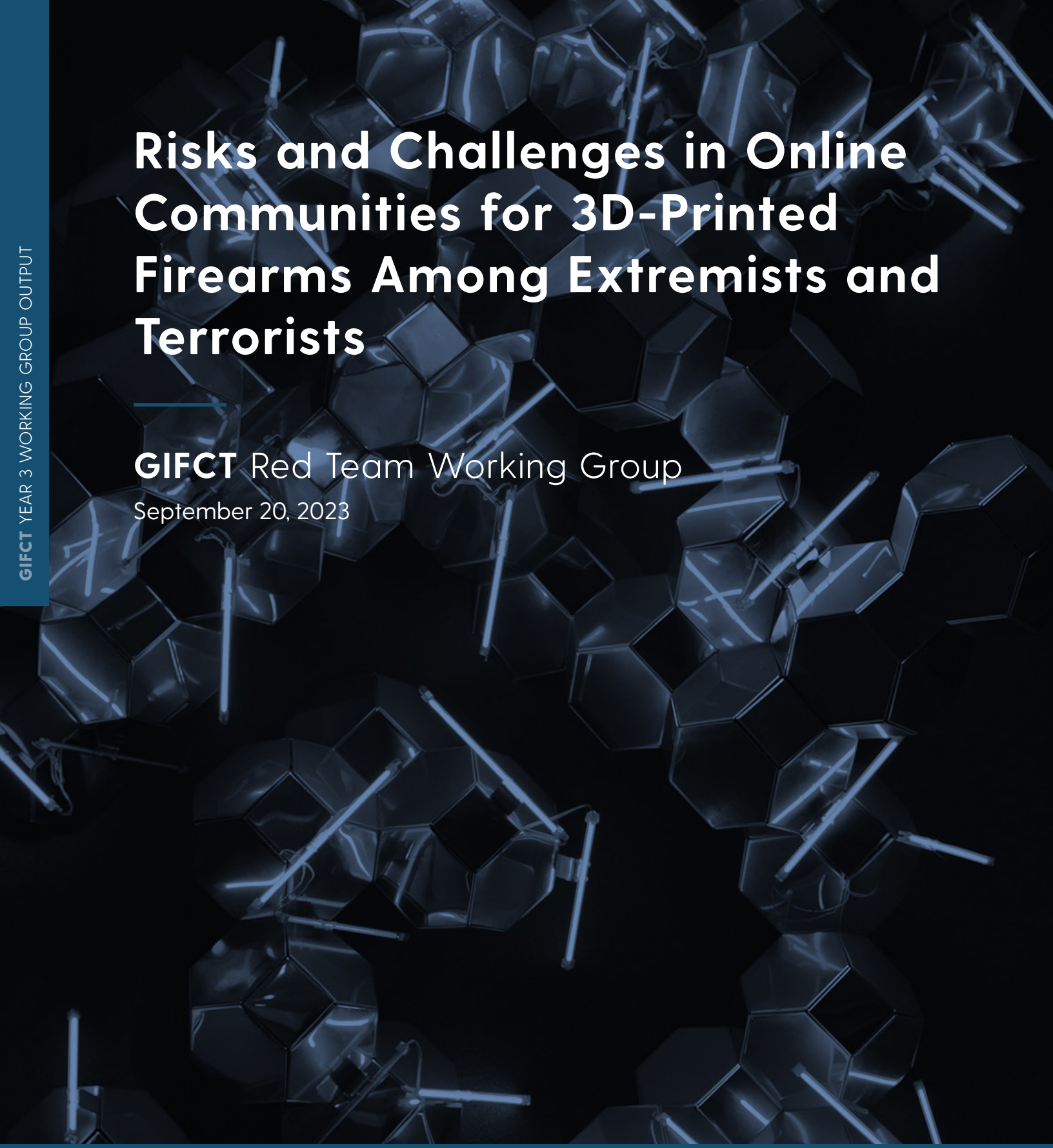
GIFCT YEAR 3 WORKING GROUP OUTPUT

Risks and Challenges in Online Communities for 3D-Printed Firearms Among Extremists and Terrorists

GIFCT Red Team Working Group

September 20, 2023



GIFCT
Global Internet Forum to Counter Terrorism

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About GIFCT Year 3 Working Group Outputs

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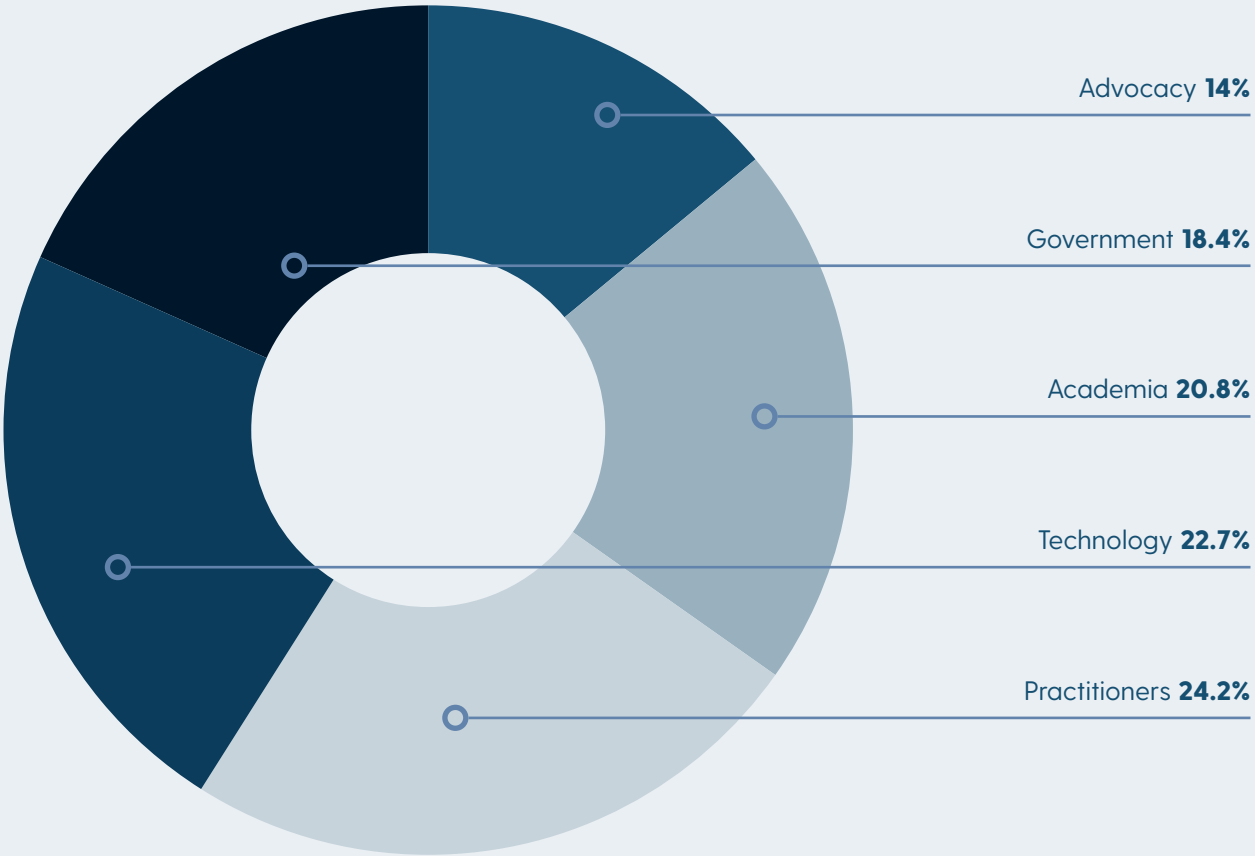
In November 2022, GIFCT launched its Year 3 Working Groups to facilitate dialogue, foster understanding, and produce outputs to directly support our mission of preventing terrorists and violent extremists from exploiting digital platforms across a range of sectors, geographies, and disciplines. Started in 2020, GIFCT Working Groups contribute to growing our organizational capacity to deliver guidance and solutions to technology companies and practitioners working to counter terrorism and violent extremism.

Overall, this year's five thematic Working Groups convened 207 participants from 43 countries across six continents with 59% drawn from civil society (14% advocacy organizations, 20.8% academia, and 24.2% practitioners), 18.4% representing governments, and 22.7% in tech.

WG Participants

Sectoral Breakdown



Beginning in November 2022, GIFCT Year 3 Working Groups focused on the following themes and outputs:

1. **Refining Incident Response: Building Nuance and Evaluation Frameworks:** This Working Group explored incident response processes and protocols of tech companies and the GIFCT resulting in a handbook. The handbook provides guidance on how to better measure and evaluate incident response around questions of transparency, communication, evaluation metrics, and human rights considerations.
2. **Blue Teaming: Alternative Platforms for Positive Intervention:** After recognizing a gap in the online intervention space, this GIFCT Working Group focused on highlighting alternative platforms through a tailored playbook of approaches to further PVE/CVE efforts on a wider diversity of platforms. This included reviewing intervention tactics for approaching alternative social media platforms, gaming spaces, online marketplaces, and adversarial platforms.
3. **Red Teaming: Assessing Threat and Safety by Design:** Looking at how the tech landscape is evolving in the next two to five years, this GIFCT Working Group worked to identify, and scrutinizes risk mitigation aspects of newer parts of the tech stack through a number of short blog posts, highlighting where safety-by-design efforts should evolve.
4. **Legal Frameworks: Animated Explainers on Definitions of Terrorism and Violent Extremism:** This Working Group tackled questions around definitions of terrorism along with the impact that they have on minority communities through the production of two complementary animated videos. The videos are aimed to support the global counterterrorism and counter violent extremism community in understanding, developing, and considering how they may apply definitions of terrorism and violent extremism.
5. **Frameworks for Meaningful Transparency:** In an effort to further the tech industry's continued commitment to transparency, this Working Group composed a report outlining the current state of play, various perspectives on barriers and risks around transparency reporting. While acknowledging the challenges, the Working Group provided cross sectoral views on what an ideal end state of meaningful transparency would be, along with guidance on ways to reach it.

We at GIFCT are grateful for all of the participants' hard work, time, and energy given to this year's Working Groups and look forward to what our next iteration will bring.

To see how Working Groups have evolved you can access Year One themes and outputs **HERE** and Year Two **HERE**.

Risks and Challenges in Online Communities for 3D-Printed Firearms Among Extremists and Terrorists

Introduction

The 2014 Netflix documentary *Print the Legend* delves into the beginnings of consumer 3D printing and the growth of the industry, celebrating the achievements and breakthroughs of 3D printing companies. It also introduces its general audience to the dark side of the technology. Several interviews with Cody Wilson, a Second Amendment activist, illustrate how quickly and easily 3D printers could be put into the service of firearms manufacturing. Wilson's design for a single-shot handgun he dubbed the *Liberator* was published on the internet on May 7, 2013.[1] Since then, the sophistication of 3D-printed firearms has advanced considerably in a relatively short time frame, and weapons enthusiasts as well as extremist actors continue to innovate the technology.

An obvious risk for online communities is that plans for these firearms can be disseminated to easily create homemade lethal weapons. However, online groups are also a gathering place where users are recruited, trained, and energized through overlapping interests in firearms, open-source experimentation, and right-wing extremism. Advocacy groups with thousands of followers or adherents, like *Deterrence Dispensed* and *Fosscad*, share increasingly improved designs for 3D-printed firearms on forums and social media. Today, it is possible to manufacture semi-automatic firearms in a garage or on a kitchen table. With different rules that govern various jurisdictions, keeping users safe while respecting legal rights is complex.

Terrorists can and do make use of many different types of weapons and explosives, but 3D-printed firearms still have the potential for significant impact. Understanding and assessing their capabilities and designs is key to understanding their potential harm. This paper lays out the background and history of the technology before discussing the online risks and offering recommendations.

Additive manufacturing

3D printing falls under the wider heading of additive manufacturing and is part of ongoing developments to involve computer controls in previously analog processes. Since humanity began making tools, approaches for creating new objects can be distilled down to three primary techniques: subtraction (chipping away rock or whittling a stick), molding (pouring gold or other molten material into a sand or concrete mold), or addition (combining pieces into a larger whole). Over time, technological advances

1 Louise Shannon, "The Liberator – the world's first 3D printed handgun," V&A website edited extract from '3D Printing an Empty Space in the Law' by Louise Shannon, and was originally published in Volume 38: The Shape of Law, January 2014, https://www.vam.ac.uk/articles/the-liberator-the-worlds-first-3d-printed-handgun.

have allowed for much more efficient and precise ways to move, cut, or deposit material, improving our ability to create ever more sophisticated and innovative objects. Until the 1990s, subtraction easily outperformed additive approaches in precision and speed. Computer Numerical Control (CNC) mills, for example, employ lasers and water jets to automate the cutting and shaping of material to an extremely fine degree. But beginning in the 1980s, additive manufacturing also began to benefit from computer control, leading to 3D printing. This relatively new technology is disrupting industrial production, and the increasingly sophisticated uses to which it has been put have garnered the attention of home hobbyists.[2]

What is 3D printing?

3D printing refers to the construction of 3-dimensional objects by adding minute amounts of material in layers following a computer model representing that object. Originally, 3D printing machines were used for rapid prototyping to create plastic mock-ups, but in the twenty years following their introduction, 3D printers have gained increasingly sophisticated capabilities and are now frequently used for final production purposes. A very large number of 3D printers use a thermoplastic filament, which is fed into a nozzle head where it is extruded and deposited onto a print bed, building up the object as more material is added. Thermoplastic is moldable when heated but reverts to a solid consistency once it cools. They come in a variety of colors or can be transparent.

Types of filament

While thermoplastic continues to be the most common material for 3D printing, by the 1990s 3D printing could also work with metals. Today, there are dozens of choices of materials one can use, from different kinds of plastics and metals to wood, paper, sandstone and minerals – even organic materials.[3] Students at several universities have developed 3D printers capable of employing metals like aluminum, and for less than $1200 can create usable objects such as bicycles.[4]

Firearms production is not immune to advances in 3D printer technology; indeed, as new materials become available, there is the looming worry that they will be used in novel ways for criminal applications. For example, black silicon could be used to manufacture drones, making them virtually invisible to infrared radar.[5] Terrorists and extremists might equally use specialized material to print

2 John M. Jordan, "Additive manufacturing ("3D printing") and the future of organizational design: some early notes from the field," Journal of Organization Design (February 27, 2019): https://doi.org/10.1186/s41469-019-0044-y.

3 Tom Gerencer, "What's the Latest in 3D Printing Materials?" HP Tech Takes, November 2, 2021, https://www.hp.com/us-en/shop/tech-takes/whats-the-latest-in-3d-printing-materials.

4 Clare Scott, "Dutch Students Create a Unique 3D Printed Metal Bicycle with Help from MX3D," 3DPrint.com, February 3, 2016, https://3dprint.com/118086/dutch-students-3d-printed-bike/. Tyler Koslow, "Indian Engineering Students Create Desktop Metal 3D Printer from Scratch," 3DPrint.com, May 19, 2016, https://3dprint.com/134818/hyderabad-metal-3d-printer/.

5 James J. Torrence, "Postscript: Anticipating Future Threats of Unmanned Systems," Small Wars Journal Website, February 28, 2022, https://smallwarsjournal.com/blog/postscript-anticipating-future-threats-unmanned-systems.

firearms, making tracking them considerably more difficult.

At the same time, advances in production have occurred, and the cost of this technology has rapidly come down in price. Good quality 3D printers are now available on sites like Amazon for less than $200. Democratization has given many people access to the technology. Although productive uses far outnumber nefarious purposes, concerns remain regarding the ease with which weapons – particularly firearms – can now be manufactured.

Craft weapons have a long history

The idea of 3D printing weapons has garnered a lot of attention since 2012. Although 3D printing is a relatively new technology, individuals and small groups constructing makeshift weapons is not. While technical definitions of crafted weapons are sparse, terms like 'rudimentary firearms' and 'craft arms' are often heard. In a study on firearms in 2015, The United Nations Office on Drugs and Crime employed this definition: "artisanal, homemade firearms or any firearm that has been assembled using parts and components manufactured for another utility or belonging to other firearms."[6]

There have been several instances of non-state actors using craft weapons that ranged from extremely crude to quite sophisticated. Although their use goes as far back as the invention of gunpowder, in current memory craft firearms have most commonly been used by resistance groups in armed guerrilla conflicts. Such weapons were employed during the Second World War and, more recently, by insurgent forces in Iraq, Syria, and Yemen.[7]

A classic example of a craft weapon was the pistols created by EOKA – the Cypriot Independence Group – in the 1950s. They fashioned a handgun from spent 20mm cartridges attached by wire to a piece of wood roughly whittled into a grip. The guerilla fighters then drilled a hole in the cartridge shell to add gunpowder and a fuse. For ammunition, they inserted a rock, marble, or ball bearing, and then used a lighter to create the combustion needed to propel their chosen projectile.[8]

During the Troubles in Northern Ireland, loyalist paramilitary organizations also constructed a large number of homemade weapons because they didn't have the same supply networks as the Provisional

6 United Nations Office on Drugs and Crime, UNODC Study on Firearms 2015, 2015.

7 G. Hays and N.R. Jenzen-Jones, "Beyond State Control: Improvised and Craft-produced Small Arms and Light Weapons," November 2018, https://smallarmssurvey.org/sites/default/files/resources/SAS-improvised-craft-weapons-report.pdf; Forgotten Weapons, "Improvised & Craft-Built Firearms with Jonathon Ferguson & Nic Jenzen Jones," Small Arms Survey, December 27, 2017, https://www.youtube.com/watch?v=0TMrun-bZLJw&t=294s.

8 Forgotten Weapons, "Improvised & Craft-Built Firearms with Jonathon Ferguson & Nic Jenzen Jones," Small Arms Survey, December 27, 2017, https://www.youtube.com/watch?v=0TMrunbZLJw&t=294s. Reinier Bergman, et al, "The Use of Small Arms and Light Weapons by Terrorist Organisations as a Source of Finance," ICCT, September 28, 2020, https://www.icct.nl/publication/use-small-arms-and-light-weapons-terrorist-organisations-source-finance.

IRA to obtain firearms from the United States and Libya.[9] They were able to produce very high-quality craft weapons through welding and CNC production. These are just two examples of many instances throughout history and around the world where those without access or resources to obtain factory-manufactured firearms were able to fabricate their own.

What's new about 3D-Printed Weapons?

Firearms manufactured with 3D printers range from very crude to highly sophisticated weapons that approach parity with those made by commercial producers. Some, like the *Liberator*, are almost entirely made from 3D-printed parts, while others contain only a small number of thermoplastic parts.

Classes of 3D-Printed weapons

3D-printed firearms are typically classified into one of three classes: fully 3D-printed, hybrids, and kit completions (i.e., an assembly kit that requires a small number of 3D-printed parts).

Fully 3D printed

A firearm where virtually all parts except the firing pin are 3D-printed is considered fully 3D printed (although the firing pin cannot be plastic, a simple hardware store nail can serve the purpose). At present, these weapons are fairly rudimentary and can fire only a few or even a single shot before they are no longer usable. They have been shown to be effective in demonstration videos as well as in tests conducted by various law enforcement agencies.

Hybrid 3D printed

The hybrid version makes use of a mixture of readily available and unregulated components (such as pipes, springs, and bolts) that serve as the pressure-bearing components. These parts can be found in hardware stores and are then integrated with 3D-printed elements. A popular example of this type of firearm is the FGC-9 (discussed below). These weapons can be created for roughly $400 and have been shown in various tests to be as effective as commercially manufactured firearms.

Kit completion

The most reliable 3D-printed firearms are built as a combination of 3D-printed and factory-made pressure-bearing components purchased specifically to create firearms. This type of

9 G. Hays and N.R. Jenzen-Jones, BEYOND STATE CONTROL Improvised and Craft-produced Small Arms and Light Weapons, November 2018, Published in Switzerland by the Small Arms Survey. Luca van Der Heide, "3D Printed Guns: Origins, Legality, Types & Status," Craftcloud, April 26, 2022, https://all3dp.com/1/3d-printed-gun-firearm-weapon-parts/.

weapon tends to be more expensive. Depending on the jurisdiction, they can be regulated (and therefore likely be traceable) or even restricted by law, and may require a permit to obtain the necessary parts.

Recent evolution and use of the technology

Cody Wilson's *Liberator* generally marks the beginning of easily shared and produced firearms that are untraceable and can be made at home by anyone with a relatively inexpensive 3D printer. The *Liberator* was named after the FP-45 Liberator, which was an inexpensive firearm manufactured by the U.S. military and designed for use by resistance forces in occupied Europe.[10] Taking inspiration from its design, Wilson set out to create an entirely 3D-printed firearm. At the time of its release, concern in the media ran extremely high, with much attention given to the fact that the handgun was made of plastic, making it seemingly undetectable by metal detectors. That particular concern was misplaced, but the lethality of the weapons was confirmed by several law enforcement agencies.[11]

Following Wilson's widely publicized release of the *Liberator*, several other firearm enthusiasts released their own versions of 3D-printed firearms.[12] These guns have also begun to appear at crime scenes. In 2019, 27-year-old Stefan Balliet attacked a synagogue in Halle, Germany, killing two and leaving many others injured. Balliet used his own craft weapons (but not 3D-printed) in the attack. Significantly, in his manifesto, he claimed that he manufactured improvised weapons as proof of their viability for deadly attacks. It is believed that he obtained internet instructions and utilized a 3D printer to create some of the components (but not the weapons themselves) he used.[13]

Since the idea of 3D printing firearms and their parts has been introduced, enthusiasts and entrepreneurs have continued to innovate. In late 2020, Timothy Watson was arrested for selling online 3D-printed drop-in auto sears (also called switches).[14] These small but precisely shaped devices convert a semi-automatic weapon into a fully automatic one. The devices were marketed as "wall hooks" for keys or coats, but simply required removing an extraneous bracket before they could be easily dropped into place for the firearm conversion. Among Watson's customers were members of the Boogaloo Boys. According to the FBI, one of its members, using an auto sear, shot and killed a Santa Cruz police officer and an Oakland courthouse security guard. This might be the first known instance of a member of a

10 Rose Durand, "Resistance from Above: The Liberator Pistol," Museum of Jewish Heritage, September 14, 2020, https://mjhnyc.org/blog/resistance-from-above-the-liberator-pistol/.

11 Georgi Kantev, "Authorities Worry 3-D Printers May Undermine Europe's Gun Laws," The New York Times, October 17, 2013, https://www.nytimes.com/2013/10/18/business/international/european-authorities-wary-of-3-d-guns-made-on-printers.html.

12 Gerald Walther, "Printing Insecurity? The Security Implications of 3D-Printing of Weapons," Sci Eng Ethics 21, 1435–1445 (2015), https://doi.org/10.1007/s11948-014-9617-x.

13 Yannick Veilleux-Lepage, "CTRL-HATE-PRINT: Terrorists and the Appeal of 3D-Printed Weapons," International Centre for Counter Terrorism, July 13, 2021.

14 United States District Court for the Northern District of West Virginia, United States of America v. Timothy John Watson, Document 1-1, October 30, 2020.

U.S.-based extremist group successfully using 3D-printed firearm modifications to commit violence.[15] It is also an early case of using the internet to distribute 3D-printed objects to customers without requiring any experience of or access to a 3D printer. Gruesome online discussions referred to how these coat hangers are great for leaving "red coats on the floor" and included other veiled hints as to their true purpose.

Probably the most sophisticated hybrid firearm created so far was released in 2020. A German man who called himself JStark published the plans for the FGC-9 ("Fuck Gun Control-9 millimeter"), which has since been developed into the FGC-9 MK II. This latest incarnation of a 3D-printed firearm is roughly equivalent to a commercially manufactured semi-automatic weapon. They were tested by the Dutch police last year and were shown to be capable of firing 2000 rounds without failing.[16]

There are both large and small factories in Spain,[17] Canada,[18] and the United States that manufacture FGC-9s. They have been used by rebels in Myanmar to commit attacks against the military junta,[19] by drug trafficking organizations in South America,[20] and have also been seen in images of paramilitary members in Northern Ireland.[21] Since early 2020, UK police have uncovered terrorist plots involving these firearms, leading Scotland Yard to issue public warnings.[22] Just last year in Iceland, a small far-right cell of four individuals was disrupted by law enforcement who found a mixture of commercially available and 3D-printed firearms – including an FGC-9 Mk II.[23]

Motivations for the use of 3D-Printed weapons

The choice to use craft weaponry is not only a strategic one but also has a wider symbolism attached

15 Andy Greenbert, "The FBI Says 'Boogaloo' Extremists Bought 3D-Printed Machine Gun Parts", Wired, November 4, 2020, https://www.wired.com/story/boogaloo-boys-3d-printed-machine-gun-parts/.

16 Vanesa Listek, "Dutch Police Confirm Increase in 3D Printed Guns," 3DPrint.com, June 16, 2022, https://3dprint.com/291819/dutch-police-confirm-increase-in-3d-printed-guns.

17 "Spain dismantles workshop making 3D-printed weapons," BBC News, April 19, 2021, https://www.bbc.com/news/world-europe-56798743.

18 Chris Lambie, "N.S. man charged for making 3D printed guns and importing silencers," Saltwire, February 3, 2023, https://www.saltwire.com/atlantic-canada/news/ns-man-charged-for-making-3d-printed-guns-and-importing-silencers-100820826/.

19 Robert Bociaga, "Myanmar Fighters Continue Improvising in Struggle Against Junta," The Defense Post, July 18, 2022, https://www.thedefense-post.com/2022/07/18/myanmar-fighters-improvised-weapons/.

20 Andréa Baretto, "Brazil and US Dismantle Ghost Gun Manufacturing Group", Diálogo Americas, May 4, 2022, https://dialogo-americas.com/articles/brazil-and-us-dismantle-ghost-gun-manufacturing-group/#.ZEWGj-zMK8U.

21 Jennifer Sensiba, "'Ghost Gun Watch: The FCG-9 3D Printed Gun Shows Up in Northern Ireland," The Truth About Guns, April 20, 2022, https://www.thetruthaboutguns.com/ghost-gun-watch-the-fgc-9-3d-printed-gun-shows-up-in-northern-ireland/.

22 Josh Halliday, "UK police removing 'large amount' of online gun-making guides," The Guardian, February 1, 2023, https://www.theguardian.com/uk-news/2023/feb/01/uk-police-removing-large-amount-of-online-gun-making-guides.

23 Daniel Boffey, "Icelandic police arrest four people over alleged terror attack plans," The Guardian, September 22, 2022, https://www.theguardian.com/world/2022/sep/22/icelandic-police-arrest-four-people-over-alleged-terror-attack-plans.

to it, particularly among right-wing extremists.[24] 3D printing has landed on fertile ground in the U.S., converging with its existing firearm subculture. The idea of new and inventive methods to create a firearm in one's garage has a large appeal and found a very willing community anxious to leverage the technology.

Many gun enthusiasts in the U.S. combine a passion for DIY with extreme political beliefs. Two groups who actively promote 3D-printed firearms, Deterrence Dispensed and Defense Distributed, promote themselves by touting Second Amendment rights, repurposing slogans like "Come and Take It," "Live Free or Die," and "Free Men Don't Ask."[25] They openly oppose gun control, and the intent of their membership is to arm themselves in preparation for a possible rebellion against the federal government.

There are practical reasons as well for the use of 3D-printed firearms. Transporting weapons across borders can be difficult, and having production capability closer to those employing the weapons (especially in remote locations) can potentially solve many logistical problems. Distributed production also allows for the possibility of local customization and innovation.

Fully 3D-printed and hybrid printed firearms are untraceable and available to anyone, even those who would be prevented from acquiring them due to local laws or prior convictions that would preclude ownership of firearms. Firearm restrictions around the world can be circumvented.

There is also a cost consideration. For approximately the price of one conventional firearm, violent extremists can buy a 3D printer to make many weapons at a fraction of the per unit cost. Having an inexpensive source of firearms can massively increase the lethality of terrorist groups.

Firearms R&D in Latin America and Myanmar

Innovation in any one criminal enterprise easily transfers to others as well. 3D-printed firearms offer the same appeal to drug dealers that they do to terrorists, with Latin America – where the most dangerous criminal drug organizations in the world are found – becoming an international laboratory for weapon evolution. For drug rings, technology is power. The untraceability of craft firearms makes them particularly valuable, and the portability of 3D printers is an added benefit. If manufacturers come under police attack, they can quickly move to another location with minimal disruption to their output.

Printing also allows small criminal groups to increase their capabilities. Experts predict that in five to ten years, Latin America will see more criminal groups growing in size and power and causing

24 Yannick Veilleux-Lepage, "CTRL-HATE-PRINT: Terrorists and the Appeal of 3D-Printed Weapons," International Centre for Counter-Terrorism, July 13, 2021, https://www.icct.nl/publication/ctrl-hate-print-terrorists-and-appeal-3d-printed-weapons.

25 Champe Barton and Chip Brownlee, "What Are 3D-Printed Guns, and Why Are They Controversial?" The Trace, https://www.thetrace.org/2021/02/3d-printer-ghost-gun-legal-liberator-deterrence-dispensed/.

more territorial conflict.[26] According to Brazilian press in southern Brazil last year, Santa Catarina police discovered a 3D printer along with instructions on how to print firearms. They also found Nazi insignia and a practical manual on learning to speak and write Russian, indicating a similar combining of extremist elements also seen in the U.S.[27]

3D weapons have also been found in Mexico, with cartels exporting drugs to the United States and using the same routes to import arms and gun parts. Last year, Andrew Scott Pierson – an American national based in Nuevo Laredo, Mexico – was sentenced to twelve years in prison for receiving firearm components from the United States. He had been putting them together with 3D-printed parts to assemble firearms.[28] Since technology from the United States is very expensive, countries like Brazil and Bolivia have started to develop low-cost 3D printers, which are now widely available.

In 2021 FGC-9s were seen in the hands of guerrilla fighters in Myanmar, possibly marking the first instance of 3D-printed firearms being used in an armed conflict.[29] Myanmar authorities also arrested an individual in 2020, charging him with "terrorist actions.[30]" During the arrest they discovered and seized weapons which included 3D-printed firearms.

3D Printing and the Internet

The internet is a core part of the distribution and sharing of plans of 3D printed weapons, fostering overlapping violent and extremist communities. Knowledge-sharing over the internet can bootstrap and radicalize groups that might otherwise have limited their activity to online gaming. Social platforms must consider how internet technologies intersect with real-world violence. The technology is available to anyone, but there is a certain level of expertise required to manufacture or assemble these crafted weapons in an effective manner. Developing that expertise happens online.

General-purpose 3D model repositories are commonly used for the distribution of plans, but there are also other specialized sites that specifically host designs for firearms parts. Possibly the most well-known, DefCad, run by Cody Wilson, was the subject of high-profile legal proceedings.[31] Some hosting services have implemented policies to limit the discussion of 3D-printed firearms, which then prompts these communities to move to new and less monitored areas of the internet where they can continue

26 Zuppello, M. (2022, May 16). 3D Firearm Proliferation Among Latin American Criminal Organizations. Militant Wire, https://www.militantwire.com/p/3d-firearm-proliferation-among-latin

27 Zuppello, M. (2022, May 16). 3D Firearm Proliferation Among Latin American Criminal Organizations. Militant Wire, https://www.militantwire.com/p/3d-firearm-proliferation-among-latin

28 Zuppello, M. (2022, May 16). 3D Firearm Proliferation Among Latin American Criminal Organizations. Militant Wire. https://www.militantwire.com/p/3d-firearm-proliferation-among-latin

29 Thomas Eydoux, How rebel fighters are using 3D-printed arms to fight the Myanmar junta, France 24 The Observers, January 7, 2022 https://observers.france24.com/en/asia-pacific/20220114-3d-printed-weapons-myanmar-rebels

30 Ibid.

31 Greenberg, A. (2018, July 10). DIY Guns: A Landmark Ruling Opens the Door for Homemade Firearms. WIRED. https://www.wired.com/story/a-landmark-legal-shift-opens-pandoras-box-for-diy-guns/

conversing without interference.[32] Designs can also be shared on closed forums and in private chat rooms, making controlling their distribution virtually impossible.

Despite the covert quality of some of the actions described above, a considerable amount of information describing how to manufacture these firearms is actually shared on very public-facing platforms like YouTube, LinkedIn, and Reddit. In the early 1990s, the landmark U.S. court ruling *Bernstein v. Department of Justice* established that computer code is speech and therefore is protected under the Constitution.[33] Following Bernstein, it's not only the Second but also the First Amendment granting full legal protection to the main producers of this content.

The web also hosts marketplaces for the instructions and parts for weapons, in addition to other information related to successfully producing these weapons. The communities interested in 3D-printed firearms have expanded beyond the early enthusiasts sharing tips and plans to produce crude single-shot firearms.

Final thoughts

The subject of 3D-printed firearms sits at the intersection of a strong DIY and gun culture. There are many social, legal, and political complications resulting from easy access and the ability to share legal but potentially dangerous information online. Tracking and monitoring the 3D-printed weapons market should be a priority until platforms can develop specific rules to mitigate the risks. DIY content for 3D printing weapons of various kinds is permissible, but as content begins to express terrorist and extremist points of view, reducing its reach is critical. Platforms should minimize the possibility that users can run across such content without actively looking for it.

Moderating this content is complicated because it's not illegal. Nor is the production of craft weapons illegal in all places. In fact, in the United States, a large number of people producing both instructions and firearms are not extremists and are not promoting violence. They might be hobbyists who create their own firearms or 3D printing enthusiasts who, rather than building a watch or clock, choose to build a firearm. These objects are technologically challenging with a lot of moving parts. For some, it's enough to build something because it makes a big bang. Even in Canada, where the crafting of firearms is prohibited by the criminal code, the crafting of a magazine within the legal limit for the number of rounds is perfectly legal. There are law-abiding individuals who use and manufacture these firearms, making online discussion a lot harder to regulate because the use of crafted weapons is not limited to terrorists. Publishing instructions on how to create a waffle magazine isn't inherently nefarious, so the context matters.

32 Champe Barton, "As Social Networks Crack Down, 3D-Printed Gun Community Moves to New Platforms," The Trace, July 25, 2019, https://www.thetrace.org/2019/07/3d-printed-guns-social-media-ban/.

33 Bernstein v. USDOJ (9th Cir. May 6, 1999). (n.d.). https://archive.epic.org/crypto/export_controls/bernstein_decision_9_cir.html

Having said that, platforms can make their own policies. Downloads of blueprints for 3D weapons could be restricted. Platforms should work together with civil society to exchange experiences and expertise and to develop best practices and a strategy for handling such content.

Nor is 3D-printing technology static. It continues to advance, with researchers currently working on printing bacteria and viruses.[34] As is the case with 3D pistols and rifles, such technology in the future could be adapted by terrorists. Germ or biological warfare is not new, but the possibility of widely distributing the capability to 3D-print germs from blueprints is a new and frightening possibility. Thus, current and future innovations of this technology must be monitored and governed by thought-through policies to limit the risks they pose.

34 John Hornick, "3D Printing New Kinds of Crime," IACP Police Chief, https://www.policechiefmagazine.org/3d-printing-new-kinds-of-crime/.

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GIFCT is a 501(c)(3) non-profit organization and tech-led initiative with over 20 member tech companies offering unique settings for diverse stakeholders to identify and solve the most complex global challenges at the intersection of terrorism and technology. GIFCT's mission is to prevent terrorists and violent extremists from exploiting digital platforms through our vision of a world in which the technology sector marshals its collective creativity and capacity to render terrorists and violent extremists ineffective online. In every aspect of our work, we aim to be transparent, inclusive, and respectful of the fundamental and universal human rights that terrorists and violent extremists seek to undermine.

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