2. The Regulation Furthers a Substantial Government Interest Unrelated to the File's Speech Elements.

To survive intermediate scrutiny, the regulation or restriction must further an important or substantial governmental interest unrelated to the suppression of free speech.[162] In *O'Brien*, the Court held that the government's interest in ensuring the successful functioning of the Selective Service System related to the non-communicative aspects of O'Brien's conduct.[163] Further, the Court reasoned that O'Brien frustrated the governmental interest by impeding the functioning of the system established by Congress to raise armies.[164] Likewise, restricting the CAD file furthers a substantial government interest in harm regulation that relates not to the expressiveness of the CAD file, but to its functionality, particularly regarding its ability to instruct a 3-d printer to print a functional gun.[165]

In *Corley*, the United States Court of Appeals for the Second Circuit similarly found an important or substantial governmental interest unrelated to the suppression of free expression.[166] Specifically, the court decided that the restriction furthered a substantial governmental interest related to the functional capacity of the code's ability to instruct a computer to decrypt.[167]A restriction on the CAD file correspondingly serves a

160. *See id.* (specifying that technical data includes information in the form of blueprints, drawings, etc.).

161. *See* Universal City Studios v. Corley, 273 F.3d 429, 442 (2d Cir. 2001) (summarizing the defendants' arguments on the classification of computer code and the resulting level of scrutiny courts should employ when evaluating the restriction).

162. *See* United States v. O'Brien, 391 U.S. 367, 381-82 (1968) (examining the governmental interest in preventing the burning of Selective Service certificates).

163. *See id.* (examining the Amendment prohibiting the destruction or mutilation of Selective Service registration certificates).

164. *See id.* (explaining that the nation has a vital interest in maintaining a system for raising armies; therefore, the government has a substantial interest in assuring the availability of Selective Service certificates).

165. *See id.* at 382 (distinguishing the regulation from one directly aimed at suppressing communication).

166. *See Corley*, 273 F.3d at 454 (stating that the government's interest in preventing unauthorized access to encrypted copyrighted material is unquestionably substantial).

167. *See id.* (explaining that regulating the decryption code relates to the

comparable governmental interest in national security based again on the file's functional capacity to instruct a 3-d printer.[168]

3. Regulating a CAD File Containing a 3-d Gun Blueprint For Violating the ITAR Meets the Narrowly Tailored Requirement Under Intermediate Scrutiny Because the Means Are Not Substantially Broader than Necessary to Fulfill the Government's Interest.

Finally, under the *O'Brien* test, the restriction on alleged First Amendment freedoms must not be greater than necessary to further the government interest.[169] For example, the *O'Brien* Court agreed that the government chose the most narrowly tailored, or least restrictive, means to achieve its important objective in preventing the destruction of Selective Service certificates.[170] Likewise, although not as evident as in *O'Brien*, the *Corley* court held that the Digital Millennium Copyright Act also achieved a narrowly tailored means in preventing the circumvention of digital walls guarding copyrighted materials.[171]

In this analysis, the court in *Corley* recognized other ways for the government to accomplish this goal but argued that a content-neutral restriction need not employ the least restrictive means.[172] Instead, the restriction need only avoid burdening substantially more speech than necessary to achieve a legitimate interest.[173] Similarly, although other means may also superficially help deter criminals from printing a 3-d gun, such as criminal and civil liability, the content-neutral restriction on the CAD file does not require the most narrowly tailored means available to

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government's interest in preventing unauthorized access regardless of whether the code contains any information that would qualify as speech).

168. *See id.* at 453 (asserting that the decryption program's ability to accomplish unauthorized and unlawful access to materials in which plaintiffs have intellectual property rights limits the program's First Amendment protection).

169. *See* United States v. O'Brien, 391 U.S. 367, 377 (1968) (requiring the incidental restriction to be no greater than essential to further the interest).

170. *See id.* at 381 (suggesting that there are no alternative means more accurately and narrowly tailored to achieve the government's interest in ensuring the continuing availability of Selective Service certificates than a law directly prohibiting their destruction).

171. *See Corley*, 273 F.3d at 454 (noting that the appellants failed to suggest any other technique to prevent the instantaneous worldwide distribution of a decryption code that would make a lesser restriction on the code's speech elements).

172. *See id.* at 450 (explaining that a content-based restriction must employ the least restrictive means to reach its goal, but that a content-neutral restriction must only not burden substantially more speech than necessary).

173. *See id.* at 455 (suggesting other possible ways to accomplish the same goal, such as by creating criminal and civil liability for those who gain unauthorized access).

achieve its goal.[174] A restriction limited to the specific CAD file containing the 3-d gun blueprint rather than a restriction on all CAD files, the CAD program, or the 3-d printer, satisfies the standard employed by the court in *Corley* because it does not burden substantially more speech than necessary.[175]

D. Even if a Court Views a Restriction on a CAD File as a Prior Restraint, the Regulation Will Nevertheless Withstand Constitutional Scrutiny Because the Government's Interest in Regulating the File Outweighs Any Potential First Amendment Speech Interests.

Although regulating a CAD file satisfies the test for intermediate scrutiny, some may view a restriction on a CAD file as a prior restraint on the file's speech elements.[176] In particular, some may apply this classification because a restriction on the CAD file would inevitably also prevent the publication of the accompanying 3-d gun blueprint.[177] Thus, if a court classifies the State Department's action as a prior restraint, it must engage in an analysis focusing on the balancing of the alleged speech interests as it relates to the First Amendment against the government's interest in suppression.[178]

Unlike in *New York Times Company*, the restriction of a CAD file does not involve the press; therefore, this restriction does not require an analysis focusing on the traditional importance of a free press.[179] Specifically, in his concurrence in *New York Times Company*, Justice Douglas noted that the prior restraint on the newspapers would undermine the dominant purpose of the First Amendment in prohibiting the widespread practice of

174. *See id*. (recognizing the argument that the restriction may not be absolutely necessary to prevent unauthorized access because other ways exist that may also accomplish the goal).

175. *See id*. (concluding that although the prohibition on the posting of the decryption code is not the least restrictive way to prevent access, it is nonetheless narrowly tailored).

176. *See generally* Bernstein v. U.S. Dep't of State, 945 F. Supp. 1279 (N.D. Cal. 1996) (arguing that the ITAR's licensing requirements are an unconstitutional prior restraint on the plaintiff's ability to communicate and publish both his speech code and its accompanying technical data).

177. *See* New York Times Co. v. United States, 403 U.S. 713, 714 (1971) (striking down a prior restraint on speech by allowing the New York Times to publish internal Pentagon documents).

178. *See id.* at 717 (Black, J. concurring) (considering the First Amendment's purpose as it applies to the alleged infringement on free speech).

179. *See id.* (explaining the importance of free press, for example, its ability to expose government deception).

governmental suppression of embarrassing information.[180] Unlike the prior restraint in *New York Times Company*, a restriction on CAD files focuses on dangers stemming from the file's functional capacity and thus, it would not undermine a core purpose of the First Amendment.[181] In fact, refusing to regulate the CAD file would likely result in irreparable damage, a danger Justice Brennan argued would not result from the publication of the Pentagon Papers in *New York Times Company*.[182] More importantly, the restriction on CAD files would not likely constitute a prior restraint because the government took action only after Mr. Wilson made the CAD file available online.[183] However, even if the CAD file restriction constitutes a prior restraint, the government's national security interest in regulating the export of defense items under the ITAR would remain justified when weighed against the First Amendment.[184]

IV. POLICY RECOMMENDATIONS

Regardless of whether government regulation of CAD files containing 3-d gun blueprints under the ITAR is constitutionally justified, the significant and immediate threat to public safety posed by the new 3-d printed gun represents the pressing need to address this issue before technology outpaces the law.[185] Three-dimensional printers traditionally created the least threatening of objects.[186] However, the recent firing of a 3-d printed gun illustrates the emerging capabilities and dangers stemming from this new technology.[187] When contemplating these dangers and considering

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180. *See id.* at 723-24 (Douglas, J. concurring) (asserting that the present case would "go down in history as the most dramatic illustration of that principle").

181. *See id*. at 720 (interpreting one of the core purposes of the First Amendment as preventing governmental restraint on the press).

182. *See id.* at 730 (Brennan, J. concurring) (concluding that the publication would not surely result in irreparable damage).

183. *See* Chandler, *How to Regulate*, *supra* note 23 (noting that over 100,000 people downloaded the CAD file before its removal).

184. *See* New York Times Co. v. United States, 403 U.S. 713, 718 (1971) (arguing that the prior restraint case did not ask the court to construe specific regulations or apply specific laws, but rather it simply sought to prevent the publication of material).

185. *See* Gayle S. Putrich, *Plastic Gun Draws Eyes to 3-D Printing*, PLASTICS NEWS (May 13, 2013, 2:30 PM), *available at* http://www.plasticsnews.com/article/20130510/NEWS/130519989/plas tic-gun-draws-eyes-to-3-d-printing# (remarking that digital technology will fast outpace the law because it carries the potential to make manufacturing more affordable and accessible).

186. *See* Jensen-Haxel, *supra* note 18, at 450 (listing examples of 3-d printed objects, such as hearing aids and violins).

187. *See* Navneet Alang, *3-D Printed Guns and the End of the Internet's Wild West*, THE GLOBE AND MAIL (May 8, 2013, 7:00 AM), *available at*

potential ways to regulate this modern-day weapon, it remains important to consider the significant economic and social benefits in an effort to avoid impeding future beneficial innovations.[188] Nevertheless, legally controlling technology should become a top priority as digital technology begins to move beyond what it once stood for: mere convenience and individual empowerment.[189] However, legislation banning the use of new technology, particularly 3-d printers, will undoubtedly spark strong opposition because such a sweeping and general ban on 3-d printers would significantly hinder innovation and growth.[190]

Instead, one option at lawmakers' disposal includescriminalizing certain uses of technology.[191] Yet another option would require all 3-d printers to connect with the Internet to function, establishing a procedure that would force users to check with a list of prohibited items online before allowing them to download and print blueprints.[192] Others suggest that addressing the most basic part of the firearm, the energy source, would best regulate the 3-d printed gun, especially given that 3-d printed guns and other plastic firearms will increasingly become difficult to detect using traditional screening techniques.[193]

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http://www.theglobeandmail.com/technology/digital-culture/3-d- printed-guns-and-the-end-of-the-internets-wild-west/ article11754916/ (warning that the 3-d printer is now advanced enough to create a deadly firearm).

188. *See id.* (mandating that it remains critical for the government to avoid overreacting to this new technology).

189. *See id.* (arguing that all new technology must eventually be subjected to some restraint, for example, the printing press created copyright and comprehensive libel laws to address the printing press's unprecedented ability to convey information).

190. *See* Heather Kelly, *Study: At-home 3-d Printing Could Save Consumers 'Thousands,'* CNN (July 31, 2013, 12:06 PM), *available at* http://whatsnext.blogs.cnn.com/2013/07/31/study-at-home-3-d- printing-could-save-consumers-thousands/ (asserting that 3-d printers can not only save consumers money, but can also benefit the environment by reducing packaging and transportation).

191. *See* Alang, *supra* note 187 (suggesting criminalization as one way to balance liberty with safety and privacy concerns).

192. *See* Opinion, *Their View: 3-D Printed Gun You Read About Is Just the Start*, LAS CRUCES SUN-NEWS (May 21, 2013, 1:00 AM), *available at* http://www.lcsun-news.com/las_cruces-opinion/ci_23284394/their- view-3-d-printed-gun-you-read (explaining Professor Zittrain's proposal while acknowledging his doubts about his suggestion).

193. *See Making Homemade Guns on a 3-D Printer Becomes Real, so Engineering Expert Suggests Stronger Laws on Gunpowder*, STATES NEWS SERVICE (Feb. 12, 2013, 3:45 PM), *available at* http://www.newswise.com/articles/making-homemade-guns-on-a-3-d- printer-becomes-real-so-engineering-expert-suggests-stronger- laws-on-gunpowder (explaining Professor Lipson's suggestion that legal limitations on gunpowder could successfully regulate 3-d guns because to fire a bullet, gunpowder remains crucial).

This December, the Senate voted in favor of renewing the Undetectable Firearms Act of 1988, which makes manufacturing undetectable guns a federal offense.[194] After the House of Representatives voted in favor of renewing the bill, Senator Chuck Schumer from New York sought to modify it.[195] Specifically, Senator Schumer voiced concerns because the bill only requires manufacturers to include a single metal piece on the gun to ensure detection by metal detectors.[196] Defense Distributed's 3-d printed gun complies with this requirement as it contains one metal piece – a standard carpenter's nail used as the firing pin; however, this piece may easily be removed to circumvent a metal detector.[197] Despite these concerns, the Senate ultimately passed the bill unmodified, leaving a potential loophole in the law.[198]

The 3-d printed gun's first shot provides a small glimpse into the "dark side" of 3-d printing technology.[199] The peril posed by 3-d printed guns will only continue to grow as technology improves and 3-d printers become more affordable.[200] This mounting threat illustrates the need for Congress to engage in a larger discussion focusing on the development of a comprehensive public policy that reasonably and fairly regulates the potential dangers associated with this new technology.[201]

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194. *See* Colin Neagle, *Explaining the Senate's 3D-Printed Gun Ruling*, NETWORK WORLD (Dec. 10, 2013, 11:09 AM), *available at* http://www.networkworld.com/news/2013/121013-senate-3d-printed-gun-276778.html (noting the Senate's intention of preventing an increase in the production of 3-d printed guns).

195. *See id.* (requesting a requirement mandating that plastic weapons include a permanent piece of metal).

196. *See id.* (noting because no part of the law requires this metal piece to be permanent that 3-d printed guns with removable metal pieces remain legal).

197. *See id.* (explaining that after re-attaching the removable metal piece, the gun would become legal once again).

198. *See id.* (suggesting that this loophole remains despite the last-minute dispute over the bill's language).

199. *See* Jacob Silverman, *A Gun, a Printer, an Ideology*, THE NEW YORKER (May 7, 2013), *available at* http://www.newyorker.com/ online/blogs/elements/2013/05/3d-printed-gun-cody-wilson- defense-distributed.html (asserting that Mr. Wilson's gun epitomizes a dark side where individuals will be able to manufacture cheap and untraceable weapons).

200. *See id.* (noting that the technology is moving from high-end commercial use to personal use in the homes of thousands of hobbyists).

201. *See* Chandler, *How to Regulate*, *supra* note 23 (arguing the need to address the issue even though the conversation may determine that the digital world is, in fact, far too complex to regulate).

V. CONCLUSION

After analyzing CAD files under the First Amendment, it becomes clear that a CAD file contains both expressive and functional characteristics.[202] Although a CAD file combines two traditionally distinct characteristics, its functionality does not rid the file of its expressive features.[203] As a result, courts should classify a CAD file as expressive conduct, a classification that dictates the appropriate level of judicial scrutiny as intermediate scrutiny.[204] The regulation of a CAD file will survive intermediate scrutiny and not violate the First Amendment because the regulation furthers an overall substantial interest in harm regulation by focusing not on the file's speech elements, but on the potential harm resulting from its functionality.[205]

202. *See* Universal City Studios v. Corley, 273 F.3d 429, 442 (2d Cir. 2001) (recognizing computer code as expressive despite its functionality).

203. *See id.* at 448 (noting that computer code should qualify as speech because of its ability to convey information).

204. *See* United States v. O'Brien, 391 U.S. 367, 376 (1968) (employing intermediate scrutiny for conduct combining elements of speech and conduct).

205. *See id.* at 377 (explaining that to survive intermediate scrutiny, the regulation must further an important government interest in a way substantially related to the interest).