

Scharon Harding:

Hello everyone. I'm Scharon Harding, senior products expert at Ars Technica. Today, we're talking about the fight to the right to repair as part of our Road to Ars Frontier Series. Joining me is Kyle Wiens. He is the CEO of iFixit, which provides tools, manuals, and advice for repairing your own tech products.

Scharon Harding:

Kyle and iFixit are big advocates for the right to repair, working to make it so consumers have the right to open and fix our tech products and access repair documentation, parts, and tools. Kyle, thank you for joining us.

Kyle Wiens:

Thanks so much for having me. This is going to be a lot of fun.

Scharon Harding:

Absolutely. Today, we'll be talking about where we currently are in the fight to the right to repair, how we got here and the broader implications this all has for things like consumer rights, the environment, and technological advancement. But before we get started a quick reminder, we should have some time at the end of the conversation for a few of your questions. To ask a question, just tweet it to us @ArsTechnica using the #ArsFrontiers.

Scharon Harding:

Kyle, before we get to where we are today and the right to repair, I'd like to take a few steps back and talk about how we got here, specifically the Digital Millennium Copyright Act, DCMA and section 1201. Could you briefly explain what that is and how it's connected to the right to repair today?

Kyle Wiens:

Yes. Way back in the dinosaur era of the internet in 1998, Congress passed the DMCA, which was big, updated the Digital Millennium Copyright Act. It was the grand update of copyright in the internet era. This was as some of the internet file sharing services were becoming a thing, and the movie studios were moving from VHS to DVD. They were very terrified of people copying DVDs and sharing them online and rampant piracy of music. They wanted to update copyright laws for the 21st century.

Kyle Wiens:

One of the things they were concerned about was people copying DVDs or even sharing tools to [inaudible 00:02:16] DVDs and there's encryption on the DVDs. They passed a subsection of this copyright act, section 1201, which made it illegal to distribute tools or to break encryption on products that had been manufactured. For the first time ever in American history, it was illegal to do certain types of math. The actual algorithm had been banned to break encryption and to say, "Well, maybe that's a compromise. Copyright is there to further advance the arts."

Kyle Wiens:

But what Congress did not anticipate was that the locks that were put on that DVD were going to make it into every product that we have. Now, you have things like our cell phones are locked to a cellular carrier. You buy a phone, it comes locked to AT&T or Verizon, breaking that lock is actually a violation of section 1201. If you unlock your phone, you're violating copyright law, which is just totally crazy.

Kyle Wiens:

Congress actually had to pass the first update to the DMCA about a decade ago to specifically legalizing unlocking of cell phones, but it didn't go far enough. Now, we're in the situation where there are many, many things that we want to fix, and it's illegal to do the math involved, to break these locks that are on products for a variety of reasons in order to fix them.

Scharon Harding:

One of the reasons this is important in this discussion is it brings a debate to the federal level versus the state level. Can you talk a little bit about why it's important that we get to that federal level when it comes to this discussion and getting the right to repair?

Kyle Wiens:

Yeah. Section 1201 is such a broad sweeping thing saying you cannot break a lock on the thing that you own. This applies to everything from tractors. It applies to electric wheelchairs. It applies to people who want to be able to tweak and configure their hearing aid. If there's any kind of digital protection on there, now you have to phone home and get permission from the manufacturer before you can tweak a thing that you have.

Kyle Wiens:

This is a total sea change from what historic property rights have been. If you buy a table and you want to cut the table in half or paint it purple, you can do that to your table, but you can't necessarily do that to your hearing aid or to your phone. Because this law was passed at the federal level, the states can't preempt. Congress at the federal level reset copyright policy. This fix has to happen at the US federal level.

Kyle Wiens:

Unfortunately, we tend to take US copyright law and we include it in trade agreements with other countries. Whether it's the USMCA or actually in some of the drafts of the Transpacific Partnership, this section 1201 was in that. This really is something that can only be fixed in one place in the world. It has to be fixed in Washington, DC.

Scharon Harding:

Where are we right now in terms of working on the section 1201, and in the general discussion of terms of where we are in the fight to the right to repair today?

Kyle Wiens:

Sure. Every three years, they built an escape hatch into section 1201, where every three years, we can go to the copyright office and ask for exemptions. For the last decade, I've been flying out to DC, hat in hand, asking for exemptions. We've gotten several of those exemptions, notably, we got one for repairing tractors. We got one for repairing medical equipment this year.

Kyle Wiens:

The catch is that it only allows consumers to do their own repairs. If you can whittle your own tool, you can do a repair. But if someone, some enterprising tech company, wanted to design and sell a tool for repairing tractors, you can't do that without a permanent change. There's a bill in Congress right now

that Representatives Mondaire Jones and Victoria Spartz have introduced, a bipartisan bill, that would fix section 1201 and add a permanent exemption for repairing products.

Kyle Wiens:

That's really what we need to see. We need to see that bill move forward. Now, there's actually quite a few bills in Congress around right to repair right now. There's an agriculture-focused bill that Senator Tester's introduced. There's some auto-specific bills. There's a broad right-to-repair bill that Representative Morelle from New York is introduced. But the one that absolutely has to happen at the federal level is this Jones-Spartz fix to section 1201.

Scharon Harding:

What are you seeing right now in terms of how close we are to getting that changed?

Kyle Wiens:

Congress doesn't get a whole lot done, in general, in broad terms. In this case, we have some big companies that are opposing it. The medical device manufacturers have stepped up to oppose it, the Entertainment Software Association representing Microsoft and Sony and Nintendo, they have been opposing it.

Kyle Wiens:

We need to find a way to pass some of that opposition in order to get this thing over the finish line. I'm optimistic. I'm hopeful that we'll have a hearing on this soon, and we'll be able to make progress. This is just a common sense fix. When the cell phone unlocking bill passed, it was broadly bipartisan. It passed close to unanimously, and that's the kind of fix we'd like to see here where this is just common sense. Just let us fix our stuff.

Scharon Harding:

Speaking of that and that idea of optimism, I do want to talk about one of the biggest recent movements in this space. It comes from Apple, actually. Last month, Kyle, as you know, Apple launched its self service repair program. Now, owners of the iPhone 12, 13, and the newest iPhone SE can order the same parts that Apple's authorize repair providers use. You can order those from Apple. They're also offering their self service repair manuals for the iPhones. You can even rent tools from Apple for your repairs too.

Scharon Harding:

This is huge because obviously Apple is a huge name in tech, of course, but the company has also been for a long time, they've been pushing against self-repair. So looking at this Apple program recently launched, what do you think? What does it do right, and what does it do wrong?

Kyle Wiens:

Yeah. This is really exciting. The reason that I started iFixit, this open source repair manual for everything, was because the repair manuals were secret. I was trying to fix my Apple iBook, and I couldn't get the service manual because they'd actually sent a DMCA take down notice to censor that information from the internet.

Kyle Wiens:

This whole movement has come out of this secrecy clamping down on repair information. For Apple to do 180 degree about face and post the service manual online for the iPhone, that's a really big step. That's a huge step in the right direction. Up until now, I mean, I'm here in iFixit's labs. I can show you real quick. Here's some of our equipment.

Kyle Wiens:

Then I actually, I've got an iPhone 13 sitting here where we are working on writing iFixit's for repair manual for these new products. It's a lot of work. We have to buy every new thing. We have to disassemble it. We have to painstakingly measure every screw. Is it one millimeter? Is it 1.1 millimeters?

Kyle Wiens:

Reverse engineering these products to be able to get to a point where we have a service manual for them is a tremendous amount of effort. Being able to build on top of the manufacture service documentation is exactly the right thing.

Kyle Wiens:

So, what is Apple doing right? The information being available is huge. Selling the tools is a big deal. Now, this is primarily going to be benefiting repair shops. A lot of these independent repair shops had not had access to the same tooling that the Apple geniuses had.

Kyle Wiens:

Some of these fixtures, they're big. If you buy or you rent the tools, they come in two big Pelican cases. It's 70 something pounds of tools. That's probably not something that is accessible or relevant to most consumers that just want to fix their phone. But for a repair shop that's fixing things day in, day out, it's a big deal. That's what they're getting.

Kyle Wiens:

What Apple is doing wrong in this case is they continue to embark on this strategy where they have paired specific parts to the phone. If you take two brand new iPhone 13s and you swap the screens, you're not necessarily going to get all the functionality that you would expect, which is strange because if you take two cars and you swap the engines, they work just fine. If you take two cars and you swap [inaudible 00:10:32], they work just fine. You take two Samsungs and you swap the screens, they work just fine.

Kyle Wiens:

Apple's got this new strategy of pairing parts, so they can give you a detailed service history is what they're saying. But the concern is that they can use the same technology to ban aftermarket parts. The repair economy, the circular economy around iPhones is significant. It's a huge economy. It's very successful. It creates a lot of jobs.

Kyle Wiens:

Apple could easily short circuit that economy by employing these cryptographic locks to tie parts to phones. Then this would tie into section 1201, because it might potentially be illegal to circumvent those locks to make an aftermarket part work again. That's the fear, that's the concern. But I don't think that

diminishes from Apple taking such a huge step, making parts, tools and information available. That's exactly the right thing we'd like to see them doing. We just have a few concerns with how they're rolling it out.

Scharon Harding:

Of course, maybe some of the hard work you've done and other advocates, but what do you think it is that actually moved Apple to finally release a program like this? They also plan on expanding it to MacBooks.

Kyle Wiens:

Apple has said they're going to expand to other products, absolutely. I think it's interesting. We've been doing this for a long time. I had the idea when we started iFixit, we started making manuals available, and they started getting popular. I was like, this is so obvious. Of course, Apple's going to see this and want to emulate and copy it.

Kyle Wiens:

That just has not been the case. We work on developing a lot of the green standards for electronics. We work on EP for cell phones, the green sticker that you get for certifying green electronics. We've been working inside those to create what I would call a carrot for reparability. That there's additional points that you could get if a product is easier to repair.

Kyle Wiens:

Apple has been involved in those discussions, and they have systematically vetoed every single proposal in the green standards to make phones more repairable and serviceable. We said, "Hey, what if there was an extra point if the battery was easier to replace?" They said, "No, absolutely not." We said, "Well, what if there was points for using commonly available tools?"

Kyle Wiens:

This is iFixit's toolkit. You can see we got 64 different bits for every different... What if there was extra points for just using a few screws instead of a lot, and Apple veto that. There has been a systematic strategy to create as much design freedom as possible, which has then allowed these glued together, integrated, very, very thin products that have been increasingly hard to repair.

Kyle Wiens:

I'm optimistic for the future, but I would say, really, it seems clear that the only thing that brought Apple to the table was the threat of legislation and shareholder actions. That's what's different this year, as opposed to five years ago, when I was asking nice, and we were trying to work collaboratively. They were just totally stonewalling us.

Kyle Wiens:

It seems that it's been the work of grassroots activists. You have US public interest research network working on this. You've got the repair associations working on it and a whole coalition of people working on right to repair. It took assembling that coalition and systematically introducing legislation in over 20 different US states this year to finally bring them to the table.

Scharon Harding:

I wanted to ask you, we're on the topic of self service repair programs that are currently available. So I wanted to ask you, Kyle, if there are any good examples of consumer tech manufacturers that are just doing an exemplary job of enabling self repairs of their products.

Kyle Wiens:

Well, the company that gets the most credit is Motorola. They were the first to the table here. They reached out to us several years ago and said, "Hey, we want to start selling repair parts for our phones. Do you want to help?" We said, "Sure, absolutely." Motorola's been making this information available, parts available. That's been fantastic.

Kyle Wiens:

You have companies like Fairphone and Framework. Fairphone is a startup smartphone manufacturer. Framework is a startup laptop manufacturer. They're both doing the right thing, really providing a lot of transparency and designing products that are easy to repair. Then we've launched this year partnerships with Samsung and Google, and Valve as well, where we're going to start making parts available for their products.

Kyle Wiens:

You're starting to see some momentum here, but I would say Motorola gets the OG credit for really being the first smartphone manufacturer that step up and do the right thing.

Scharon Harding:

I want to play a little bit of devil's advocate with you, Kyle, because obviously there has been some resistance to the right to repair. I just want to play this game with you and see, what would you say to people who might think, you know what, it's not a tech vendor's responsibility to maintain, sell, and ship parts and tools. They're out there creating the tech and repair and maintenance and enabling all that is a different business. What's your response to that?

Kyle Wiens:

Well, it is, I think, incumbent on all of us as citizens of the world to be caretakers of the things that we have. If you're manufacturing a product and putting it out in the world, you need to take a little bit of ownership for what's the impact of that. We have a e-waste crisis in the world.

Kyle Wiens:

The thing that drove the e-waste crisis to the biggest degree was CRT manufacturing. The making of the big lead TVs that we used to have. Now, maybe you've got one in the basement. Maybe you haven't seen one in a while, but those things were huge. They were lead. They were toxic and they actually cost a huge amount of money to recycle. It wasn't the kind of thing where you pitch it in the blue bin and the metal pays for the cost of recycling. They were actually very expensive to manage.

Kyle Wiens:

The manufacturers of those products didn't ever have a plan. You had Zenith and Sony and all these manufacturers that made these things, sold them out in the world, basically dumped them on the rest of

us and said, "Dealing with the waste from that is your problem." There have been lawsuits, and there have been hugely polluted sites. The EPA is still doing enforcement around these.

Kyle Wiens:

It's an aftermath of, I would say, careless manufacturers not thinking about what is the downstream impact of a product that you're making. Another example of this is in the camera world, Nikon and Canon had a thriving marketplace where there were in every community in America. There was local camera shops, and you could take them in, you could buy new lenses from them. You could have them work on your cameras.

Kyle Wiens:

Several years ago, both manufacturers decided on a whim just to shut off access to parts and tools. That was the death knell of local camera retail in America. There aren't local camera stores anymore. When you do that, you create these deserts. You're shaping the economy. I think it's incumbent on all of us to say, what kind of economy do we want? Do we want a main street where we have local people that know how to fix and maintain our things?

Kyle Wiens:

Or do we want a factory assembly line where we manufacture stuff in Asia, we dump it here, use it for however long it works, and then there's no maintenance plan for it? The automotive industry, I think, is an example of success, where we do have local mechanics in our neighborhoods. You have the manufacturers dealership network, you can go to them. You can also go to independent shops.

Kyle Wiens:

Manufacturers have about 25% market share. The independents have about 75% market share, and that's created a really healthy ecosystem. We don't have that with electronics. We don't have it with cameras. We don't have it with TVs anymore. There used to be TV shops in our neighborhoods.

Kyle Wiens:

Really, I think this is a society level question. What kind of society do we want? Do we want it something where we manage manufacture things elsewhere, and then we have them for a while and then we toss them away? Or do we want an ecosystem where we have an industry, we have an economy built around taking care of and maintaining and extending the life of our products, where we have neighbors that we know that we're going to community picnics with. They're our computer repair techs or our camera repair techs.

Kyle Wiens:

There's a huge opportunity for creating that circular economy with green repair jobs here. But that can only happen if the manufacturers are engaged in the process and supporting that. Because they create the product, they have that stranglehold, they can either strangle the industry or they can support it, and they'll enable it to thrive.

Scharon Harding:

You're bringing up some interesting points about the environment. I want to talk about that a little bit, especially when we talk about our daily tech gadgets, like the laptops and the smartphones. A lot of those products are being built better, thankfully, and they're also being commoditized.

Scharon Harding:

For example, smartphones aren't necessarily making massive leaps in terms of features from generation to generation, and people may be holding onto them longer than they used to. They're also being built tougher. They're getting water resistant, and they're just being physically being built to last longer physically.

Scharon Harding:

With all that under consideration, how impactful do you see the right to repair in reducing e-waste? Especially when you think about it from like an individual's perspective and what we can do as individuals, as part of the society?

Kyle Wiens:

Manufacturing these products is very complex. I have an iPhone here and you have a lot of different elements and that you've got the aluminum frame. You have the Taptic engine has various elements in it. Out of all the elements on the periodic table, there's close to 30 of them in this device. When it comes to recycling, we've got to try to get all that back out.

Kyle Wiens:

It's over 250 pounds of raw material dug out of the ground to make your six ounce smartphone. That's a huge amount of raw material. Also, if you look at the carbon impact, the carbon impact of a phone, if you're using it, I think Apple's numbers are for five years. Over 85% of the carbon impact of the product is during manufacturing. It's not during the use phase, you're plugging it into the wall. It's all embodied in energy and manufacturing.

Kyle Wiens:

The environmentally optimal thing to do once we have made a complex thing like that is to use it as long as possible. Maybe we can use it for more than just a smartphone. Maybe it's a smartphone for the first five years of its life, and for the second five years, it's a baby monitor or a smart thermostat management tool or anything else. You can imagine a whole world of things you could do with these things.

Kyle Wiens:

They've launched these things into orbit and use them as the controllers in CubeSats. They're incredibly sophisticated computers, touch screens. They've got antennas, they've got all kinds of technology in them. It's absolutely crazy to say, "I'm going to take this technological marvel that would've wowed anyone from 20 years ago, it's five years old. Let's shred it and get the silicon back out." The silicon isn't worth anything.

Kyle Wiens:

We're going to have to find a way to manage the lifespan of these things. I think we should be talking about lifespans of smartphones in terms of 20, 25 years. What does it take to keep these things working

that long? Now, we don't have an ecosystem that provides security updates for these things for anywhere close to that long. If you're talking 25 years, the battery is going to need to be replaced several times over that course. The batteries chemically last around two years, that they last a few hundred charge cycles, and then they need to be replaced.

Kyle Wiens:

You have wear items, but no one would talk about throwing away a car after the tires wore out. We expect cars are going to go through several changes of tires in their lifetime, and that's fine. We need to get to that place with the consumer electronics in our lives.

Scharon Harding:

I'm thinking about something you said earlier, Kyle, about also just building the devices so they're inherently easier to repair. What about the idea or any concerns that, focusing on building a repairable device and supplying that ecosystem to support them could potentially stifle or limit a company from either making money or even being able to innovate on new products.

Scharon Harding:

Again, talking about maybe using the same type of screws, or we see Apple fighting to keep the lightning port over in the EU when USB-C would kind of simplify things. Maybe you could keep reusing the same cables and things like that. Any concerns about that, about this fight maybe potentially hurting a company's pockets or their ability to make new products?

Kyle Wiens:

Well, if you're doing the right thing and you're making a product that's designed to last, and you're focused on being customer first, you're not going to be monetizing that planned obsolescence cycle, but I can't say that it won't have an impact. When Apple got caught slowing down phones with older batteries, and they rolled out and increased access to repairs for batteries, and they reduced the battery pricing, Tim Cook in their earnings calls said that was a factor that resulted in slightly slower iPhone sales that quarter.

Kyle Wiens:

It can have an impact, but I would argue that over the long run for the manufacturer, for Apple or anybody else, they're going to be much better off investing in their customers. France has rolled out a reparability labeling law where products have to be labeled right next to the price with how easy or hard they are to fix. It's a red or a yellow or a green sticker that says, "This is easy to fix." 80% of French consumers would prefer a more repairable product over their favorite brand.

Kyle Wiens:

It's over time going to be much better for companies that do the right thing. But you're going to have to provide an ecosystem and maybe it costs a little bit to set it up at first, but there's also a profit opportunity. I think Dell and HP, major electronics manufacturers that do sell repair parts, it's a major profit center for them being able to sell parts over the life of a product.

Kyle Wiens:

If you think about a battery on a phone, if this phone is going to last 20 years, I'm going to be going back to Apple and buying a battery every couple years. That's a recurring revenue model. That's where we should be focusing.

Kyle Wiens:

Also in Apple's case, they're monetizing services, they're selling you all kinds of subscription services on top of the phone. An overall install base for their platform is much better for them than short circuiting that and causing their products to fail after two years, that would be a bad strategy if you're trying to grow your overall install base.

Scharon Harding:

I want to get into a couple of viewer questions that we have, Kyle. The first one is from Paul. Thank you for your question, Paul. We got into this a little bit already, Kyle, but I wanted to see if you had a little more to add. Paul asked, "What are these companies, biggest arguments against giving rights to repair?" Anything that we haven't gotten into yet?

Kyle Wiens:

The major arguments that we've heard with lawmakers is they say, "Well, it's not safe for people to be repairing products themselves." Well, I'm here. At iFixit, we help hundreds of thousands of people a month open these things up and fix them. We don't see any safety challenges.

Kyle Wiens:

Is replacing the battery in your phone more or less dangerous than replacing the battery in your car? Everyone would expect, of course, you can go to AutoZone and get a new battery for your car, but those things weigh like 40 pounds. You could drop it on your foot and hurt yourself. I think those safety concerns are really overblown.

Kyle Wiens:

We've also heard some cybersecurity arguments against right to repair. I'm not going to go into the details there, but there's a coalition of some of the world's leading cyber security experts called Secure Repairs, where they've signed on a statement of principles saying that the overall increasing access to repair will actually increase the security of these devices over the long run. Those are the two main arguments. They don't really hold up.

Kyle Wiens:

I think if you dive into it, and the Federal Trade Commission went into this and they released a big report analyzing this, and their conclusion at the end of the day, was that manufacturer arguments against right to repair are totally unwarranted that there's no justification for these repair restrictions.

Scharon Harding:

We also have a question from Chris. Thanks for your question. He asked, "Are modular systems more repairable or better for the earth because we can mix, match and hack?" They're thinking of an abandoned line of phones, so not sure it's from Nokia or Motorola that's coming to their mind.

Kyle Wiens:

In general, anytime you can make something modular, it's more repairable. With this phone, we've got the main board up here and then you've got the lightning port at the bottom. It's a separate board. If the lightning port fails, the main board doesn't, you don't have to replace that. Where on other phones, maybe the charging port is built into the main board.

Kyle Wiens:

Where you see extreme examples of this with these amazing designs, Fairphone has a modular, it's a smartphone. You can upgrade the camera. Framework has a laptop where you can change out the ports and you can even upgrade the main board. That type of modularity is really fantastic. It enables a maker community. It enables modding.

Kyle Wiens:

What I think Chris is thinking about is Project Aura, which was a project that Google had, where it was going to be a modular, interchangeable, hot swappable smartphone. Unfortunately, Google got it almost done, and then they killed the project as Google is want to do. They tend to kill things. I think Google sucked the oxygen out of the room, because they said they were going to do this modular smartphone and got us all really excited about it.

Kyle Wiens:

They hired engineers and they were working on and they got almost there. Nobody else did one because Google was going to do it, and so the other manufacturers all canceled their plans. They didn't want to compete with Google. Then when Google canceled the project, it sucked the air out of the room. I hope someone else picks that up and tries it again, because it would be absolutely wonderful. I would love to have a modular phone.

Kyle Wiens:

I want a headphone jack on an iPhone. Apple doesn't make that. I switched to Android, so I could have a headphone jack. Give us modular ports. There's all kinds of cool innovations. I have a friend who's a biologist who has an app that requires a special microphone to track bats. It's really cool, when you have the microphone, it'll show you on the screen what bats are flying around. Wouldn't that be neat to be able to upgrade the sensors in our phones?

Kyle Wiens:

I think there's a whole world of opportunity there that could come out of extending and expanding the life of these phones beyond a couple years, that we really need to be opening our minds. What if the next wave of innovation was with amazing things that we could do with the tech that we already have rather than a whole new wave of gadgets?

Scharon Harding:

Absolutely. Before you get me going on the headphone jack, I know that we're starting to run out of time here. Before we go, Kyle, I just wanted to thank you again for taking the time to join us and share your expertise here.

Kyle Wiens:

Thanks so much, Scharon. This was a blast and let's keep the conversation going.

This transcript was exported on May 18, 2022 - view latest version [here](#).

Scharon Harding:

Absolutely. Of course, thank you to all the viewers who tuned in today. For more information about our live event, Ars Frontiers, taking place tomorrow in Washington, DC, visit Frontiers.arstechnica.com for more information. Have a great day.