The Internet and Its Discontents: 3-D Printing, The Commerce Clause, And A Possible Solution to an Inevitable Problem

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I. Introduction

Hunter: “S***, that's light. What's it made of?”
Leary: “Composite. Like plastic.”

At the time *In the Line of Fire* was filmed, the idea of an entirely plastic firearm was a thing of fantasy. Deadly and undetectable, the idea of a criminal or an assassin getting his hands on a plastic firearm was terrifying. However, science fiction can, at times, make bold predictions about what the future holds. While plastic firearms are still in a quasi-beta phase, the technology is here and the reality of plastic firearms being printed in a living room near you is here. Technology has vastly improved both over time. Technology has come to the point where people can now potentially produce their own firearms in their living room with just the Internet and a 3-D printer. A group in Texas, Defense Distributed, test-fired the first all plastic firearm on May 1, 2013 and the group has declared its goal of bringing this technology to you and your neighbor through the Internet.

This emerging technology has alarmed Congress, which in December of 2013 attempted to address the emerging technology head on by amending and reenacting the Undetectable Firearm Act of 1988. However, Congress was unable to amend the Act, thus leaving it with the exact same language it contained before 3-D printing was even available. Therefore, the Act uses language and references to a cultural and technological time period almost three decades old. This is problematic and raises issues that challenge the Act’s effectiveness. Senator Edward J. Markey (D-Mass.), a co-sponsor of the legislation, released a statement that captures the current mood in Congress about 3-D technology and firearms:

I applaud reauthorization of the Undetectable Firearms Act to ensure a new generation of stealth weapons made with 3D printing

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1. See *In the Line of Fire* (Columbia Pictures Corporation 1993).
4. See id.
5. See id.
technology don’t go undetected. This is only a first step though, as there are still loopholes in the Undetectable Firearms Act that must be closed. We must not allow a 3-D printer cartridge to become as deadly as a gun cartridge. I look forward to continuing to work with my colleagues and the ATF to ensure this legislation is permanently reauthorized and any loopholes are closed.6

Although the Act is a step in the right direction, it is ill-equipped to regulate this emerging technology because the loopholes are troubling. This comment discusses the shortcomings of the Undetectable Firearms Act proposes two possible solutions to the inevitable issue of home-manufactured 3-D plastic firearms. An analysis of the Commerce Clause and its potential to regulate the Internet produces a possible remedy that the Undetectable Firearm Act could not—the ability to regulate. The Undetectable Firearm Act seeks to ban all firearms without barium sulfate (the mechanism by which detectors “pickup” the firearm) and those firearms that fail to look like firearms in an x-ray.7 The Act was written in the 1980s, nearly two decades before 3-D technology was invented, and does not mention 3-D firearms.8 However, 3-D printed firearms could be effectively regulated in a less direct way—the Internet. Although the Supreme Court has never ruled on the Internet in relation to the Commerce Clause, New York’s Southern District has. In American Library Ass’n v. Pataki, the court makes an argument that the Internet substantially affects the stream of commerce and is therefore subject to regulation.9 Using the court’s reasoning, the Internet, and CAD (Computer Animated Design) designs of 3-D printed firearms on various databases, could be regulated. Although controversial, this solution would allow Congress to regulate a potentially problematic development in technology and it may allow them to bypass any Second Amendment controversy. The second solution relies on Wickard v. Filburn, which ruled that a farmer who produces his own crops for personal consumption affects the stream of commerce and is thus subject to the Commerce Clause.10 Analogizing this case, it could be argued that home manufacturing of 3-D printed firearms, metal or plastic, substantially affects a $33 billion a year industry. Thus, Congress may have the ability to regulate 3-D printed firearms through the Commerce Clause without having to navigate the Second Amendment.

8. See id.
II. HISTORICAL BACKGROUND

"Don't take your guns to town son
Leave your guns at home . . ."11

A. 3-D Printing

In his 2013 State of the Union address, President Obama saw 3-D printing as a beacon of hope in a tough economy, “A once-shuttered warehouse is now a state-of-the-art lab where new workers are mastering the 3D printing that has the potential to revolutionize the way we make almost everything.”12 The President was most certainly correct, more than most people may have realized at first. At its most basic and mundane level, 3-D printing is “a manufacturing process for the rapid production of three-dimensional parts directly from computer models.”13 The process stacks layer upon layer of “two-dimensional” printing to produce a 3-D object.14 The computer model is translated into an algorithm that draws the detailed information on every layer similar to an ink-jet printer.15 Then a “piston that supports the powder bed and the part in progress lowers so that the next powder layer can be spread and selectively joined. This layer-by-layer process repeats until the part is completed.”16 The object is then heat-treated and any unbound powder is removed, thus leaving the fabricated part.17 3-D printing is described as “additive manufacturing,” which is a “process of joining materials to make objects from 3-D model data, usually layer upon layer, as opposed to subtractive manufacturing.”18 3-D printing has the potential to produce a lot of very useful objects. In fact, researchers at Wake Forest Baptist Medical Center are embarking on a project to produce the “body on a chip” project using 3-D

11. JOHNNY CASH, DON’T TAKE YOUR GUNS TO TOWN (Columbia Records 1958).
14. Id.
15. See id.
16. Id. at 28.
17. Id.
printing or “bioprinting.” The “body on a chip” technology seeks to create a mini human-organ system about the size of a quarter to test the body’s response to drugs. The ultimate goal of bioprinting is to create “large, functional, implantable organs that will address the growing gap between viable organ supply and demand for transplants.”

However, others have focused on producing other things with 3-D printing technology. In July of 2012, an amateur gunsmith named Michael Guslick managed to construct and shoot a pistol made partly out of plastic, 3-D printed parts. Guslick then adapted those parts to make a fully functional AR-15 rifle. According to Guslick, the process “wasn’t difficult.” Guslick obtained the gun blueprints online “from a website.” However, Guslick’s creation was not entirely made from 3-D printed parts. He also used off-shelf metal components to complete the gun.

While Michael Guslick’s AR-15 really pushed the bounds of 3-D printing in a non-commercial setting, some want to push it even further. A group out of Austin, Texas called “Defense Distributed” has begun a campaign called “Wiki Weapon Project,” which seeks to bring a fully functional firearm made entirely of plastic to your living room. Cody Wilson, the group’s de facto leader, wants to create a completely plastic gun that can be downloaded via the Internet and printed at the consumer’s convenience. Wilson and Defense Distributed have successfully fired an entirely 3D-printed gun. The gun fired a .380 caliber bullet into a pile of dirt.

20. Id.
21. Id.
23. Id.
24. Id.
25. Id.
26. Id.
29. Id.
calls the firearm the “Liberator” in homage to the cheap, one-shot pistol delivered to the French resistance by the Allies during the Nazi occupation in World War II. Defense Distributed’s Liberator is almost entirely made of plastic:

[fifteen of its 16 pieces have been created inside an $8,000 second-hand Stratasys Dimension SST 3D printer, a machine that lays down threads of melted polymer that add up to precisely-shaped solid objects just as easily as a traditional printer lays ink on a page. The only non-printed piece is a common hardware store nail used as its firing pin.]

Wilson’s dream is to allow anyone to print a “lethal device.” “It’s kind of scary, but that’s what we’re aiming to show. Anywhere there’s a computer and an Internet connection, there would be the promise of a gun.” The Liberator’s relative success caught the eye of Washington. New York Congressman Steve Israel responded to Defense Distributed’s work by calling for a revamping of the Undetectable Firearms Act, to be discussed presently. “Security checkpoints, background checks, and gun regulations will do little good if criminals can print plastic firearms at home and bring those firearms through metal detectors with no one the wiser.”

Defense Distributed is seeking to design a method that works on the cheaper printers like “the $2,200 Replicator . . . or the even cheaper, open-source RepRap.” These 3-D “hobby printers” sit on a desktop and are controlled by a PC or a MAC and “feed[ ] a plastic ‘wire’ through a heated nozzle onto a platform that shifts in concert with the nozzle building a three-dimensional plastic object.” These printers can go for as low as $1,200. Defense Distributed’s project has created quite a stir. Wired, a tech publication, included Wilson in their “15 Most Dangerous People in the World” list. But Wilson believes that Defense Distributed is simply revealing how

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30. Id.
31. Id.
32. Id.
33. Id.
34. Id.
35. Id.
37. Id.
technology can “circumvent laws until governments simply become irrelevant.”

Legislation frequently has difficulty keeping up with technology. Defense Distributed’s goal of bringing a 3-D printed firearm to every home is not a stretch by any means. Congress has attempted to regulate the ownership of undetectable firearms through the Undetectable Firearms Act, but the Act does not mention 3-D printed firearms. Although the Act is broad, the 3-D printing technology is taking advantage of the Act’s silence as far as the manufacturing of the weapons. Therefore, Congress needs to propose legislation that will regulate the technology in a meaningful way. One way to regulate the home production of a material is through the Commerce Clause.

B. The Commerce Clause—A Historical Overview

Article I, Section 8, Clause 3 of the United States Constitution delegates to Congress the power to regulate commerce among the several states. “[1] The Congress shall have Power. . . [3] To regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes.” Congress has used the Commerce Clause to regulate a large and diverse variety of daily activities. In Gibbons v. Ogden, Chief Justice Marshall first analyzed the nature of the Commerce Clause. Justice Marshall argued that there are limitations on the power, yet it “is complete in itself” and the Constitution is the only acknowledged limitation. The “enumeration presupposes something not enumerated,” according to the Court. The Court saw its power as “exclusively internal” to the commerce of a State. Over the course of time, the efforts of the Supreme Court were concentrated more on state regulation of internal commerce. The Court would typically uphold any state activity unless it “discriminated against or burdened interstate commerce.”

There was a shift of focus in 1887 when Congress began to affirmatively regulate commerce through means such as the Interstate Commerce

43. See Gibbons v. Ogden, 22 U.S. (1 Wheat.) 189, 190 (1824).
44. Id. at 196.
45. Id. at 195.
46. Id.
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Act and the Sherman Antitrust Act of 1890. In 1905, the Commerce Clause was used to halt price fixing in the Chicago meat industry using the Sherman Antitrust Act. In Swift & Co. v. United States, the Court found that business done at a local level could become part of a “current of commerce among the states,” and the purchase of items such as cattle “is part and incident of such commerce.” In ALA Schechter Poultry Corp. v. United States, the Court created and implemented the direct/indirect test, which aided in “determining how far the federal government may go in controlling intrastate transactions upon the ground that they ‘affect’ interstate commerce . . . .”

The Commerce Clause slowly began to expand beginning with NLRB v. Jones & Laughlin Steel Corp. That Court recognized much broader grounds upon which the Commerce Clause could regulate state activity, namely if that activity of commerce in general had a “substantial effect” on such commerce. The National Labor Relations Act permitted workers to unionize and participate in collective bargaining. Effectively, the NLRB could issue a complaint for “unfair labor practices” that affected commerce. The Court found, “[a]lthough activities may be intrastate in character when separately considered, if they have such a close and substantial relation to interstate commerce that their control is essential or appropriate to protect that commerce from burdens and obstructions, Congress cannot be denied the power to exercise that control.”

With a newly expanded Commerce Clause, Congress “continued to pass laws invoking their commerce power for the next sixty years.” Wickard v. Filburn sought to challenge the Commerce Clause expansion. In Wickard, Roscoe C. Filburn took action against the Secretary of Agriculture, Claude R. Wickard, for a marketing penalty imposed by an amendment to the Agricultural Adjustment Act. The penalty effected part of his 1941 wheat crop which “was available for marketing in excess of the marketing quota established for his farm.” Filburn claimed that the wheat marketing quota provisions in the

48. See Kolenc, supra note 42, at 871.
53. See id. at 40.
54. Id. at 22–23.
55. Id. at 24.
56. Laughlin Steel Corp., 301 U.S. at 37.
Act were unconstitutional and not “sustainable” under the Commerce Clause. Filburn had owned and operated a small farm in Ohio where he kept dairy cattle, sold milk, raised poultry, and sold poultry and eggs. He also grew a small acreage of “winter wheat” that was sown in the fall and harvested in the summer. Part of this crop was sold, another was to feed the poultry and cattle that he sold, some was used for home consumption, and whatever was left was kept as seed for the next year.

However, in July of 1940, pursuant to the Act as amended, Filburn’s 1941 crop allotment was allowed 11.1 acres and a “normal yield of 20.1 bushels of wheat an acre.” Although Filburn was given notice of this allotment, he sowed “23 acres, and harvested from his 11.9 acres of excess acreage 239 bushels,” which under the terms of the Act, constituted farm marketing excess and subject to a “penalty of 49 cents a bushel, or $117.11 in all.” Then the Court made an interesting distinction. The Court argued that even though Filburn’s actions did not in and of themselves “affect commerce,” if every farmer in the country did what Filburn did then “[h]ome-grown wheat ... competes with wheat in commerce.” This is commonly referred to as the “aggregate effects” test. The Court’s decision also marked the beginning of showing deference to congressional findings. Some rulings did not even require any congressional findings.

The most notable, and perhaps the apex of the Commerce Clause expansion was Heart of Atlanta Motel, Inc. v. United States. In that case, the Court concluded that Title II of the Civil Rights Act of 1964, which prohibited racial discrimination in places of public accommodation, as applied to a motel that serves interstate travelers, “is within the power granted [Congress] by the Commerce Clause of the Constitution, as interpreted by this Court for 140 years.” The cases that followed “showed no practical limit on Congress’ power under the Commerce Clause.”

59. Id.
60. Id. at 114.
61. Id.
62. Id.
63. Id. at 114.
64. Filburn, 317 U.S. at 114–15.
65. Id. at 128.
66. Id. at 127–28.
C. *Lopez* and the Modern Commerce Clause

*United States v. Lopez* changed everything. Before *Lopez*, it seemed that Congress' Commerce power was almost unlimited. Throughout the past several decades the Court had deferred to Congress and allowed the Commerce Clause to continue to expand its reach. *Lopez* became the breaking point. In his majority opinion, Chief Justice Rehnquist sought to confirm that the "outer limits" of the Commerce Clause had been reached.69

In *Lopez*, a 12th-grade senior high student brought a concealed .38-caliber handgun and five bullets to Edison High School in San Antonio, Texas.70 Congress had previously passed the Gun-Free School Zones Act of 1990, which made it a federal offense "for any individual knowingly to possess a firearm at a place that the individual knows, or has reasonable cause to believe, is a school zone."71 Acting on a tip, the school authorities confronted Lopez and he admitted that he was carrying the firearm and ammunition.72 Lopez was arrested and charged under Texas law with firearm possession on a school premise.73

The state charges were dropped and federal agents charged respondent with violating the Gun-Free School Zones Act of 1990, 18 U.S.C. § 922(q)(1)(A).74 A grand jury indicted Lopez with "one count of knowing possession of a firearm at a school zone, in violation of § 922(q)."75 However, Lopez moved to dismiss the federal charge as "unconstitutional," and argued that it was "beyond the power of Congress to legislate control over public schools."76 Lopez waived his right to a jury trial and the District Court found him guilty of violating § 922(q).77 However, the Court of Appeals for the Fifth Circuit reversed Lopez's conviction, agreeing with Lopez that "his conviction based on . . . § 922(q) exceeded Congress' power to legislate under the Commerce Clause."78 Rehnquist and the majority agreed.

In his opinion, Rehnquist outlined "three broad categories" of activity that Congress *may* regulate under its commerce power.79 First, Congress may

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70. Id. at 551.
71. Id.
72. Id.
73. Id.
74. Id.
75. Id. at 551.
76. Id.
77. Id. at 552.
78. Id.
79. Id. at 558.
regulate the use of channels of interstate commerce."^{80} Rehnquist, citing *Caminetti v. United States*,^{81} recognized that "[t]he authority of Congress to keep the channels of interstate commerce free from immoral and injurious uses has been frequently sustained, and is no longer open to question."^{82} Second, "Congress is empowered to regulate and protect the instrumentalities of interstate commerce, or persons or things in interstate commerce, even though the threat may come only from intrastate activities."^{83} Examples are things such as destruction of aircraft or theft from interstate shipments.^{84} The final category of "Congress' commerce authority includes the power to regulate those activities having a substantial relation to interstate commerce, those activities that substantially affect interstate commerce."^{85} The proper test for the final category requires "an analysis of whether the regulated activity 'substantially affects' interstate commerce."^{86} Rehnquist believed that if § 922(q) was to be sustained, it had to fall within the third category as "regulation of an activity that substantially affects interstate commerce."^{87} The Court believed that § 922(q) did not relate to economic activity like the Agricultural Adjustment Act in *Wickard*.^{88} Where the Act in *Wickard* related to economic activity, § 922(q) was concerned with criminal penalties.^{89} The Court upheld the notion that the Commerce Clause will continue to regulate economic activity that substantially affects interstate commerce and "any legislation regulating that activity will be sustained."^{90} In the third category, the Court identified four major problems with the Act. First, firearm possession had nothing to do with commerce.^{91} Second, the Act had "no express jurisdictional element which might limit its reach to a discrete set of firearm possessions that additionally have an explicit connection with or effect on interstate commerce."^{92} Third, congressional findings were absent in the Act, which broke from prior firearms

80. Id.
84. See id.
85. Id. at 558–59.
86. Id. at 559.
87. Id.
88. Id. at 561.
89. *Lopez*, 514 U.S. at 561.
90. Id. at 560.
91. Id. at 561.
92. Id. at 562.
legislation.93 Finally, the government’s reasoning, if accepted, “convert[s] congressional authority under the Commerce Clause to a general police power of the sort retained by the States.”94

Further, the Court did not overrule Jones & Laughlin Steel or Wickard.95 Instead, the Court found that § 922(q) contained “no jurisdictional element which would ensure, through case-by-case inquiry, that the firearm possession in question affects interstate commerce.”96 Therefore, the Court, while not overruling itself, managed to taper the expanding congressional power through the Commerce Clause.

United States v. Morrison affirmed Lopez. In Morrison, petitioner Christy Brzonkala alleged that she was raped and assaulted repeatedly by Antonio Morrison and James Crawford.97 Brzonkala claimed that the attack caused her severe emotional distress, which caused her to eventually withdraw from the school.98 Brzonkala eventually sued Morrison and Crawford in the United States District Court for the Western District of Virginia claiming that the attack violated 42 U.S.C. § 13981 and was thus entitled civil remedies.99 The District Court dismissed the suit and on appeal; the Court of Appeals heard the issue en banc, and affirmed the District Court’s conclusion that “Congress lacked constitutional authority to enact § 13981’s civil remedy.”100

The Court applied Lopez’s four “significant considerations.”101 The Court found that § 13981 satisfied only one factor, congressional findings, which was insufficient to uphold the Act under Congress’ commerce power.102 The Court reasoned that the congressional findings were founded on an argument that the Lopez court had expressly rejected, namely “that Congress might use the Commerce Clause to completely obliterate the Constitution’s distinction between national and local authority . . . .”103 Further,

93. Id. at 563.
94. Id. at 567.
95. Luppino-Esposito, supra note 57, at 237 (citing Jim Chen, Filburn’s Legacy, 52 EMORY L.J. 1719, 1733–36 (2003)).
96. Lopez, 514 U.S. at 561.
98. See id. at 602–03.
99. Id. at 604.
100. Id. at 604–05.
101. See id. at 609–13. (significant considerations are: 1) § 922(q) was a criminal statute and did not relate to commerce or the economy; 2) it had not jurisdictional element or affect on interstate commerce; 3) there were no congressional findings; 4) no link between possession of a firearm in a school zone and interstate commerce.).
102. Id. at 614–15.
103. Morrison, 529 U.S. at 615.
even if taken in aggregate, the Court found the Act to be outside of the scope of the Commerce Clause and "reject[ed] the argument that Congress may regulate noneconomic, violent criminal conduct based solely on that conduct's aggregate effect on interstate commerce." The Court affirmed that this type of a crime is a local activity, and maintained the distinction between "what is truly national and what is truly local."

III. CURRENT STATE OF THE LAW

"I took a little risk
Send lawyers, guns and money
Dad, get me out of this"  

A. The Modern Commerce Clause—Raich to present.

Lopez held its rein for a decade. Gonzales v. Raich is now considered to be the seminal commerce power case. In Raich, the Court considered whether Article I, § 8, of the Constitution in its authority, allowed Congress to prohibit "the local cultivation and use of marijuana in compliance with California law." In 1996, California adopted the Compassionate Use Act of 1996, which allowed the "seriously ill" residents of the State to have access to marijuana for medical purposes. The Act also encouraged Federal and State Governments to take steps toward ensuring the safe and affordable distribution of the drug to patients. The Act created an exemption for physicians and patients alike from criminal prosecution if they possess or cultivate marijuana for medicinal purposes.

The two respondents in the case, Angel Raich and Diane Monson, both suffered from serious medical conditions and "sought to avail themselves of medical marijuana pursuant to the terms of the Compassionate Use Act." For years, both women had been using medical marijuana that had been prescribed by licensed, board-certified physicians to alleviate their pain. Both women relied "heavily on cannabis to function on a daily basis." In fact,

104. Id. at 616-17.
105. Id. at 617-18.
106. WARREN ZEVON, LAWYERS, GUNS AND MONEY (Asylum Records 1978).
107. Luppino-Esposito, supra note 57, at 238.
108. Gonzales v. Raich, 545 U.S. 1, 5 (2005).
109. Id. at 5-6.
110. Id. at 6.
111. Id.
112. Id. at 6-7.
113. Id. at 7.
114. Raich, 545 U.S. at 7.
Raich’s physician believed that forgoing the treatment would cause Raich “excruciating pain and could very well prove fatal.” Respondent cultivated her own marijuana, while Raich relied on her caregivers to provide her with locally grown marijuana.

On August 15, 2002, county deputy sheriffs and Federal Drug Enforcement Administration (DEA) agents came to Monson’s home. The county officials concluded that “her use of marijuana was entirely lawful . . . .” However, the DEA had a three-hour standoff, which resulted in the federal agents destroying all six of Monson’s marijuana plants. The respondents sought injunctive and declaratory relief that would prohibit the enforcement of the Controlled Substances Act (CSA) “to the extent it prevents them from possessing, obtaining, or manufacturing cannabis for their personal medical use.” Justice Stevens, writing for the majority, found the CSA to be Constitutional, calling the statute “comprehensive” and “provid[ing] meaningful regulation over legitimate sources of drugs to prevent diversion into illegal channels . . . .” The Court likened the situation to Wickard, and reiterated that “even if appellee’s activity be local and though it may not be regarded as commerce, it may still, whatever its nature, be reached by Congress if it exerts a substantial economic effect on interstate commerce.” The Court further noted that it “need not determine whether respondents’ activities, taken in the aggregate, substantially affect interstate commerce in fact, but only whether a ‘rational basis’ exists for so concluding.” The Court found CSA to be “necessary and proper” to regulate commerce and accomplish Congress’ goal of curbing the criminal drug market. The Court declared “[t]hat the regulation ensnares some purely intrastate activity is of no moment. As we have done many times before, we refuse to excise individual components of that larger scheme.”

Further, the Court distinguished § 922(q) (the Gun Free School Zones Act) from the CSA, stating “[t]he Act (§ 922(q)) did not contain any requirement that the possession of a gun have any connection to past interstate activ-

115. Id.
116. Id.
117. Id.
118. Id. at 7.
119. Id.
120. Raich, 545 U.S. at 8.
121. Id. at 10.
122. Id. at 17.
123. Id. at 22 (citing Lopez, 514 U.S. at 557).
124. Id. at 22.
125. Id.
ity or a predictable impact on future commercial activity."126 Here, however, the "statutory scheme that the Government is defending (CSA) is at the opposite end of the regulatory spectrum."127 The Court reasoned that "[p]rohibiting the intrastate possession or manufacture of an article of commerce is a rational (and commonly utilized) means of regulating commerce in that product."128 The Court concluded by reminding the respondents that Congress can regulate things as conceptually simple as supply and demand issues: "One need not have a degree in economics to understand why a nationwide exemption for the vast quantity of marijuana (or other drugs) locally cultivated for personal use may have a substantial impact on the interstate market . . . ."129 Therefore, the Court reversed the Ninth Circuit's injunction and affirmed that Congress can criminalize wholly intrastate conduct even in Lopez's Third Category cases.

Raich appears to allow federal regulation of "wholly intrastate conduct in some Lopez Third Category cases. Certainly its invocation of the rational basis test—entirely absent from Lopez and Morrison—provides fresh hope to proponents of federal criminal enforcement."130 Raich effectively explores the language of Lopez and Morrison and "asses the validity of [the] Lopez Third Category statutes solely be reference to whether or not the conduct they regulate is properly characterized as 'economic.'"131 Thus, the Lopez Third Category is isolated, while the other two categories are "set aside" as "distinct" as they do not raise the same federalism concerns.132

The Lopez Third Category is, without a doubt, the primary focus of all modern Commerce Clause jurisprudence.133 The Court has not had occasion to "address directly the constitutionality of any First or Second Category statute."134 The Lopez line of cases exempts any First and Second Category statutes from the economic/non-economic analysis used in the Third Category.135 Yet, federalist scholars have a difficult time accepting this limitation:

... [S]cholars and criminal defense lawyers alike have sought to extend Lopez's principles to First and Second Category cases, ar-

126. Id. at 23.
127. Id. at 24.
128. Id. at 26.
129. Id. at 28.
131. Id.
132. Id.
133. Campbell, supra note 130, at 234.
134. Id. at 234–35.
135. Id. at 235.
guing that Lopez should be construed to place any and all intra-
state, violent, noneconomic crime beyond the power of Congress
to regulate regardless of its impact on the facilities or channels of
commerce. 136

Arguably, these concerns find their genesis in Justice Breyer’s dissent in
Morrison. Breyer found the majority’s economic/noneconomic distinction
“unworkable.” 137 “[I]n a world where most everyday products or their com-
ponent parts cross interstate boundaries, Congress will frequently find it pos-
sible to redraft a statute using language that ties the regulation to the
interstate movement of some relevant object, thereby regulating local crimi-
nal activity. . . .” 138 In essence, Justice Breyer noted that the economic/
noneconomic distinction was meaningless and argued that such “murkiness
called out for a rational-basis standard of review that would have Congress,
rather than the Court, draw these difficult lines.” 139 Though Breyer’s dissent
has molded the way scholars think about the Commerce Clause in relation to
various Third Category statutes, it has not permeated Congress’ decision
making or drafting as of yet. This will become particularly clear in the real
life example of the Internet and 3-D printing technology.

B. The Internet and the Stream of Commerce

The Internet raises some profound questions about the relationship be-
tween the many states and the federal government. The Internet is without
border. It affects most aspects of our daily lives from communication to fi-
nancial transactions to travel. According to a recent Pew Internet and Ameri-
can Life Project study, nearly 85% of Americans are online. 140 The number
of people who have Internet in their homes is slightly lower—72%. 141 How-
ever, it is indisputable that the Internet has a profound impact on our society,
both economically and non-economically. In fact, several courts have argued
that the Internet is an instrumentality of interstate commerce. The impact of
this analysis reveals that the Internet must be recognized as an “instrumental-
ity” and subject to regulation and Commerce Clause considerations.

In American Libraries Ass’n v. Pataki, the plaintiffs:

136. Id.

137. Id.

(Breyer, J., dissenting)).

139. Campbell, supra note 130, at 236.

140. Caitlin Dewey, The 60 Million Americans Who Don’t Use the Internet, in Six
com/blogs/the-switch/wp/2013/08/19/the-60-million-americans-who-dont-use-
the-internet-in-six-charts/.

141. Id.
"represent[ed] a spectrum of individuals and organizations who use the Internet to communicate, disseminate, display, and access a broad range of communications... including American Library Association, ... American Booksellers Foundation for Free Expression ... Association of American Publishers ... Bibliobytes ... Interactive Digital Software Association ... American Civil Liberties Union ..."142

The defendants were the Governor and Attorney General of New York.143 The plaintiffs sought to challenge the New York Penal Law § 235.21 (the Act) which sought to criminalize the communication and distribution of "nudity, sexual conduct or sado-masochistic abuse, ..." to minors.144 The court argued that the "Internet is a decentralized, global communications medium linking people, institutions, corporations, and governments all across the world."145 The court described the Internet as a "network or networks" that was "capable of rapidly transmitting communications without direct human involvement or control."146 The information on the Internet is "as diverse as human thought."147 The diversity of human thought carries the good and the bad.

Access to the Internet is available through a number of avenues. "Students and faculty often obtain access via their educational institutions; similarly some corporations provide their employees with direct access to the Internet. Individuals ... can access the Internet via a community network or a local library that provides direct or modem access ... "148 Now people can access the Internet via cellular phone networks and residential and commercial wi-fi hotspots.

The court makes a salient argument about the nature of the Internet and its connection to interstate commerce by finding the Act in violation of the Commerce Clause:

The Internet is wholly insensitive to geographic distinctions. In almost every case, users of the Internet neither know nor care about the physical location of the Internet resources they access ... The majority of the Internet addresses contain no geographic clues and, even where an Internet address provides such a clue, it may be misleading ... Moreover, no aspect of the Internet can feasibly be closed off to users from another state. An Internet user

143. Id. at 163.
144. Id.
145. Id. at 164.
146. Id.
147. Id.
who posts a Web page cannot prevent New Yorkers or Oklahomans or Iowans from accessing that page and will not even know from what state visitors to that site hail. Nor can a participant in a chat room prevent other participants from a particular state from joining the conversation . . . . Commercial use of the Internet, moreover, is a growing phenomenon . . . . In addition, many of those users who are communicating for private, noncommercial purposes are nonetheless participants in interstate commerce by virtue of their Internet consumption. Many users obtain access to the Internet by means of an on-line service provider . . . which charges a fee for its services . . . . The inescapable conclusion is that the Internet represents an instrument of interstate commerce, albeit an innovative one; the novelty of the technology should not obscure the fact that regulation of the Internet impels traditional Commerce Clause considerations.\(^{149}\)

The court concluded, "the Act places undue burden on interstate traffic, whether the traffic be goods, services, or ideas."\(^{150}\) However, the impact of the court’s decision reaches far beyond the New York Penal Law § 235.21. The court effectively bridged the Internet and Commerce Clause together, and acknowledged that the Internet must be looked at through the Commerce Clause lens because it recognizes no borders, is accessible to almost everyone, and carries with it ideas, goods, and services. Many courts have shared the holding in \(\text{Pataki},\) mostly courts considering child pornography issues. For example, in \(\text{United States v. Penton},\) an 11th Circuit case, the court held that the government’s evidence “was sufficient to establish the interstate commerce element of each of the crimes” when they showed evidence that Penton showed child pornography to a minor.\(^{151}\) Penton had stored and displayed the indecent material on a computer and the computer, which was built from parts manufactured outside of the United States.\(^{152}\) The court also noted that it “is well-settled that the Internet [sic] is an instrumentality of interstate commerce.”\(^{153}\)

In \(\text{United States. v. Faris},\) an 11th Circuit case, the court acknowledged that the Internet was an instrumentality of interstate commerce even when the purposes of the use are primarily intrastate.\(^{154}\) The court reasoned, “[e]ven if none of Faris’ communications were routed over state lines, the internet and telephone he used to contact the undercover officer were still ‘instrumental-

\[^{149}\text{Id. at 170–73.}\]
\[^{150}\text{Id. at 173.}\]
\[^{151}\text{U.S. v. Penton, 380 Fed. Appx. 818, 820 (11th Cir. 2010) (For a full treatment of this issue, see Cambell, supra note 130, at 234).}\]
\[^{152}\text{Penton, 380 Fed. Appx. at 820.}\]
\[^{153}\text{Id.}\]
\[^{154}\text{See United States v. Faris, 583 F.3d 756, 759 (2009).}\]
ties of interstate commerce." Therefore, 18 U.S.C. § 2422(b), which prohibits using a facility of interstate commerce to entice a minor to engage in sexual activity, does not violate the Commerce Clause.155

In United States v. Lane, another 11th Circuit case, the court found that "Congress clearly has the power to regulate the internet, as it does other instrumentalities and channels of interstate commerce, and to prohibit its use for harmful or immoral purposes regardless of whether those purposes would have a primarily intrastate impact."156 Lane cited United States v. Hornaday, which pointed out that the Commerce Clause power is plenary and Congress "may reach and prohibit the use of telephone or the internet . . . . The communication does not have to be directly with the victim."157 The court also dismissed Hornaday's argument that 18 U.S.C. § 2422(b) punished him for exercising free speech activities protected by the First Amendment, noting that "[s]peech attempting to arrange the sexual abuse of children is no more constitutionally protected than speech attempting to arrange any other type of crime."158 The Hornaday court essentially reasoned that the Internet is an instrumentality of interstate commerce and Congress can regulate it regardless of whether the use is fundamentally intrastate.

Finally, in United States v. Trotter, the court reasoned that "[t]he Internet is an international network of interconnected computers and is comparable to 'a sprawling mall offering goods and services.'"159 Computers, according to the court, are "both the means to engage in commerce and the method by which transactions occur . . . ." and are thus instrumentalities of commerce and a channel of interstate commerce.160

Pataki and the decisions that followed all point to the fact that the Internet is both an instrumentality of commerce and a channel of interstate commerce. This is significant because it allows Congress to regulate the medium in which so many conduct everyday transactions. Further, if Congress can regulate the Internet to prohibit immoral or harmful use of the "channel" the door opens for regulatory Big-Brotherness to take hold. While the regulation and prohibition of child pornography will have few dissenters, the regulation of designs of 3-D plastic guns available via a website may find passionate dissent among gun rights advocates and small government supporters alike.

155. Id.


158. Id.

159. United States v. Trotter, 478 F.3d 918, 921 (8th Cir. 2007) (citing Reno v. ACLU, 521 U.S. 844, 850 (1997)).

160. Id. at 921.
C. The Undetectable Firearms Act of 1988

The Undetectable Firearms Act of 1988 reads:

(a) PROHIBITIONS.—Section 922 of title 18, United States Code, is amended by adding at the end the following: "(p)(1) It shall be unlawful for any person to manufacture, import, sell, ship deliver, possess, transfer, or receive any firearm—"(A) that, after removal of grips, stocks, and magazines, is not as detectable as the Security Exemplar, by walk-through metal detectors calibrated and operated to detect the Security Exemplar; or (B) any major component of which, when subjected to inspection by the types of x-ray machines commonly used at airports, does not generate an image that accurately depicts the shape of the component. Barium sulfate or other compounds may be used in the fabrication of the component.161

Section (p) of the Undetectable Firearms Act (the Act) is the overarching guideline that all firearms must meet to be legal. Most of the discussion about the Act revolves around Second Amendment issues and the Act itself is usually a side comment. In fact, many articles have been dedicated to 3-D printed guns and potential effects on individual rights.162

The Act is typically taken as a whole and used in a wide variety of ways to regulate unlawful use or possession of firearms. For example, in an Eastern District of New York case, the defendant was caught with an inoperable firearm after fleeing police.163 The gun was "no more effective . . . than a water gun."164 Section 922(p) was used to define a firearm grip.165 Despite the ineffectiveness of his firearm, the defendant was sentenced to 15 years in prison.166

The Act was recently up for renewal and amendment in part because of the video posted by Defense Distributed.167 The U.S. Senate addressed con-

164. Id.
165. Id. at n.1.
166. Id. at *1.
167. See Keith Wagstaff, Despite Plastic Gun Ban, 3-D Printed Firearms Still Have a Future, NBC NEWS (Dec. 9, 2013 at 8:02 PM), http://www.nbcnews.com/
cerns about criminals' ability to arm themselves with a simple [Control + Alt + P]. The legislation "continues the ban on the sale or possession of firearms that aren't detectable by X-ray machines or metal detectors . . . ."168 The idea is that 3-D printed guns will fall into that category, and will regulate the new technology under the old Act.

IV. AN INEVITABLE PROBLEM AND TWO POSSIBLE SOLUTIONS

A. An Inevitable Problem

Technology is both a solution and a problem. Advancements in technology are typically offered as a solution to a problem. Whether the problem is how to travel from point A to point B, how to lift X from here to there, or simply how to cure boredom, technology seeks to answer the question of "How?" How do we do this more efficiently? How can we cross the Atlantic more quickly? Typically, technology does not have to ask permission either. Someone invents something and later society decides whether everyone should have it, whether it should be restricted, or whether it should be outlawed. History gives us many examples: the gin mill, the machine gun, and the automobile.

Society, and the law that governs it, is usually reactionary. The law acts to the advancement in technology, deciding whether or not it is socially, morally, or legally acceptable. The only category that is dispositive is whether or not something is legally acceptable. Social and moral acceptability can provide for interesting discussions and perhaps even persuade lawmakers, but inventions that promote things that are socially or morally unacceptable may still find legal support.

This brings up the question of what to do with the prospect of printing a 3-D, fully plastic firearm on a printer that anyone can own? The CAD plans are available and distributed on the Internet and the raw materials are very inexpensive. The printers, as noted above, are relatively affordable and becoming more so as the technology advances. Combine the ease of design with the affordability of the materials and technology, and Cody Wilson's dream of everyone in America having access to these weapons is not far-fetched.169

This proposes a two-fold problem: (1) Is the current law (The Undetectable Firearms Act of 1988) capable of regulating this growing field of technology? and (2) If not, then how can it be regulated? As to the first question, I posit that it is not. The current law is outdated, overly-broad, and fails to pinpoint the real problem—access. To the second question, I propose the

168. Id.

169. See Greenberg, supra note 28.
regulation does not focus so much on the gun, but rather on the access to the design via the Internet.

The second answer (the solution) is controversial and the regulation of the Internet in this capacity would need to be parsed out very carefully. This Comment does not seek to propose legislation, but rather prove that it can be justifiably done through the Commerce Clause. The Commerce Clause itself offers two different solutions: the first is regulation of the Internet as stream of commerce; the second is using a Wickard analysis to justify regulation of purely intrastate activities that substantially impact the stream of commerce. As will be discussed presently, the current Act is not sufficient to regulate this growing technological trend. While the regulation of the Internet and the restriction of information may seem a tad Big Brother, the Commerce Clause and current common law are poised to allow Congress to do so. The only real unknown is how the law will react to the solution technology provided.

B. The Act and Its Shortcomings

The Undetectable Firearms Act of 1988 is obsolete as it reads. The Act requires that every gun manufactured must contain barium sulfate and take the form of something looking like a firearm if it were to go through an x-ray machine like the ones in airports. Clearly, the Act deals more with manufacturers and less with any ill-willed possessors of the firearms who want to remove the barium sulfate to escape detection. But the Act does not articulate much outside of these two requirements. It does not ban printing your own firearms out of plastic. A home manufacturer could easily place a piece of barium sulfate into a plastic firearm to meet the requirement. There are two issues with the Act. The first concerns its focus and the second concerns its future.

The Act's focus is on the weapon after it has been manufactured. The gun is made and it better look like a gun and it better have a piece of metal in it large enough to set off a metal detector. For most guns this is not an issue. The majority of the gun is made out of metal, the bullets have metal casing, and the firing pin is metal. A 3-D printed firearm is only slightly different: the bullets have metal cases, the firing pin must be metal, and everything else is plastic. As Representative Steve Israel, D-N.Y. said, "In 1988, when we passed the Undetectable Firearms Act, the notion of a 3-D printed plastic firearm slipped through metal detectors, onto our planes in secure environments was a matter of science fiction."\(^{170}\) However, the problem is now a reality. Some Democratic senators pushed for stricter controls including "3-D printed guns having permanent metal components,"\(^{171}\) obviously foreseeing the ability of manufacturers to easily remove the metal strips. In the end, however, the Act was simply renewed, thus the regulations for 3-D printed firearms are the same today as it was when the Act was passed.

\(^{170}\) Wagstaff, \textit{supra} note 167.

\(^{171}\) Id.
For pioneers in this area of technology like Cody Wilson, Congress' inability to change the Act is both good and bad, "[a]s the technology is adopted and gets more popular, it looks like 3-D printed guns have a future now . . . . I'm still expecting more restrictions as a result of this law being passed." 172 However, the focus of this particular regulation is not on how to control the technology, but rather, what to do with the firearm once it has been printed. This focus is a fundamental flaw that opens a huge can of societal worms known as the Second Amendment.

The Second Amendment is hotly contested and is becoming more so with each new tragedy. Whether it is the unthinkable event that occurred at the Sandy Hook Elementary School in Newtown, Connecticut in 2012 or the shooting in a theater in Aurora, Colorado, it seems both sides dig in a little deeper. Analyzing the merits of the Second Amendment and an individual's right to own and possess a firearm are outside the scope of this comment. The issue that remains relevant to 3-D printing technology is the focus of the Act. The focus is on the gun after it is made, not on how it is obtained. This is a major shortcoming of the Act and is the reason it is not a major threat to the technology as it is.

Further, the future of the Act is may be in question following the District of Columbia v. Heller decision which could be interpreted to "support a general right of individuals to manufacture their own firearms." 173 In Heller, the Court analyzed whether the District of Columbia's prohibition on the possession of a usable handgun in the home was a violation of the Second Amendment. 174 The law required residents to "keep their lawfully owned firearms, such as registered long guns, 'unloaded and disassembled or bound by a trigger lock or similar device' unless they are located in a place of business or are being used for lawful recreational activities." 175 The Court turned its attention to the Second Amendment and its natural division into prefatory and operative clauses. 176 Justice Scalia reasoned that the prefatory clause did not limit the operative clause grammatically, "but rather announces a purpose." 177 According to Scalia, the amendment could be reordered to read, "Because a well regulated Militia is necessary to the security of a free State, the right of the people to keep and bear Arms shall not be

172. Id.


175. Id. at 575.

176. Id. at 577.

177. Id.
infringed."\textsuperscript{178} Scalia believed that the operative clause codified "the right of the people" meaning that the right is an individual right.\textsuperscript{179}

However, Justice Scalia's opinion had some tacit implications for the future of gun regulation. The holding of the case is relatively narrow: citizens can possess firearms in their homes. The dicta, on the other hand, is expansive. For example, Scalia's opinion seems to extend protection to modern firearms. Scalia makes the analogy, "[j]ust as the First Amendment protects modern forms of communications, and the Fourth Amendment applies to modern forms of search, the Second Amendment extends, prima facie to all instruments that constitute bearable arms, even those that were not in existence at the time of the founding."\textsuperscript{180} Some have argued that this can be interpreted to support "a general right of individuals to manufacture their own firearms."\textsuperscript{181} Under \textit{Heller}'s own historical analysis, "home-manufacture is not among the 'presumptively lawful' exceptions to Second Amendment protection and indeed appears to be supported in our nation's tradition."\textsuperscript{182}

Further, under \textit{Heller}'s "longstanding prohibitions," home manufacture for protection is not excluded.\textsuperscript{183} The list of exceptions is not exhaustive, yet "no regulation, longstanding or otherwise, has controlled personal firearm manufacture." Also, "personal manufacture remains almost entirely unregulated. Specifically, Congress has always defined a firearm 'manufacturer' as one who operates for 'the principal objective of livelihood and profit.'"\textsuperscript{184}

Therefore, if the Undetectable Firearm Act of 1988 seeks to regulate 3-D printed firearms, the Supreme Court and \textit{stare decisis} may have left home-manufactured firearms on the table. The Act clearly does not focus on the manufacture of the firearms, but rather their makeup once produced. Moreover, if \textit{Heller} is interpreted to support the right of home-manufactured firearms, then the advent of 3-D printed plastic firearms appears to raise significant issues for Congress seeking to regulate the technology.

C. The Commerce Clause, Internet, and 3-D Printing of Plastic Firearm Regulation

Legislation has typically struggled to keep pace with technology. It is no different with 3-D printing of firearms. As shown above, Congress attempted to address the issue through the Undetectable Firearms Act but has failed. This leaves Congress with a problem and no solution. If the current Act can-

\textsuperscript{178} \textit{Id.}
\textsuperscript{179} \textit{Id.} at 578.
\textsuperscript{180} \textit{Heller}, 554 U.S. at 582.
\textsuperscript{181} Jensen-Haxel, \textit{supra} note 162, at 474.
\textsuperscript{182} \textit{Id.} at 475.
\textsuperscript{183} \textit{Id.} at 479.
\textsuperscript{184} \textit{Id.}
not regulate 3-D printed plastic firearms, then Congress will need to look to the Commerce Clause to do so. However, passing legislation to regulate firearms is a difficult task, especially with the strong lobbying presence of the National Rifle Association. However, there are two possible solutions that would allow Congress to regulate the new technology without encroaching on the Second Amendment and an individual's right to own and possess a firearm. Both solutions rely on the Commerce Clause.

The first solution is to regulate the Internet through the *Lopez* stream of commerce analysis. 3-D printed firearms rely heavily on a home manufacturer being able to access designs online. Therefore, by making an analogous argument to some Internet regulations that already exist, it is to regulate and restrict the ability to access the designs for the average Internet consumer.

The second solution requires a *Wickard* analysis. 3-D printers are easily accessible and relatively affordable. One can imagine the day that the 3-D printer becomes as common a household electronic as the current printer is today. Much like the farmer who withheld grain for his own consumption, a home manufacturer of 3-D printed plastic firearms could significantly impact the stream of commerce. The gun industry is a $33 billion industry. If the technology were widely available and allowed anyone to print his or her own firearms, then the gun industry could be dramatically affected if the home manufacturing is taken in the aggregate.

Both of these solutions are plausible under the current interpretation of the Commerce Clause by the Supreme Court. While it is unclear whether Congress will (or can) come up with a solution given its inability to make a simple amendment to the Undetectable Firearms Act, there is no doubt that 3-D printing will continue to be at the forefront of the political and legal conversation going forward.

i. The Internet and its Discontents

The first solution to the inevitable problem of home manufactured, 3-D printed firearms is to regulate access to the information online. As discussed above, potential manufacturers can access the CAD designs online and print the firearm. Access to the type of information that could lead to access to a deadly weapon, raises concerns about Internet safety. Congress has already shown the ability to regulate aspects of the Internet that violate moral or societal mores. A prime example of this is the Adam Walsh Act,\[185\] which seeks to protect children from sexual exploitation. Examples like the Adam Walsh Act could provide a template as well as a precedent for Congress to use its Commerce Clause power to regulate access to 3-D firearm CAD designs.

Title II of the Adam Walsh Act "contains numerous provisions amending existing federal crimes to address gaps and enhance penalties, all in the

interest of protecting children, but with a determined and specific focus on Internet safety.”

Campbell focuses on Title II, § 213, entitled “Kidnapping Jurisdiction.” Title II, according to Campbell, “amended 18 U.S.C. § 1201(a)(1) to create the expanded federal jurisdiction at issue . . . Specifically, Title II, § 213 of the Adam Walsh Act amended the Federal Kidnapping Act, 18 U.S.C. § 1201(a)(1).” The new 18 U.S.C. § 1201(a)(1) reads: “Section 1201 of title 18, United States Code, is amended—(1) in subsection (a)(1), by striking ‘if the person was alive when the transportation began’ and inserting ‘or the offender travels in interstate . . . commerce or uses the mail or any means, facility, or instrumentality of interstate . . commerce in committing or in furtherance of the commission of the offense . . . .’”

The most significant change to existing federal jurisdiction in kidnapping cases is the addition of federal jurisdiction over kidnappings “in which the perpetrator uses facilities or instrumentalities of interstate commerce in committing or in furtherance of the crime.” For the purposes of this Comment and Campbell’s article, the instrumentality is the Internet. As Campbell points out, Congress’s concern with the Internet safety “arose out of a legitimate federal interest: the need to keep the important economic tool of the Internet safe for use, rather than having it subverted by sexual predators who take advantage of its anonymity to lure child victims.”

The Adam Walsh Act provides an important example of Congress’s identification of the societal threat of child predation through the Internet, and using the Commerce Clause, more specifically the Lopez Second Category, to regulate the issue.

The Internet is a clear instrumentality of interstate commerce. The question is whether Congress should regulate access to 3-D firearm CAD designs. The answer to this question will be highly charged politically and is outside the scope of this Comment. However, with approximately thirty-two mass shootings since Columbine, the idea that firearms can simply be printed in a person’s living room regardless of age or mental wellness demands a serious look at the possibility of regulation. Answering in the affirmative would require drawing an analogy to other instances in which Congress has regulated the Internet, such as the Adam Walsh Act. However, would Congress be stretching the limits of its Commerce Clause power by regulating 3-D

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186. Campbell, supra note 130, at 239.
187. Id.
188. Id. (citing 120 Stat. at 616 (codified at 18 U.S.C. § 1201(a)(1) (2006))).
189. Id.
190. Id. at 240.
printed firearms? A line must be drawn somewhere. While using the Commerce Clause to protect children from online predators should raise few objections from a societal interest standpoint, doing so to regulate access to firearms will be far more controversial.

Whether or not Congress should regulate 3-D printed firearms is a debate for another time. The question of whether or not Congress can regulate firearms is a little clearer. Drawing from the Adam Walsh Act and the American Library Ass’n v. Pataki decision, Congress and the Supreme Court indicated that the Internet is fair game for Commerce Clause regulation. The Second Category of the Lopez analysis opens the door for Congress to enact legislation that regulates and protects the “instrumentalities” of interstate commerce, even if the threat only comes from intrastate activities.\textsuperscript{192} Thus, even if a CAD design was created by the manufacturer and then printed on a 3-D printer at his or her own home, the production of the firearm involves an “instrumentality” and can be regulated. The Lopez decision is broad in this sense and allows the Court and Congress significant leeway in deciding Commerce Clause jurisprudence. As the Pataki decision noted, “[t]he inescapable conclusion is that the Internet represents an instrument of interstate commerce, albeit an innovative one; the novelty of the technology should not obscure the fact that regulation of the Internet impels traditional Commerce Clause considerations.”\textsuperscript{193} The 3-D printing technology is here and, although novel, should not obscure the need for a traditional Commerce Clause consideration. The question of whether or not Congress can regulate Internet access to 3-D printed firearm designs is answered by conducting a Lopez analysis. Congress has already used Lopez’s Second Category to regulate the Internet in a child predation situation through the Adam Walsh Act. Therefore, Congress could do the same with 3-D printed firearm design on the premise of protecting and regulating the instrumentalities of interstate commerce.

Further, regulating access to the information via the Internet could also help avoid any Second Amendment issues that may arise. The Second Amendment gives the people the right to keep and bear arms.\textsuperscript{194} The amendment reads, “A well regulated Militia, being necessary to the security of a free State, the right of the people to keep and bear Arms, shall not be infringed.”\textsuperscript{195} The Heller decision interpreted the Second Amendment as giving an individual the right to keep and possess a firearm in his or her home. 3-D printing of firearms at home, which would proliferate access and ownership, creates a noticeable tension between the Supreme Court’s decision in Heller and Congress’s desire to regulate the technology. This tension is likely to draw the attention of lobbying groups such as the National Rifle Association.


\textsuperscript{194} U.S. CONST. amend. II.

\textsuperscript{195} Id.
Interestingly, however, the NRA was silent during Congress’s deliberations about the Undetectable Firearms Act. This could be because the NRA realized that Congress was not going to be able to amend the act in any meaningful way and therefore decided to let nature run its course. Or, perhaps the silence was a sign of something else.

The NRA identifies itself as “America’s longest-standing civil rights organization . . . [and] proud defenders of history’s patriots and diligent protectors of the Second Amendment.” One would think that the advent of this new technology would garner support from the NRA to groups like Defense Distributed. However, “the development of new 3-D technology that could dramatically increase the number of available weapons—and competition to gun manufacturers—these two competing pressures are at odds.”

As Joshua Sager points out, “[T]he NRA faces a test: Will it back the new technology and promote the rights of everyone to have unlimited guns? Or, in an effort to protect its generous contributors, chart a different path?”

The NRA, “takes millions of dollars a year from the largest manufacturers of guns, including Beretta and Benelli USA, as well as companies that make gun accessories and companies that require easy access to weapons . . . .” Will the NRA back the individual’s right to greater access to guns, or will the NRA feel the pressure of its pocketbook? Backing any legislation that regulates access to the information could come across as reasonable by showing that the NRA is “willing to compromise” on gun control. Also, by attacking the access to the CAD designs on the Internet, both Congress and the NRA can effectively avoid a Second Amendment argument. The NRA saves face and Congress avoids dealing with the NRA’s strong arm.

Therefore, while gun control is a contested topic in the United States and 3-D printing seems to be able to put greater access to a larger arsenal into the hands of every individual, regulating access via the Internet could allow Congress an avenue to restrict a potentially dangerous technological advancement without treading upon the Second Amendment. Further, groups like the NRA may see great benefit in supporting such legislation because of the potentially damaging effect it would have on their bottom line.

**ii. An Aggregate Effect: The Farmer’s Market**

Another possible outlet for Congress to exercise its Commerce Clause power is through a Wickard analysis. One of the main draws of 3-D printing technology is the ability to print things like firearms at home. 3-D printing technology turns the consumer into the manufacturer and allows an individ-

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197. Sager, supra note 2, at 19.
198. Id.
199. Id.
200. Id.
ual to create and produce nearly anything imaginable. For instance, the UK-based company, PrinterInks, has teamed up with Organovo to print functional human tissue for medical research and therapeutic applications.\(^\text{201}\) Obviously, home manufacturing of human organs is far-fetched and not incredibly useful to the average consumer, but the fact that it is possible illustrates the far-reaching capabilities of this technology. 3-D printing of firearms also could greatly negatively affect the $33 billion gun industry, much like the Supreme Court found Filburn’s personal crops affected the agricultural industry.

The gun industry in America is enormous. In aggregate, the industry supports approximately 220,000 jobs, which is more than twice as many as corporate giant General Motors.\(^\text{202}\) The gun industry is made up of thousands of small businesses and a few giant corporations like Smith & Wesson and Remington.\(^\text{203}\) These thousands of small businesses are divided across the country and provide jobs in every state in the Union. Idaho’s economy, for example, benefits enormously from the gun industry as it is home to one of the largest ammunition manufacturers in the United States—ATK Sporting.\(^\text{204}\) Idaho’s firearm businesses bring in an estimated $512.7 million in revenue each year and provide 3,116 jobs.\(^\text{205}\) Nationally, the number of those employed by the gun industry grew by more than 10% from 2008 to 2010.\(^\text{206}\) In 2012, the gun industry was estimated to be worth $33 billion dollars with $5 billion in tax revenues to the federal government.\(^\text{207}\) For Texas, the economic contribution of the gun and ammunition industry is an incredible $2,213,737,414, making it the second highest grossing state for that industry behind California’s $3,798,233,534.\(^\text{208}\)

The reason this industry is so enormous is the fact that 47% of American adults own at least one firearm in their home or property.\(^\text{209}\) America’s gun industry consists of 5,441 makers, 1,895 manufacturers of ammunition,


203. Id.

204. Id.

205. Id.

206. Id.

207. Id.


209. Id.
48,676 dealers, 7,075 pawnbrokers, 59,227 collectors, and 811 importers.\textsuperscript{210} Further, most guns made in the United States are sold in the United States Of the 6.54 million guns produced in 2011, only 296,888 were sold in export markets.\textsuperscript{211} Compare this with other industries, such as the automobile industry, where a manufacturer like GM who sells only 30\% of the automobiles produced in the United States.\textsuperscript{212} In all, from 1986 to 2011 some 2,228 United States companies produced more than 106 million firearms.\textsuperscript{213} Thus, while economic titans, like ExxonMobil, which generated $450 billion in 2012 overshadow the gun industry, it is still a significant percentage of the U.S. economy and creates a large number of jobs in each state.

The advent of 3-D printed firearms stands to jeopardize the flourishing gun industry. Congress has a strong interest in protecting important economic industries like the auto industry, the firearm industry, and the agricultural industry. And much like the Agricultural Adjustment Act in \textit{Wickard v. Filburn}, Congress will want to protect the gun industry by regulating consumers’ ability to manufacture their own firearms. The Court there noted that Filburn’s actions did not in and of themselves “affect commerce,” but if every farmer did the same thing then “[h]ome-grown wheat . . . competes with wheat in commerce.”\textsuperscript{214} It would also be unfair to penalize those who did not grow wheat by forcing them into the market and allowing those who did grow wheat to be immune from having to participate in that same market.\textsuperscript{215} The Court also noted, “[t]he conflicts of economic interest between the regulated and those who advantage by it are wisely left under our system to resolution by the Congress under its more flexible and responsible legislative process.”\textsuperscript{216} Thus, if Congress believed that the gun industry were truly at risk from the potential proliferation of home-manufactured firearms, then \textit{Filburn} would provide a clear precedent for Congress to act.

Of course, wheat crops and firearms are different. Some could argue that the Agricultural Adjustment Act merely penalized excess wheat stocks, but did not outlaw it. To outlaw the home manufacturing of firearms is therefore not analogous to the \textit{Filburn} decision, it instead stretches it too far. However, this criticism lacks certain muster when seen in the bigger picture of the Commerce Clause. The Commerce Clause has been interpreted to protect and regulate the instrumentalities of interstate commerce. The \textit{Filburn} decision used an aggregate effects analysis, which forced the Court and, in turn, Congress to consider the entirety of the stream of commerce. To protect

\begin{itemize}
  \item \textsuperscript{210} \textit{Id.}
  \item \textsuperscript{211} \textit{Id.}
  \item \textsuperscript{212} \textit{Id.}
  \item \textsuperscript{213} \textit{Id.}
  \item \textsuperscript{214} Wickard v. Filburn, 317 U.S. 111, 128 (1942).
  \item \textsuperscript{215} \textit{Id.} at 129.
  \item \textsuperscript{216} \textit{Id.}
\end{itemize}
the market, Congress must make a decision as to what is regulated and who
is allowed to take advantage of that regulation. Here, in the instance of 3-D
printed firearms, which threaten to upend a $33 billion industry, Congress
has precedent to consider the technology’s aggregate effect on the entire
stream of commerce. Doing so would likely lead Congress to prohibit home
manufacturing of firearms through 3-D printing. Congress may permit cer-
tain people to manufacture firearms with a permit and under certain circum-
stances, but it is unlikely that Congress will allow the technology to go
unchecked. As the Filburn decision reveals, Congress has the power and the
interest to regulate and protect the gun industry by limiting access to the
technology.

Therefore, Filburn lays the ground work for Congress to regulate the 3-
D printing of firearm’s industry through its aggregate effects analysis. While
it will be contested, the Supreme Court seemingly has given Congress the
power to protect the stream of commerce by considering the overall effect an
action will have on a given industry. Filburn remains good law and bestows
on Congress the ability to restrain the ability to manufacture a firearm
through 3-D printing in one’s own living room by regulating access. How
Congress chooses to protect the gun industry remains to be seen. It will not
likely be a complete prohibition, but rather a permit and registration require-
ment that is steep in cost and severe in penalty if broken.

V. CONCLUSION

3-D printing technology is quickly advancing in many directions. One
direction is the ability to manufacture a firearm in one’s living room. Groups
like Defense Distributed have declared it their goal to bring the ability to
print a fully functional plastic firearm to every home in America. With the 3-
D printers becoming reasonably affordable, Defense Distributed’s goal is not
far-fetched. Unfortunately, Congress missed on its first swipe at addressing
the potential security risk the technology poses. The Undetectable Firearms
Act of 1984 is inadequate as it currently reads to properly regulate the emerg-
ing technology. Additionally; the Act does not address the potential eco-
nomic impact home manufacturing could have on the gun industry.
Therefore, the solution from Congress will need to address the technology
head on through the Commerce Clause. There is a clear precedent from the
Supreme Court that allows Congress the power to protect and regulate the
instrumentalities of interstate commerce. Congress must act in order to keep
up with emerging technologies, especially when they pose significant eco-
nomic threats.

The first avenue for Congress to consider is to regulate access to the
information on the Internet. In American Library Ass’n v. Pataki the court
made a compelling argument for the Internet to be subject to regulation just
like any other instrumentality of commerce. Essentially, the Internet substan-
tially affects the stream of commerce by being a major source of transactions
of economic and informational value. Therefore, the Internet falls under the
Lopez Second Category analysis. Because the Internet substantially affects
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The stream of commerce, it thus falls within the zone of Congress's Commerce Clause jurisdiction. While arguments that the Internet should be regulated in any uniform way has yet to be made in the nation's highest court, Congress has already done so in certain circumstances like kidnapping or child pornography.

The second avenue for Congress to consider is to use an aggregated effects analysis as provided in Wickard v. Filburn. The gun industry is a $33 billion industry that employs a significant number of people in each state. 3-D printing technology could jeopardize the industry if, in aggregate, the technology transformed the consumer into a manufacturer of firearms. If the technology becomes as accessible as projected, then this is a likely outcome. As noted, 47% of Americans own at least one firearm. If technology makes access easier and more affordable, then it is likely that more people will produce their own and negatively affect the gun industry. Much like the fear Congress held that if all farmers withheld wheat for personal use then it would negatively impact the agricultural market, so too Congress should rightly fear that the ability to freely manufacture one's own weapons with the relative ease that 3-D printing provides would negatively impact the gun industry, which is a pillar of the U.S. economy.

In conclusion, anytime Congress attempts to regulate access to firearms it is controversial. And while a Second Amendment analysis is outside the scope of this Comment, there are real issues there that Congress would need to weigh carefully before drafting any legislation. However, Congress has a clear ability to regulate and protect the channels of interstate commerce. "Protect" is the vital word in this analysis because projects like Defense Distributed would bring significant changes to the gun industry's market share. Thus, Congress has the ability and the duty to protect the channels of interstate commerce; sometimes even against itself. An all-out ban of 3-D printed firearms is probably out of the question, but limited permits and steep fines or criminal action could be a strong first step in controlling what is likely to be the future of manufacturing. The law has always struggled to keep pace with technology and 3-D printing is no different; yet, the stakes are high and advancements are moving at a rapid pace. Congress will act. Congress has the power and precedent to protect and regulate the stream of commerce by restricting access to information on the Internet or denying the ability to home-manufacture certain products like firearms.