

# 3D guns and regulation

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## Transcript

Now to manufacturing guns using 3-D printers.

As far back as 2013, NSW Police were talking about the dangers of downloading blueprints and manufacturing a gun at home.

Andrew Scippione: There's been a recent explosion, if you like, download of 100,000+ files that allowed people to get access to CAD material that would allow people to print their own 3-D gun. The New South Wales police force has done that, we have manufactured two firearms. We have one of those firearms here with us today that we can show you.

Damien Carrick: That's the recently retired NSW Police Commissioner Andrew Scippione, speaking back in 2013. Since then there have been a number of prosecutions around 3-D printing of guns. The most recent was in January. It involving a man in Mudgeeraba, which is on the Gold Coast in Queensland.

Richard Mathews is an Engineering PhD candidate at Adelaide University who has a special interest in 3-D printing.

Richard Mathews: In Queensland the offender was Kyle Wirth, and what happened in this case is the offender basically printed off some parts at home, bagged them up into about three or four different plastic bags. These plastic bags are the little dime bags that you would see often put about the place for storage of very fine small parts. The interesting thing in this case is none of these guns were assembled, none of these parts were actually assembled into a fully functional firearm. And throughout the case he actually went and admitted to the police what was required in order to assemble it into a fully functional weapon. What was lacking was a barrel, obviously, and a spring in order to fire the firing pin. The interesting thing was though was it wasn't the fact that he had printed the weapons or the parts for the weapon as such, but rather the intent, as under our current legislation manufacture of firearms without a permit is actually a criminal offence.

Damien Carrick: So that was the offence in this case, manufacturing firearms parts.

Richard Mathews: Correct. With regards to firearms, it's not a new offence to manufacture a firearm at home without a licence. What a 3-D printer enables us to do though is to do this from the comfort of our home with very little understanding of what we are actually doing. This means that we don't actually need any new legislation to ban 3-D printed firearms per se because the legislation already exists in order to ban the manufacture and sale of firearms as they are at home already.

Damien Carrick: Kyle Wirth pleaded guilty and was sentenced to 6 months imprisonment which was suspended for 12 months. Is that right?

Richard Mathews: Correct.

Damien Carrick: As I understand it, in the Court a police video was shown where a bullet was actually fired from the gun. What happened was that Queensland police went off and put these parts together to see if it was a useful gun.

Richard Mathews: I'm not aware that they did that for the Queensland case. I am aware that New South Wales and Victoria have done that in similar cases however. It is basically in order to work out whether it is either an imitation firearm or an actual effective firearm though, because the legislation is very clear on this, you have categories of equipment basically. You have a functional firearm, you have an imitation firearm or you have, for want of a better term, toys. If you are manufacturing a toy, if it's for play or for prop purposes then it's actually not illegal. If however you are printing something that's going to be used to intimidate or scare people but still doesn't fire a bullet, then it's still an imitation firearm and it's still illegal. If obviously then you've manufactured something that can actually fire a bullet, then clearly it's an illegal weapon as well.

Damien Carrick: I understand that Kyle Wirth's lawyer told the court that his client was simply curious to see if he could make a 3-D gun and he never intended to sell the gun or make it for criminal purpose, but nevertheless it was still deemed to be a crime.

Richard Mathews: Yes, curiosity often kills the cat in this case. Curiosity is not a valid defence in these cases. If you

manufacture a firearm without a licence, you're going to get caught.

Damien Carrick: The judge acknowledged I think that Wirth didn't produce an entire gun and 'it took police to add a few key parts in order for the gun to successfully fire a bullet, but he was still trying to make a gun.' I think that was the end of the quote. So that's where he got into hot water.

Richard Mathews: Yes, correct.

Damien Carrick: So we've had the Kyle Wirth case in Queensland. Meanwhile in New South Wales charges have recently been laid against an individual, and that's under quite specific legislation which New South Wales has. Tell me about what we know about this case and what we know about this legislation.

Richard Mathews: Yes, New South Wales is very interesting as far as Australia is concerned because New South Wales have actually recently rewritten their firearm legislation to define what is known as a 3-D printed blueprint or a digital blueprint. This digital blueprint is something that can be used on either a CNC machine or a computer numerically controlled machine or a 3-D printer. So they've specifically targeted items such as milling machines and 3-D printers in their legislation to ensure that if people possess these digital files they're going to be breaking the law as well. They are the only state or territory in Australia that has taken this approach.

Damien Carrick: So it's actually possession of the digital files, the instructions for the manufacture of a gun, a 3-D gun, which is an offence, yes?

Richard Mathews: Yes. Interestingly, similar legislation was attempted to be introduced in Queensland prior to their previous state election and it was knocked back, purely and simply because they turned around and said we've already got all-encompassing firearms legislation that covers this, we don't need new laws. It's interesting that New South Wales then took this approach because what it does do is it can limit innovation in this sector for actual legal firearms in this area, legal research for defence purposes or just purely for gunsmith purposes.

Damien Carrick: So you're saying there was perhaps no need for this legislation.

Richard Mathews: In my opinion no, there was no need for it as far as firearms are concerned. However, if we look at what they've actually stated, they've defined a digital blueprint. If we look at what a 3-D printer is capable of doing at the moment, it's making physical parts. If we look at what's going to occur in the future though, we've been told and we can see research and the way that it's heading is that we are actually going to be able to fabricate almost everything and anything. This includes things such as a molecular chains and even things at the atomic level. So rather than going down to your drugstore and buying a box of Panadol, you would literally print yourself one at home. By defining a digital blueprint in this way we can actually now start to outlaw and classify other types of blueprints to ensure things like the illegal drug trade doesn't make its way into our homes on these devices.

Damien Carrick: Fascinating. As I understand it, for the first time charges have been laid for offences under this legislation in New South Wales, is that right?

Richard Mathews: Correct. These devices that the offender has printed though are not functioning firearms as my understanding is. From what I've seen with the photographs that have been reported in the media, it appears that the majority of what has been seized is actually a category of item called air soft weapons. So this is actually a sport. It's very prominent over in the United States of course. However, in Australia though they are still a prohibited item under our firearms legislation.

Damien Carrick: Speaking about digital blueprints, there's an American, a Mr Cody Wilson, who has become quite notorious for posting those instructions online. Tell me about him.

Richard Mathews: Yes, Mr Wilson, he is an interesting fellow. He is actual behind a project called Wiki Weapon. He is a self-proclaimed anarchist. He is definitely an American who believes in his fundamental right to bear arms. It was during 2012 I believe where MakerBot was first emerging onto the market as the retail printers, and they were printing all these trinkets and toys, and Cody was basically turning around saying, you know what, let's print a gun, let's actually show what this technology can do.

Damien Carrick: Cody Wilson created quite a splash when he posted these instructions, these digital instructions online. What was the response of American authorities?

Richard Mathews: They were a little bit unsure how to handle it at first, but what ultimately ended up happening is the files were ended up taking down. His printers that he was using were seized. The government over their basically turned around and said what you're doing we believe is not in the interest of national security so we are going to seize all these items and we are going to issue you with takedown notices to ensure that these items are

pulled from the internet.

Interviewer: Do you have any concerns at all about this technology?

Cody Wilson: Well, we are doing this project and using this technology as a form of resistance. So it's just a critical use of the technology. Of course we have concerns at the end of the day but we see liberty under threat, we see sovereignty under threat, we must respond. This is an alternative way of manufacturing things and it really takes out almost all expert required knowledge. The model is already in software, you can download it. If you have a machine, you just tell the machine to make it and you have it. It's that simple.

Richard Mathews: Although Americans have the right to bear arms in their Second Amendment, they do not have a constitutional right to bear military items. And that's what I believe ended up happening here. They turned around and said, look, there's a military application here. If we deploy someone to a battlefield with a 3-D printer rather than the actual weapons they need and they can just print their weapons on site effectively, then all of a sudden it's military technology, it's a military firearm, therefore you don't have a legal right to it, we're going to confiscate it.

Damien Carrick: What interactions have you had with him?

Richard Mathews: Very brief interactions. We do follow each other on Twitter, and obviously through that we see what each other is up to with regards to the 3-D printing space. He is still involved. He is still heavily involved in this Wiki Weapon project. And my understanding is that he is currently fighting court orders in the American courts regarding the takedown of the Liberator firearm because he is still pursuing the Wiki Weapon as it was.

Damien Carrick: And what's the Liberator firearm, it's a plastic gun essentially?

Richard Mathews: Yes, so the Liberator firearm was what he actually released to the public, it's what he designed, he tested, he fired, and it's what caused all the controversy back in 2012. It's what is I believe the journalists over in England were able to print off and assemble on a train at one point.

Damien Carrick: Between London and Paris I believe, yes.

Richard Mathews: Yes, indeed, and because it's purely made out of plastic it bypasses all of the security measures. That is what has caused all of this controversy, is that the weapon, indeed.

Damien Carrick: Interestingly guns are more widely available in the USA than, say, in Europe and Australia. So in many respects the economics are such that if you are interested in getting a gun in the USA, it's going to be much cheaper for you to get one using conventional means. It would appear that there is more concern perhaps in places like Europe and Australia because it might make more sense to invest in accessing a gun using a 3-D printer in Australia or Europe because they are harder to come by.

Richard Mathews: I'm not sure if that's 100% true. 3-D printing is a new tool on the market. There have been plans around since the '90s available on the internet to actually manufacture weapons just from going down to your local hardware store, purchasing off-the-shelf components to assemble it using tools that you would find in a common garden shed. If people want cheap firearms that's what they do, and we do actually see this in the firearms that police seize. In fact there's a case recently in Queensland, which is still going before the courts I believe, where a whole range of firearms were seized along with a lot of drug paraphernalia, 3-D printers again, and some computers. And the press incorrectly reported that they were 3-D printed guns. They were manufactured metal guns that had 3-D printed triggers. So what I think we would end up seeing is we will see a 3-D printer, a very cheap one, probably no more than about \$300, \$400, not the ones that people would use that if they are seriously involved in manufacturing items, they will use these sort of printers to manufacture supplementary items to use on these already existing plans for weapons because they are easier to do in that sense.

Damien Carrick: So Richard, you reckon we will get more composite weapons, but the 3-D printing machines that create these guns or these gun components, the technology that is now widely available, is it reliable and is it cheap?

Richard Mathews: As far as cost is concerned I don't think it's a cost but more of a time investment, because you literally can just set and forget with a printer. The technology though isn't quite there with residential 3-D printers that you don't need to have any knowledge in how to manufacture with the printer. You still do need to understand how to set things right, and in fact there's a wealth of information and hundreds of groups on Facebook, for example, where the community is just full of the new hobbyists asking the same questions over and over again about things such as how do you get the plastic to adhere for the first layer. And if criminals can't get these things down pat than they are not going to be able to manufacture with the 3-D printer, in which case it's going to be cheaper to go off to the

hardware stop.

Where I think this is concerning is not from the economy but from the secrecy or the availability of it. We now have the ability of manufacturing something out of plastic which bypasses all of our common security techniques. There has even been rumours of people printing such an item out of a plastic that is biodegradable upon activation with another chemical. So the idea is that you would fire off a bullet from this weapon, dump it into a vat of this chemical and literally all the evidence would just dissolve away, and that scares people, because if there is no evidence for the crime, then how do you actually see that these people end up in jail?

Damien Carrick: Richard Mathews, who is based at Adelaide University's school of electrical and electronic engineering. He's currently doing a PhD in digital image forensics.

That's the Law Report for this week. A big thanks to producer Anita Barraud and also to technical producer Carey Dell. I'm Damien Carrick, talk to you next week with more law.

## **Credits**

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