

Three-Dimensional Constitutional Scrutiny

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ABSTRACT

Welcome to the rise of the most innovative technological revolution manifesting in the modern age. We are just beginning to embark through an era where technological enterprise is exhibiting troubling questions to modern interpretations of constitutional rights. Today for the same price range of a high-end computer you can print an infinite number of three-dimensional objects from a 3D printer. The printer uses CAD digital code files that can be shared and downloaded like blueprints to customize an innumerable amount of physical objects. Recently the novelty of 3D gun blueprints made infamously by Cody Wilson, founder of Defense Distribution, has drawn national attention as his case against the State Department of Justice has enlightened discussion of protection held by individuals under the First and Second Amendment. The new technology is exhibiting the deficiency of modern court dicta to clarify the perimeters by which individuals can use the three-dimensional printing as it pertains to 3D printed guns. Any efforts made by governmental bodies of law to regulate or ban three-dimensional guns must meet constitutional scrutiny under both the First and Second Amendments. Expressions of innovative regulation must satisfy public interest without offending constitutional notions of right to speech and to bear weapons is a pressing matter as three-dimensional printing becomes more mainstream.

Key words: 1st & 2nd Amendment, 3D Printer, CAD Digital Data, Undetectable Firearms Act, International Traffic in Arms Regulation

INTRODUCTION

Three-dimensional printing heads into its second decade improving upon its technological premise to transform computer source code into physical three-dimensional objects. At its genesis, the technology hovered in the same price range as an entry luxury vehicle. Today the consumer can buy a 3D printer for the inferred down payment of the aforementioned entry luxury vehicle. The market is a fickle weather forecast, one in which novel technology either booms or busts, the point is that 3D printers are incredibly affordable currently. In fact, public libraries have slowly begun to acquire 3D printers and made them accessible to the public. The technology became accessible to a Cody Wilson, founder of Defense Distribution, and with CAD computer code blueprint delivered the Liberator, a handgun manufactured entirely out of plastic parts created by a 3D printer. The notorious plastic gun was manufactured to fire one round and reportedly broke after a handful of shots. The gun had no serial numbering, registration, need to pass a background check, and could theoretically bypass a metal detector had Wilson not added a metal fidget to cover his legal liabilities as purported by federal gun

regulation. Needless to say, after recent memories of alleged terrorist with box cutters taking down the twin towers, a batman shooter alleged to be mentally insane, distressed youth willing to sentence lives at the mercy of lethal weaponry from Columbine to the little college town of Isla Vista at the University of California at Santa Barbara, not one generation has fully elapsed to distinguish yesterday's dicta from today's. An influx of sparks that fuel the hellfire of legislative actions limiting the scope of constitutional freedoms enjoyed from the roots of the Patriot Act to the recent injunction by Judge Robert S. Lasnik of the U.S. District Court for Western Washington who extended a previous temporary restraining order, which will remain in place until the case is resolved.

The notion of untraceable, "Ghost Guns", that individuals can essentially built from home is not a novelty of three-dimensional printing as built kits for guns have been available to the consumer for decades. Moreover, the economic burden sided with the poor quality of product birthed by a 3D printer is grossly unsound making the national concern about 3D printed guns vastly overstated. Under existing law, it is perfectly legal to personally manufacture a firearm, without any need to register it, or seek permission of the government. Further, with supplies available at any hardware store, it is quite simple to cheaply build an undetectable, lethal weapon out of non-metal parts. In addition, for the foreseeable future, it is exponentially more expensive and time consuming to build a gun with a 3D printer. These fears should not drive a broader debate about regulation of this new innovative technology

THREE-DIMENSIONAL PRINTING

Three-dimensional printing also known as "additive manufacturing," is a process where a three-dimensional model designed on a computer or transcribed by CAD computer code blueprint is transformed into a three-dimensional solid object by additives such as plastics and even metal. Three-dimensional printing has the potential to stir waters in the manufacturing market. President Barrack Obama, during his February 2013 State of the Union address, noted 3D printing "has the potential to revolutionize the way we make almost everything."¹

Three-Dimensional printers "employ an additive process, which involves squirting molten plastic, targeting a laser to harden layers of powder or liquid resin, or shaping other materials such as metal, cake frosting, or living cells, to make an object."² The CAD computer file source code is "compiled," with a software compiler, which generates object code. It is important to note that CAD digital data is incomprehensible to humans, but understandable by computers. The essence of this data and how it is communicated is the crux of the debate between proponents of 3D gun regulation and the advocates of free speech communication as inferred by the current understanding of First Amendment rights.

The creation of guns using additive manufacturing was first introduced by Wilson's Wiki Weapons project, creating the plastic lower receiver for an AR-15 rifle from a 3D printer. The first fully functional 3D gun, aptly named "The Liberator", fell apart after firing six shots while

¹ Office of the Press Secretary, Remarks by the President in the State of the Union Address, WHITE HOUSE, February 12, 2013.

² Deven R. Desai & Gerard N. Magliocca, Patents, Meet Napster: 3D Printing and the Digitization of Things, GEO.

improved versions were able to fire six-hundred rounds successfully.³ The Liberator was designed by former-law student Cody Wilson, who re-named his project Defense Distributed. The Liberator consisted of twelve separate parts of “acrylonitrile butadiene styrene thermoplastic polymer,” with the firing pin as its single metal part.⁴

The State Department of Justice sent a letter to Cody Wilson dated May 8, 2013 demanding that he cease distribution of digital files that contained blueprints for the manufacturing of lethal weaponry. The SDOJ asserted that the CAD files were regulated by export control laws, prohibiting the transmission of data about munitions to foreign nationals.⁵ Cody Wilson abided by the requests and immediately took down the website and the CAD files, nevertheless, nearly 100,000 people had downloaded the blueprint, and the files are still readily available on the internet through third party websites.

Three-dimensional printing firm Solid Concepts in Austin, Texas manufactured the first 3D-printed gun made out of metal. The gun was an M1911, and per Eric Mutchler, the project coordinator, the manufacture took a hundred hours to print all of the parts for the pistol. Moreover, even after all of the parts were printed, they needed to be finished, polished, and then assembled, quoting a rough estimate of \$10,000 for a single gun.⁶ Simple economic reasoning infers that the seeker of a firearm for whatever purpose or desire will not seriously consider rendering to the extensive assembly process of 3D printing over the comparable easiness of buying a registered and licensed gun. One media outlet noted, “officials do not believe there’s a risk that street criminals will be able to mass produce guns using 3-D printing technology, as the printer required to produce a gun can cost more than \$100,000 and quality varies.”⁷

1ST AMENDMENT CONSTITUTIONAL SCRUTINY

The nation has historically been more politically active and eager to fight for the rights construed within the first two amendments of the Constitution more so than any of its counterparts. Civil Rights Movement, free-speech demonstrations, discussion of anarchist literature, and well equipped National Rifle Association lobbyist casting their shadows over lawmakers are examples to numerate a few. The failure of the interested parties to ban literature like the “Anarchist Cookbook” or of the Government and State to dispense a peaceful protest without violating notions of protected freedoms, is precisely the reason why it is difficult to congress, implement, and enforce innovative law as reflective of this new technological frontier. The Supreme Court has made clear that information, regardless of its form is protected speech including 3D computer-aided design (“CAD”) files used to describe and create 3D printed objects. Further, the Supreme Court has found that the right of freedom of speech protects not only the speaker, but also the “public and its right to receive information.” In *Red Lion Broadcasting Co. v. Federal Communications Commission*, the Supreme Court recognized that the First Amendment protects “the right of the public to receive suitable access to social,

³ John Biggs, Defense Distributed Prints an AR-15 Receiver that Has Fired More than 600 Rounds, TECHCRUNCH

⁴ Andy Greenberg, Meet the “Liberator”: Test-Firing the World’s First Fully 3D-Printed Gun, FORBES.

⁵ Tim Worstall, The “Liberator” Plastic Gun and the Export Regulations Take Down of It, FORBES.

⁶ Josh Blackman, Tour of 3D-Gun Printing Facility, JOSH BLACKMAN’S BLOG, November 12, 2013.

⁷ Holder Takes Aim at 3-D Guns, Calls for Renewal of Metal Detection Law, FOX NEWS, November 15, 2013.

political, esthetic, moral, and other ideas and experiences.”⁸ In *Time, Inc. v. Hill*, the Supreme Court stressed the importance of access to information of matter of public interest.⁹

Restrictions on the ability to share 3D blueprints would infringe upon the constitutional rights of the teachers who share the information and the students who wish to learn from it. Therefore, unmeasured bans or regulation on 3D blueprints would violate the First Amendment. The freedom of speech Electronic communications are considered speech for purposes of the First Amendment.¹⁰ Even though printing the guns is conduct, at its heart, the government is regulating expression which is “sufficiently imbued with elements of communication to fall within the scope of the First . . . Amendment[.]”¹¹ In *Brown v. Entertainment Merchants Association*, the Supreme Court found that “video games qualify for First Amendment protection.” In the same way that “protected books, plays, and movies that preceded them, video games communicate ideas—and even social messages— through many familiar literary devices and through features distinctive to the medium.”¹²

The State Department’s letter to Cody Wilson ordered him to “treat the above technical data as ITAR-controlled,” meaning that “all such data should be removed from public access immediately.”¹³ Here, because the First Amendment consists of both a right of “creation and dissemination of information.”¹⁴ the Supreme Court held that denying someone the equipment to exercise a right is itself a constitutional violation stressing “whatever the challenges of applying the Constitution to ever-advancing technology, ‘the basic principles of freedom of speech and the press, like the First Amendment’s command, do not vary’ when a new and different medium for communication appears.”¹⁵

2ND AMENDMENT CONSTITUTIONAL SCRUTINY

As recognized in *District of Columbia v. Heller*, the right to keep and bear arms, as the Constitution guarantees, infers a right to acquire arms and in the supply chain of arms dealership there always lies the right to acquire.¹⁶ Meaning that the Second Amendment right encompasses the right to acquire arms wherein the right can be reasonably regulated, but not unreasonably banned. The case highlighted the right of Dick Heller, who owned his gun from before the District instituted its gun ban, to be able to legally keep and bear it for self-defense. Justice Scalia’s majority opinion noted that the Second Amendment should not “cast doubt” on “laws imposing conditions and qualifications on the commercial sale of arms.” Since *Heller*, the Circuit Courts have split concerning whether the Second Amendment protects the right not only to bear arms, but also to acquire them. In an unpublished decision, the Fourth Circuit observed that

⁸ *Red Lion Broad. Co. v. Fed. Comm’n Comm’n*, 395 U.S. 367, 390 (1969).

⁹ *Time, Inc. v. Hill*, 385 U.S. 374, 388–89 (1967).

¹⁰ *Reno v. Am. Civil Liberties Union*, 521 U.S. 844, 851 (1997).

¹¹ *Texas v. Johnson*, 491 U.S. 397, 404 (1989).

¹² *Brown v. Entm’t Merchants Ass’n*, 131 S. Ct. 2729, 2733 (2011).

¹³ Letter from Glenn E. Smith, Chief, Enforcement Div., U.S. Dept. of State, to Cody Wilson, Dir., Def. Distributed May 8, 2013.

¹⁴ *Sorrell v. IMS Health Inc.*, 131 S. Ct. 2653, 2667 (2011).

¹⁵ *Joseph Burstyn, Inc. v. Wilson*, 343 U.S. 495, 503 (1952).

¹⁶ *District of Columbia v. Heller*, 554 U.S. 570, 636 (2008).

nothing “remotely suggests that, at the time of its ratification, the Second Amendment was understood to protect an individual’s right to sell a firearm.”¹⁷ In contrast, in *Ezell v. City of Chicago*, the Seventh Circuit found that a shooting range that sold ammunition and rented firearms successfully raised a claim under the Second Amendment on behalf of individuals who used the facility. The court held that a Chicago law banning shooting ranges inside the city was very likely unconstitutional.¹⁸ The Supreme Court reaffirmed the *District of Columbia v. Heller* finding of the right to keep arms for purposes of self-defense with *McDonald v. Chicago*.

Currently under federal law, it is legal to make pistols, revolvers, and rifles from home. For semi-automatic rifles, such as the AR-15, it is legal to make the lower receiver so long as the gun is not being sold, shared, or traded, no license is required. The Bureau of Alcohol, Tobacco, Firearms, and Explosive (“BAFTE”) explains, “[w]ith certain exceptions a firearm may be made by a non-licensee provided it is not for sale and the maker is not prohibited from possessing firearms.”¹⁹ Recognizing that the internet is inundated with self-help resources to make or build a variety of weapons including the notorious potatoes guns, potatoes cannons, homemade tasers, bombs and “zip guns.” Most of these weapons can be improvised with as low as \$20 in materials, can be lethal, bypass metal detection security and take little time or skill to make.

The right to make arms for personal use has historically been subject to virtually no regulations and it is deeply rooted in our nation’s history. Therefore, the Second Amendment, as consistent with *Heller*, protects three guarantees: the right to keep and bear arms, the right to acquire arms, and the right to make arms. Any attempts at regulations limiting the manufacturing of guns with 3D printers will run into all three guarantees of the Second Amendment alongside the First Amendment guarantee to Freedom of Speech. Even if the market allows the facilitated the manufacturing 3D weapons prohibited by federal law, under existing precedent, Congress would have jurisdiction and State would have authority to regulate these particular homemade automatic weapons. The Ninth Circuit found that Congress “could prohibit the possession of a homemade machine gun because it could have rationally concluded that the possession of homemade machine guns would substantially affect the interstate market in machine guns.”²⁰ The court reaffirmed this holding, finding that *Heller* “has absolutely no impact on *Stewart’s* Commerce Clause holding.”²¹ Henceforth, the right to make and acquire arms, however defined, is firmly grounded in the Second Amendment.

PROPOSALS

Proposals to regulate 3D guns, laws that prohibit the manufacturing and possession of 3D guns, without a showing that the weapons are highly dangerous, must meet strict constitutional scrutiny. A complete and even partial ban on individuals right to make and possess 3D guns for personal use would be unfounded and likely unconstitutional considering precedential dicta on protections of the First and Second Amendments and a historical lack of regulation on

¹⁷ *United States v. Chafin*, 423 F. App’x 342, 344 (4th Cir. 2011).

¹⁸ *Ezell v. City of Chicago*, 651 F.3d 684, 696–711 (7th Cir. 2011).

¹⁹ U.S. DEP’T OF JUST., BUREAU OF ALCOHOL, TOBACCO, FIREARMS & EXPLOSIVES.

²⁰ *Mont. Shooting Sports Ass’n v. Holder*, 727 F.3d 975, 981–82 (9th Cir. 2013) cert. denied, 134 S. Ct. 955 (2014) (citing *United States v. Stewart*, 451 F.3d 1071, 1077 (9th Cir. 2006)).

²¹ *United States v. Henry*, 688 F.3d 637, 638 (9th Cir. 2012).

homemade firearms. In reality, only the commercial sale of firearms, manufactured by 3D printers or otherwise, could be reasonably regulated in manners consistent with the current sale of traditional firearms without violating notions of protected freedoms.

The Undetectable Firearms Act (“UFA”) is the primary mechanism under Federal Law to address the manufacturing, and possession of 3D guns. UFA makes it illegal to “manufacture, import, sell, ship, deliver, possess, transfer, or receive any firearm” that “is not detectable” by a metal detector. The law requires the metallic equivalent of 3.7 ounces of stainless steel to be installed into all firearms.²² The UFA was reauthorized in 1998, 2003, and was set to expire in December of 2013, not long after the Liberator and 3D guns demanded national attention. In calling for the UFA’s reauthorization, Attorney General Holder specifically cited the threat of 3D guns, which he called “a very worrisome threat to law enforcement and to people who fly every day. We can’t have guns legally in circulation that are not detectable by metal detectors.”

The “rapid progress” of a 3D-printed AR-15 “lower” receiver from only being able to handle a few rounds, to 600 rounds in 2013, “sends shivers up the spine of public officials who want to regulate firearms.” Proposals were introduced in the House and the Senate that would have expanded the reach of the law to criminalize certain types of 3D-printed guns. Specifically, the Undetectable Firearms Modernization Act (“UFMA”) would have extended the UFA ban to “undetectable firearm receivers made by individuals” and “undetectable ammunition magazines by individuals.” While in the past, the manufacturing of firearms for personal consumption was largely unregulated, now do-it-yourself guns would become a federal crime.²³

The Department of Homeland Security concluded that “[e]ven if the practice is prohibited by new legislation, online distribution of these digital files will be as difficult to control as any other illegally traded music, movie or software files.”²⁴ In other words, impossible. Therefore, some have proposed stopping 3D guns by cutting off the problem at the source—banning the sharing, and distribution of the 3D CAD files. The sale of 3D guns, like all other guns, would be regulated by existing federal law. There has, however, been some movement on this front at the local level. A proposed law in California, aimed directly at 3D printing, would criminalize making your own firearm without permission and assigned serial number from the state. The bill requires that “prior to manufacturing or assembling a firearm, a person making or assembling the firearm shall . . . apply to the [California] Department of Justice for a unique serial number or other mark of identification”²⁵

An alternative to banning the manufacturing or possession of 3D guns would be to ban, or heavily regulate, the supplies needed to print a 3D gun. It would involve the regulation and restricted access to the particular blend of additives that can be shaped into reliable guns. There are practical problems with this approach for it would be virtually impossible to single out the type of materials that can be used. Remember, 3D guns are not limited to plastic parts, solid Concepts built a 3D-printed metal gun. As consequence, banning a certain type of plastic, or additive that can be used for 3D printing would indirectly regulate vast amounts of innovative non-weaponry designs people can manufacture such as protestics. The Government and State

²² 18 U.S.C § 922(p) (2012).

²³ Undetectable Firearms Modernization Act, H.R. 1474, 113th Cong. (2013).

²⁴ Jana Winter, Homeland Security Bulletin Warns 3D-Printed Guns May Be “Impossible” to Stop, FOX NEWS, May 23, 2013.

²⁵ Jacob Gershman, California Considers Plastic-Gun Measure, WALL ST. J. January 14, 2014.

interest in banning a certain type of material, because it may be used in a gun design, would be vague, ambiguous, broad and overbearing.

DISCUSSION AND CONCLUSION

While the notion of the homemade gun may make many uncomfortable, especially those unfamiliar with guns, this is not new technology. Plastic guns have been defeating security procedures for the last 30 years long before 3D printers existed. The fear of 3D guns, therefore, is largely unfounded. Nevertheless, legislative bodies of law have a heavy burden of carefully threading the legal language that defines and restricts the perimeters of this new technology.

The First Amendment should be viewed in terms of a constitutional right to create and access information. This dual faceted approach to the freedom of speech accounts for the individual right to express information and the right of individuals in society to learn and consume that information. Three-dimensional printing opens a new realm for people invent, manufacture and use innovative new products AMD introduce them to the free-market. For prudential reasons, any efforts to regulate the distribution and use of 3D blueprints must be done with adherence to the traditional notions and protections of the Constitution. Despite the Government and State interest to promote national security under the guise of public interest, an overarching ban or expansive gun control cannot withstand the constitutional scrutiny of the first two amendments.

REFERENCES

1. Office of the Press Secretary, Remarks by the President in the State of the Union Address, WHITE HOUSE, February 12, 2013.
2. Deven R. Desai & Gerard N. Magliocca, Patents, Meet Napster: 3D Printing and the Digitization of Things, 102 GEO. L.J.
3. John Biggs, Defense Distributed Prints an AR-15 Receiver that Has Fired More than 600 Rounds, TECHCRUNCH.
4. Andy Greenberg, Meet the “Liberator”: Test-Firing the World’s First Fully 3D-Printed Gun, FORBES.
5. Tim Worstall, The “Liberator” Plastic Gun and the Export Regulations Take Down of It, FORBES.
6. U.S. DEPARTMENT OF JUSTICE BUREAU OF ALCOHOL, TOBACCO, FIREARMS & EXPLOSIVES.
7. Josh Blackman, Tour of 3D-Gun Printing Facility, JOSH BLACKMAN’S BLOG, November 12, 2013.

8. Holder Takes Aim at 3-D Guns, Calls for Renewal of Metal Detection Law, FOX NEWS, November 15, 2013.
9. Jana Winter, Homeland Security Bulletin Warns 3D-Printed Guns May Be “Impossible” to Stop, FOX NEWS, May 23, 2013.
10. Jacob Gershman, California Considers Plastic-Gun Measure, WALL ST. J. January 14, 2014.
11. Letter from Glenn E. Smith, Chief, Enforcement Div., U.S. Dept. of State, to Cody Wilson, Dir., Def. Distributed May 8, 2013.
12. *District of Columbia v. Heller*, 554 U.S. 570, 636 (2008).
13. *United States v. Chafin*, 423 F. App’x 342, 344 (4th Cir. 2011).
14. *Ezell v. City of Chicago*, 651 F.3d 684, 696–711 (7th Cir. 2011).
15. *Mont. Shooting Sports Ass’n v. Holder*, 727 F.3d 975, 981–82 (9th Cir. 2013) cert. denied, 134 S. Ct. 955 (2014) (citing *United States v. Stewart*, 451 F.3d 1071, 1077 (9th Cir. 2006)).
16. *United States v. Henry*, 688 F.3d 637, 638 (9th Cir. 2012).
17. *Reno v. Am. Civil Liberties Union*, 521 U.S. 844, 851 (1997).
18. *Texas v. Johnson*, 491 U.S. 397, 404 (1989).
19. *Brown v. Entm’t Merchants Ass’n*, 131 S. Ct. 2729, 2733 (2011).
20. *Joseph Burstyn, Inc. v. Wilson*, 343 U.S. 495, 503 (1952).
21. *Sorrell v. IMS Health Inc.*, 131 S. Ct. 2653, 2667 (2011).
22. *Red Lion Broad. Co. v. Fed. Commc’ns Comm’n*, 395 U.S. 367, 390 (1969).
23. *Martin v. City of Struthers*, 319 U.S. 141, 146–49 (1943).
24. *Stanley v. Georgia*, 394 U.S. 557, 564 (1969).
25. *Time, Inc. v. Hill*, 385 U.S. 374, 388–89 (1967).
26. 18 U.S.C § 922(p) (2012).

27. Undetectable Firearms Modernization Act, H.R. 1474, 113th Cong. (2013).