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INSIGHT

Gun Control: 3D-Printed Firearms

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August 7, 2018

In May 2013, Defense Distributed, a federally licensed firearms manufacturer, posted on its website computer assisted design (CAD) files for three dimensional-printing (3D-printing) of a single-shot, smoothbore, .380 caliber pistol that could be made almost entirely with non-metallic material. The design of this firearm, the "Liberator," does not appear to violate the Undetectable Firearms Act of 1988 (18 U.S.C. §922(p)), because it includes the requisite amount of steel. This statute prohibits the manufacture, importation, transfer, or possession of any firearm that

- is [not] detectable to "walk-through metal detector[s]" calibrated to detect a security exemplar that resembles a handgun with the same electromagnetic signature as 3.7 ounces of stainless steel; or
- includes major components (barrels, slides, cylinders, frames, or receivers) that generate an [in]accurate image when inspected with "x-ray machines commonly used at airports."

The Liberator's design arguably illustrates a possible shortcoming in this statute. Besides the cartridge casing and projectile (bullet), the only operable metallic part of the firearm is its firing pin. The pistol's design includes a cavity that holds a steel block that is intended to meet the security exemplar detectability requirement described above; however, it is not an operable part of the firearm. The steel block is actually inserted into the cavity after the pistol frame is printed. In other words, it is not permanently embedded into the firearm. Consequently, it could be removed, perhaps allowing a criminal to evade security with an undetected, but still operable firearm.

In May 2013, the Department of State (State) invoked a provision of the Arms Export Control Act (22 U.S.C. §2778) related to technology transfers and ordered Defense Distributed to remove those CAD files from its website. Defense Distributed complied, but it sued State in federal court, arguing that the order violated its First and Second Amendment rights. In April 2018, the parties entered into a settlement that would allow Defense Distributed to upload 3D printer files for firearms and parts, including an AR-15

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lower receiver. A federal judge in Seattle, however, granted an emergency motion filed by eight states and the District of Columbia, temporarily blocking making these files available on the internet.

Non-metallic firearms and, hence, firearms undetectable to metal detectors or unrecognizable to an inspector under an x-ray machines, could possibly be made from materials that are commonly available in most hardware stores, notwithstanding considerable issues related to performance, durability, and safety. The growing availability of "desktop" 3D printers, however, could make such endeavors more efficient and uniform, but perhaps not less costly. There is also the future possibility that issues related to performance, durability, and safety of non-metallic firearms could be overcome with the use of other non-metallic materials and additional improvements in 3D printers.

Also known as additive manufacturing, 3D printers use CAD files to build an object one thin layer at a time, fusing each new layer to the previous layer in an iterative process. While 3D printers have generally become less expensive and commercially accessible, 3D-printer hardware and software capable of fabricating firearms barrels with rifled bores from steel are costly enough that industry experts contend that it is less expensive to produce firearms with computer numerical control (CNC) technology. CNC machines use CAD files to mill, turn, or carve objects from a solid piece of material, as well as drill or punch it, in a subtractive manufacturing process.

Under current law, it is legally permissible for any person to build their own firearm, as long as the builder is not prohibited from possessing a firearm and does not build it with intent to sell it. Home-built firearms have been popularly dubbed as "do-it-yourself" (DIY) firearms. DIY firearms are sometimes referred to as "ghost guns," because unlicensed firearms builders are not required to identify their firearms with a serial number and other markings, whereas licensed manufacturers are required to do so.

The Bureau of Alcohol, Tobacco, Firearms and Explosives and others have suggested that the Attorney General might have sufficient authority under the 1934 National Firearms Act to regulate the Liberator under the designation of "any other weapon," because the pistol is smoothbore. Today, pen, cane, umbrella, and belt buckle guns, as well as certain smoothbore, single-shot handguns, are regulated under this NFA designation. NFA firearms, like machine guns and those discussed above, are more strictly regulated than other firearms under the Gun Control Act of 1968 and must be registered with the Attorney General.

Some Members of Congress have expressed concern that undetectable, untraceable firearms could proliferate with the growing availability of 3D printer technology, allowing criminals to circumvent the law and possibly breach security systems. Senators Bill Nelson, Richard Blumenthal, Ed Markey, and Representative Theodore Deutch introduced the 3D Gun Safety Act (S. 3304/H.R. 6649), a bill to prohibit the publication of 3D printer files for firearms. Senator Nelson and Representative Ruben Kihuen introduced the Undetectable Firearms Modernization Act (S. 533/H.R. 2033), a proposal to amend current law with regard to more advanced screening technologies and detection standards. Representative Adriano Espaillat introduced the Ghost Guns are Guns Act (H.R. 1278), a bill to amend the federal statutory definition of a firearm to include firearms parts kits. Senator Richard Blumenthal and Representative David Cicilline introduced the Untraceable Firearms Act of 2018 (S. 3300 and H.R. 6643), a bill to require all firearms be serialized and marked and major firearms components be wholly constructed of a material detectable to a metal detector. As of August 10, 2018, no further action has been taken on these bills.

The National Rifle Association and National Shooting Sports Foundation, as well as other gun rights groups, maintain that current law adequately regulates firearms manufacturing, including 3D printing of firearms and parts. They maintain that 3D printing does not present a public safety risk, because criminals are not likely to incur the costs and efforts necessary to build firearms with 3D printer technology.