EPISODE 320

[INTRODUCTION]

[0:00:00.3] JM: Net neutrality is the principle that internet service providers and governments regulating the internet should treat all data on the internet the same. Debates around net neutrality can be as contentious as subjects like global warming, or the debate between tabs versus spaces.

To a hardcore free market economist, net neutrality sounds suspicious. Why would it be good for the government to regulate prices on the data that passes around wires that are owned by a corporation? The problem is that a large portion of the United States can only be served by wires that are owned by a single company. In those instances, the company that owns the wires has monopoly pricing power over the data delivered to homes in those geographic regions.

Quincy Larson is the founder of freeCodeCamp and he's a frequent author of internet based articles that are on Medium. He returns to Software Engineering Daily in this episode to make the case for net neutrality. I was convinced by some of his arguments and less convinced by others. In any case, I think you will find this episode entertaining and informative. If you're like me after this episode, you will have at least a slightly better understanding of the issues surrounding net neutrality that were quite cloudy for me before this episode.

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[INTERVIEW]

[0:02:58.1] JM: Quincy Larson is the founder of freeCodeCamp and a frequent author of internet based articles. Quincy, welcome back to Software Engineering Daily.

[0:03:06.6] QL: Thanks for having me, Jeff.

[0:03:08.3] JM: Today we're going to talk about net neutrality, and in order to prepare for the show, I actually looked up the definition of net neutrality according to Wikipedia because you hear people talking about different ways of framing net neutrality. According to Wikipedia, net neutrality is the principle that internet service providers and governments regulating the internet should treat all data on the internet the same. Why is net neutrality important to you?

[0:03:35.9] QL: Net neutrality is vitally important to me and to pretty much any company that wants to provide content on the internet, what we call content providers, and to the average consumer who wants to be able to access that content in a reasonably fast way without interruption or without interference by internet service providers or ISPs.

The reasons why it's so important are, it's an existential question. If somebody wants to go to your website and your website is suddenly not accessible because of interference on the part of the ISP, then the user is just going to go somewhere else.

[0:04:17.6] JM: Do we have net neutrality today?

[0:04:19.8] QL: Yes, we do. We have net neutrality, which was enshrined in a ruling by the Federal Communications Commission here in the U.S. in 2015. Basically, net neutrality or the title to common carrier regulation as it's called, enshrines in the law that internet service providers cannot block traffic based on its content, legal traffic, they could block illegal traffic. They cannot throttle traffic, and they cannot accept money in order to prioritize other traffic. Hypothetically, let's say Netflix wanted to get faster access, or wanted to reach consumers faster, it's illegal for the ISPs to accept money from Netflix to do that.

[0:05:11.0] JM: What are some problems that could occur if we had a lack of net neutrality?

[0:05:16.3] QL: The main problem that the telecoms, in fact, the president of AT&T has actually come out and said it publicly, they want to charge content providers. They want to charge all the different websites out there, all the different blogs, all the different educational services, all the different mom and pop Chinese restaurants that have their menu online, they want to charge all those companies for the privilege of traveling through their network.

The problem, of course, with that is all those people have already paid. They've already paid to have a broadband connection. On many cases, they had paid twice. They had paid to send all of their data up to a virtual private server. Put it up on Amazon EC2, or DigitalOcean Droplet, or Google Compute Cloud. They've already paid money to send that up there and then they're paying for the bandwidth from that to their end users. The users have already paid for their own broadband that they can use to pull that down.

So the telecoms have already got money from both sides, but they want more. That's really the main reason why the telecom lobby, they've been lobbying heavily to get rid of net neutrality for years.

[0:06:34.8] JM: I hear what you're saying there, but isn't this the type of thing that the free market works out? If the ISPs were unregulated, wouldn't the free market, and the costs, and the service levels just work themselves out?

[0:06:49.1] QL: Yeah, in theory, absolutely. If you had a truly free market and you had legislation that was clear and basically allowed for new entrance to come in, you didn't have unassailable

barriers entry, you didn't have monopoly power, you didn't have regulatory capture. Unfortunately, as you can probably guess, I'm about to say we have all those things. We have, basically, three massive corporations that control a vast majority of internet access in the United States.

The fix line and also the mobile broadband controlled by just a handful of corporations that are extremely powerful, extremely profitable, have extremely large lobbies. The barriers to entry to getting into those industries is so high that even Google, the second largest corporation in the world by market capitalization has had an extremely difficult time. In fact, they've scaled back their plans to roll out fixed line broadband, because it's just so difficult to get into the industry. Repealing net neutrality will not change that reality.

[0:07:56.6] JM: We'll get into some more hypotheticals, how the world would be without net neutrality, or with different versions of net neutrality. Let's talk a little bit more about the players in this space. When we're talking about ISPs, who are we referring to? Are we referring to Comcast? Are we referring to Facebook? What is an ISP?

[0:08:16.6] QL: An ISP, it stands for internet service provider, and it's basically the service that you pay to get your broadband internet access. In the United States there are basically four large corporations that control a vast majority of connectivity. There's AT&T, and I'm going to go ahead and — When I tell you these corporations, I'm going to also tell you their net operating income, basically, the profit they're making after tax.

AT&T made $16 billion after tax in 2016. Verizon, which controls a lot of the mobile broadband, the 4G and the future iterations of, basically, wave based broadband. Verizon made $13 billion last year. Comcast, the most hated corporation in the United States for several years in a row, $8 billion. Then, Charter, which recently acquired Time Warner, $8 billion.

[0:09:12.7] JM: To give an idea of how an internet player might look at this problem, what about Netflix? What does Netflix lobby for? I realized Netflix is totally orthogonal to what an ISP is, but I think it helps illustrate just how some other companies are thinking about this.

[0:09:29.7] QL: Netflix is for net neutrality. Back in the day, Netflix probably couldn't have happened without net neutrality, because the fees that they would have had to pay the ISPs would have been so egregious. Now, Netflix is so big and so profitable that they could easily afford to pay these fees. What Netflix is worried about now is all the new entrants. The incumbents are extremely powerful and couldn't afford to pay this.

Just to give you an idea of how consolidated the internet is today, about half of all internet traffic originates from 30 content providers including Google, and Yahoo, and Netflix, and Facebook. Basically, Netflix is very much pro-net neutrality even though they don't need it anymore from an ideological standpoint, because they realized that without it, they couldn't have succeeded.

Google itself has come out and said — Sergey Brin quoted that he didn't Google would have been able to exist without the open internet and that net neutrality was very important to Google being able to come about and gain its initial traction.

[0:10:36.8] JM: Another player is the government, namely the FCC. Recently, Ajit Pai was named the chairman of the FCC. He previously worked at Verizon and he said that his goal is to deregulate providers so that they could make even more money and invest in faster infrastructure. Why are you skeptical of Ajit's proposal here to just deregulate everything, make more money for these ISPs and they'll reinvest in data infrastructure?

[0:11:06.9] QL: Yeah. I don't believe that they're going to reinvest significant portions of that in an infrastructure, because they're already basically taking their net income that I talked about earlier, these billions of dollars they make every year, and they're just dispersing it to shareholders. Until they choose to sit down and have that uncomfortable talk with their shareholders, "Hey, you're going to make a lot less money this year, because we're going to basically claw back our proceeds and reinvest them at upgrading infrastructure." That's going to take several consecutive years to go in and fix all the various deficiencies. We can get to what exactly those deficiencies are later. Basically, the things that are preventing the internet from being "fast enough" and preventing these ISPs from going into more rural markets and providing them with internet access and things like that.

Ajit Pai, he worked as a lawyer for Verizon. He's from Telecom and he got nominated to the FCC as a commissions. Now, he's the chairman of the FCC. Former chairman, Tom Wheeler, stepped down with the presidential transition. Tom Wheeler was also from — He previously worked as an executive for one of the major ISPs. Basically, Ajit Pai has said, he wants to "take a weed-whacker" to the law and get rid of net neutrality as quickly as he can.

I think that that's a big mistake. I think that he's either coming from an ideological perspective of, "Regulation is bad. We should get rid of regulation." Or, quite likely, he's just in the pocket of the massive telecom lobbies that spend tens of millions of dollars each on lobbying and campaign contributions and unknown amount on campaign advertising every year.

[0:12:59.7] JM: As you said, Google and Netflix might not have been able to get off the ground if not for net neutrality. You also hypothesized that, "Without net neutrality, if a small business owner can't afford to pay Comcast, Comcast will slow down traffic to their website, or shut it off entirely. As a result, users will go to websites that are faster because they could afford to pay up sites like Facebook."

This picture that you're portraying here is if somebody wants to stand up their own website and Comcast says, "Well, you know, if you want us to send those bits through the pipe, you're going to have to pay us a toll." As a result, those users will say, "You know what? Let's just host it on Facebook, because, then Facebook will have to pay the toll, and that's fine. We'll just defer the cost to Facebook." Of course, you see that as problematic, because it would centralize control into Facebook.

I find your narrative here somewhat compelling, but the world is quite different than it was. When Netflix got started, it's quite different than it was when Google got started. There are a lot of options other than Facebook as well. There're all these platforms that could aggregate demand here. Just like you're saying Facebook would aggregate demand and pay for access to the pipe. You could see people going on Squarespace, or WordPress, or even AWS. You could say, "I am going to host my stuff on AWS." Maybe AWS raises their Amazon tax a little bit more. It wouldn't be so bad as to make it impossible to own a small business. Couldn't a small business owner just move their site to one of these behemoths and have the behemoth do the fighting for them?

[0:14:41.7] QL: One of the issues is the behemoths are also in the process of consolidating market power. Facebook, and Google, and to some extent, Twitter, and Snapchat and some of these other platforms, Medium, Quora, these platforms are essentially kind of trying to create new features and draw people into their platform so they can have content creators so they can basically get more money through ads.

Basically, about 85% of all advertising spent — All money spent on online advertising just goes to Facebook and Google now. That's how dire things are for the newspapers, for example. Newspapers are now kind of a small business in the sense that they have subscription, they have advertising dollars, but it's a pittance compared to what's going into these platforms. These platforms don't have the burden of actually creating content. They basically just algorithmically curate content created for free by users.

Yeah, you're making those existing platforms more powerful and you're giving yet another incentive to shepherd people into these platforms and away from owning their own domain or their own service that is free from the terms of service of Google free from the terms of service of Facebook and free from the potential censorship that they could bring down, free from the black box, the curative black box. When I search for something on Facebook, who knows why things come up the way they are. It's all completely opaque. Facebook in the past deprioritize people who don't pay.

For example, Facebook, basically, initially, was trying to get all these brands to invest all these money and energy in telling their users to go out and like their Facebook page so they'd receive updates on their newsfeeds from the Facebook. Whenever they posted something on Facebook, it would show up in that user's newsfeed.

Facebook, basically, kind of and bait-and-switched it and, now, a brand like Coca-Cola, if they want to reach their users, they're still going to have to pay for advertising, even though they have all those people who've liked it. It's not really a fair playing field for them, because Facebook has the incentive of trying to maximize the amount of money they can extract from them.

You're shepherding people by virtue of saying, "Oh, this platform will cover the tax for you." You're shepherding people into that platform and then later — Only later, once they've been locked in, will they realize the consequences of that in the form of higher fees that they had to pay for advertising to reach their own users.

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[0:17:26.9] JM: You are building a data-intensive application. Maybe it involves data visualization, a recommendation engine, or multiple data sources. These applications often require data warehousing, glue code, lots of iteration, and lots of frustration.

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[INTERVIEW CONTINUED]

[0:18:57.9] JM: Let's step back a second, because throughout the years we've defined — I think you're portraying a world that is becoming more centralized in your mind. What I would argue is that the world is actually becoming more decentralized. We've defined the internet in different ways throughout the years. Our conception of the internet in the 1980s, for example,

was a bulwark against nuclear attack. We've basically said, "This is the thing where if a nuclear hits, this is what we're going to use to communicate."

In the 1990s, the internet was what you used to access AOL. Talk about centralization. That was just everything AOL. Then, in 2000, this was just something that it was fun to use from your computer, but certainly you would never use the internet from your phone. It seems like the idea of "net neutrality" it's almost like this make America great again sort of thing, where it's like, "Let's go back to the good old days when the net was neutral and we didn't have all these centralized players."

To me, it seems like a decentralized. We have Quora, and Facebook, and Medium, and WordPress, and Squarespace, and AWS, and Google Cloud, and Facebook, if I didn't already mentioned it. It seems like we're letting a thousand flowers bloom. Doesn't our conception of the internet get continually destroyed and reborn? What makes you so sure that this less "neutral world" is going to be definitively better?

[0:20:32.4] QL: If you look historically, if you look at the history of information technologies — I'm just going to walk you through some of them. Telegrams; originally, people were sending telegrams locally and then they created these national telegram lines that people could use. Eventually, telegrams became consolidated behind a single company; Western Union.

Then, the telephone came along. Alexander Graham Bell invented it and then a guy named Theodore Vail took over what became AT&T at the time and really grew it to this behemoth. He was kind of like an enlightened, shall we say, benevolent monopolist. He wanted to expand it because he thought it was better for everybody if everybody was able to interconnect with one another and just use the same infrastructure. It dodged the messiness and the waste associated with competition, because competition is inherently wasteful. It's people at war with one another, just like war is wasteful.

Vail federated all the different local companies and then eventually he retired and somebody who is not so benevolent took over AT&T. That person proceeded to, basically, extract rent, what we call economic rent, which is way beyond normal profit. It's basically gouging people because you can. As a result, people were paying exorbitant amounts of money to call across state lines. We're paying even more to call internationally. They were paying money to rent a phone. One of

the ways that AT&T was able to solidify its monopoly was to reach out to the government and basically get its monopoly enshrined in the government as like a “natural monopoly.”

Telephones used to have these local party lines, used to have farmers wiring lines across their house. Quickly, this kind of Cambrian explosion of telephone became a consolidated nightmare of long distance bills and paying money to rent phones and not being able to attach devices. You couldn’t even attach a model, because that violated the terms of service for AT&T. That took a great amount of political will to overthrow those rules and open up the telephone lines.

To some extent, they got disrupted, but that took decades. Then, the same thing with radio. Radio used to be — Everybody had their radio station locally. What happened? The advertising driven model started to take over and people started to realize, “We can get much more economies of scale if we just have a few radio stations.” Then, they went and they lobbied to, basically, carve out huge sections of the bandwidth so that the radio stations — There were just a few dominant radio stations in every city.

Then, TV came online and, basically, it was initially kind of local access television. Then, that got consolidated to where there were just, really, two big networks. If you weren’t on CBS or NBC, you weren’t on TV. That’s all anybody watched. You had literally tens of millions of people tuning in to watch I Love Lucy. Significant portion of the people who were alive in America would tune in and watch the same exact show, and you had the advent of mass culture. That was TV.

Now, with the internet, really, we’re experiencing the same thing. We had this Cambrian explosion. AOL is kind of an aberration. It’s a good point that that was a significant chunk. I don’t know if it ever even reached half of the internet penetration. I’d actually be interested in looking up the exact figures. AOL kind of rose and fall and, ironically, AOL was purchased in the last year or two by one of the cable companies, by one of the ISPs. Just like Yahoo Verizon, purchased both AOL and Yahoo and all of these ISPs are now purchasing content providers for the purpose of basically prioritizing access to their own content over Netflix. Why would you watch Netflix and pay a bunch of money to watch it when you can watch Cox’s TV series, or Comcast’s, their streaming service instead.

Basically, they're using all these rent that they've extracted over the years to acquire more and more content so they could vertically integrate. We're not going to see the death of the open web, we're just going to see the increasing relevance of it. I'll just make a quick point. If you slowed down the internet — If you slowed down an access to a website by even 250 milliseconds, literally, the blink of an eye, if it takes that much longer, there's documented study after study shows that shows that those users will bolt. They'll close the tabs, they'll tab over to Facebook, or Reddit, or some site that's not throttled.

All the ISPs has to do to basically eliminate all but the most reticent internet user is introduce a very slight delay, a very slight latency into a website that doesn't pay, and they've basically negated that website's ability to grow its audience.

[0:25:21.2] JM: Of course, the direction this would actually lead is that — Because Comcast can't compete with Amazon for being a retailer and a cloud service provider. Comcast can't compete with Facebook to make a social media product. The end result of less net neutrality would likely be that these giant companies would have to pay more, or their end users would have to pay more to get the same level of service.

Obviously, yes, there would be penalty, there would be a financial penalty, but ultimately we would have — At least for people who are not highly price sensitive, they would have the same level of internet service in a post-net neutrality world. Do you agree with that?

[0:26:13.1] QL: When you say the people who are not price sensitive, you're talking about the content providers who have the extra money to pay the rent.

[0:26:20.7] JM: Yes, either that, or the — That would be one thing, but also just consumers who can afford to pay their increased cable bill, like, "If you get Comcast Plus and get additional 250 — Less 250 milliseconds less of latency when accessing Facebook, basically."

[0:26:38.0] QL: Right. It probably would be applied to specific websites and not the web as a whole, because if you look at what these ISPs are, traditionally, they are in the very lucrative business of cable TV. Certainly, the fix line providers; Comcast, Cox, Time Warner, which was acquired by Charter, they are in the business of basically selling these packages, "Okay, you're

a sports fan. We're going to tell you ESPN one through three. That's an extra 10 bucks a month," or "Oh! You want premium channels. We'll package Showtime and HBO for you."

That's kind of what they'd like to do with the internet, because it's extremely lucrative. It's way more lucrative than just providing a dumb pipe that just moves bits regardless of what's on them, because what they're experiencing is younger people don't really care about having traditional TV. They'll just watch YouTube. They'll just watch Netflix. They don't really care about having a broad range of different cable packages, because they can just explore the long tail of content online.

The internet is really the ultimate medium that includes all the other mediums. You can listen to radio on the internet, you can make phone calls on the internet, you can send texts over the internet, you can watch videos over the internet. You can do so many things on the internet that were traditionally standalone services. You used to pay bucks extra to be able to text, for example. Even though texting is literally moving a few bits through the digital — They considered it separate from internet access, like a data plan. Really, that's a major issue.

[0:28:06.2] JM: This is a random question. What is Mark Cuban's argument here? Because Mark Cuban is against net neutrality.

[0:28:13.3] QL: I'm not sure what his argument is. There are a few prominent technologists, like Mark Endresen, who are against net neutrality. I think it's basically — They oppose it on ideological grounds. I don't think that they have done enough reading on what the actual macroeconomic implications will be. Basically, handling all the power to these corporations that happened to bury a bunch of copper in the ground 30 or 40 years ago.

That's really what we're talking about. We're talking about corporations who invested decades ago, have recouped their investment 100 times over and are now just basically kicking back and doing nothing, providing the worst customer service in America so that people can use their pipes.

[0:28:56.0] JM: Yeah, that's the thing that I worry about, because it's like Mark Cuban or Mark Endresen might have — Having built their businesses in the internet age where competing on

the world of internet platforms. Things moves very fast. You won't dig a hole in the ground and lay a bunch of copper. You just build a new website.

Here, we're talking about a bottleneck and really no way around it, unless we're talking about Elon Musk sending satellites into space and beaming down internet, or Google sending up balloons, or Facebook beaming down internet. I think — Maybe I've been mistaken, but I think that the business models — Let's say Google owned this copper, or Facebook owned this copper, or SpaceX owned this copper, they would take much longer term approaches to extracting value from that copper. They would take higher value, longer term approach. My sense is that a company like Comcast is really going to just try to squeeze as much profit as fast as possible in ways that will probably exploit people in very unfortunate — An unfortunate fashion. The problem with taking the, perhaps, Mark Endresen, or Mark Cuban approach, again, not really knowing what their positions are, but assuming that they fall into that, "Oh, it's the internet. We'll have creative destruction sort of thing. The problem is that there's not — It's not going to be a short time horizon for that creative destruction. It's going to take, like you said with AT&T, a long time.

[0:30:31.9] QL: Absolutely. I just want to — 100% agree with you there. I'm optimistic that SpaceX and Google will disrupt fix line carriers by providing satellite or low orbiting balloon high speed internet. I think that's the most likely disruptive force. Also, SoftBank recently said that they were also going to try to get an array of satellites.

To give you an idea of the cost involved, you're launching thousands — Literally, I think more than a thousand satellites for these satellite arrays. These satellites come down regularly. They're in low orbit, so they don't even stay up that long. We're talking about thousands of satellite launches over the next 10 or 20 years. That will make a big deal. That will be huge, because then it will force — You'll have these more forward looking, long term thinking organizations. The epitome of which is probably Amazon is the most forward thinking and long term thinking.

In fact, Jeff Bezos, the CEO of Amazon has contributed heavily to The Long Now Foundation, which basically aims to look at things from a human history perspective and think 10,000 years into the future and not really a quarter into the future, which is what I think most of these old

school ISPs are doing. Literally, you've got 10th generation CEOs who are finance people, who are just trying to make ends meet. They may have some long term plans. The fact that they have such sophisticated lobbying efforts belies the fact that they do think somewhat in the long term, because it's a long game to try to get their own people —

[0:32:00.1] JM: Their long term time horizon is buy some content, so that we can jack up the prices on the pipes that are not that content.

[0:32:08.5] QL: Right. Yeah. By providing the content — In many ways, they're just trying to figure out ways that they can — They're really just trying to figure out how they can turn the internet back into cable. I think that that's their game plan, so that they can package — You've got the news package and you get access to The New York Times, you get access to The Washington Post.

Basically, there's this great kind of — It's kind of a like mock infographic of what your cable plan could look like, your cable modem plan, and it's outraging, but that it makes sense from their perspective, because they made so much more money back then than they do now. Right now, they're making $16 billion, but at some scale, that's not enough. The investors just get more and more demanding and it's hard to explain to them to think long term, because a lot of investors in it for the long term.

[0:32:59.9] JM: I can just imagine the series of checkboxes where, "Check here if you're going to download podcasts. Check here if you're going to use Facebook. Check here if you're going to use Quora." That's what it could certainly be, just like with cable.

Okay, I think we have beaten this topic pretty severely, although we can touch on it more tangentially. I want to talk about Facebook, because you and I have had some fantastic conversations about Facebook. You wrote an article called *I Can't Just Stand by and Watch Mark Zuckerberg Destroy the Internet,* and this was all before Zuckerberg wrote his 6,000-page book report about Facebook. How does Mark Zuckerberg threaten to destroy the internet?

[0:33:45.3] QL: By consolidating the internet. You have to consider Internet.org, which I know you done a show about. Basically, Internet.org was an attempt to replace the internet with

Facebook under the guise of providing people access to things like Wikipedia as well. In many countries, especially the most impoverished countries in the world, they have Internet.org and people are able to get on their phone and access a handful of websites, primarily Facebook.

I think that Mark Zuckerberg wants to continue to grow Facebook. He wants to continue to pervade our lives and absorb more and more hours of our day. If you look at mobile traffic, somewhere between 1/5th and 1/4th of all mobile data traffic is to and from Facebook. People use Facebook 50 minutes a day, the average Facebook user, and there are almost 2 billion Facebook users.

It's literally become this massive attention sink. They're absorbing so much attention. As a result, they are the premier place that you place ads. If you really want to have people see your product and get exposed to it, the most reliable way to do that these days is to get a Facebook ad and narrowly target it. It's very effective. FreeCodeCamp has never done any Facebook advertising, but if we had some product that we're trying to sell, like a software service solution, you better believe that Facebook would be the number on destination for trying to raise awareness of it, because it's so effective.

Because Facebook is so effective and it's so sticky and they've absorbed so many brilliant user experience designers, so many brilliant engineers who are speeding things up and making things run great, they're just becoming this practically in-assailable — It's very difficult to anticipate how you would go about disrupting Facebook. I don't think there's going to be another big social media network. It's going to be something else that's comes and disrupts it.

Basically, until that happens, Facebook is for people — The internet. Many people who use the internet — They've done surveys. A lot of people who use the internet, who use Facebook through the internet, don't actually realize they're using the internet. For them, Facebook is the internet.

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[0:35:59.7] JM: Indeed Prime flips the typical model of job search and makes it easy to apply to multiple jobs and get multiple offers. Indeed Prime simplifies your job search and helps you land

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[INTERVIEW CONTINUED]

[0:37:48.9] JM: Yeah, so this is the study that for me was not troubling at all, because when people started using browsers, they thought that browsers were the internet. Browsers are not the internet. When people started using AOL, they thought that AOL was the internet. AOL is not the internet. The same thing is true for Facebook. This paranoia about people confusing Facebook with the internet, we've been through this before. Why is it more problematic with Facebook?

[0:38:18.2] QL: AOL, you could access the open internet through it. That was one of the —

[0:38:20.9] JM: You could access a browser.

[0:38:22.7] QL: Yeah, you could access a browser and you could go anywhere you wanted on the internet through it. It wasn't a true walled garden where you couldn't get out.

[0:38:29.5] JM: You could say that about browsers. You can't do everything that you can do in a terminal with a browser.

[0:38:35.7] QL: That's true in the sense that you're only able to use certain protocols, but I think for human read all information, for all the human wants to accomplish. Yes, this is somewhat of a confession here. If I want to read something, or if I want to watch something, or if I want to make a phone call, pretty much everything is being packaged where it can be used in the browser. Increasingly, more and more software can run in the browser.

You've got a wide variety of browsers, so there's not a clear browser monopoly. Firefox is doing fine. Mobile Safari has a significant chunk of the mobile browser market as well, and they're new entrance into the browser space. There are open source libraries, like WebKit, that you can take and you can go build your own browser and sphere people toward that.

Facebook is literally owned by a single corporation, and that single corporation is controlled by a single individual who has 60% of the voting rights, Mark Zuckerberg. He's the most powerful person in the world. He can basically dictate — He could just pick up the phone and call, tweak the algorithms that their recommendation engine uses to bias them in some way or another.

Whether he would actually use his power in such a brazing way, we don't know. Unfortunately, we don't have any insight into that, because it's a big black box. We see their financials come up. We see their public statements. Basically, we have to take his word at face value, because we don't understand the inner working of Facebook. They are close source, they are close data, and their data is precisely their value, and the brand recognition that comes along with Facebook. When people open up a browser, they'll often intuitively type Facebook without even thinking. They're just be like, "Oh! I'm back on Facebook." Because people go there so many times a day. It's become kind of ingrained in the human psyche. That's where you go to announce that somebody died. That's where you go to announce that you got engaged. That's where you post your first baby photos.

It's become such an important cultural and sociologically significant place that it has so much power. It's unlikely — If you look at OAL, there are still two million people who pay for AOL. Even this day and age, this is 20 years passed AOLs prime. Facebook is going to cast a very long shadow. It's not going away anytime soon. All signs seem to indicate that Facebook is going more and more powerful with every passing year. They're absorbing more and more brilliant engineers and user experience designers. They're absorbing more money through advertisers who — It's a runaway virtuous circle that's virtuous for Facebook, but is deleterious for anybody who wants to enter the market and try to compete with them.

[0:41:16.9] JM: Certainly, and yet there are things that Facebook cannot do, that's why I spend 16 hours of the day on the internet. I'm probably going to spend an hour on Facebook. There's 15th, 16th of the internet that Facebook cannot service me for. Some of those things seem directly, in fact, not really aligned with what Facebook really is. There's certainly a world in which Facebook is able to swallow the entire internet experience, where Facebook is able to — I've written about this. I think they're going to build some — Either a mobile phone or either they're waiting for the next paradigm of hardware devices.

[0:41:59.7] QL: VR. Speak no further. VR. They are going to be the market leader in VR, I suspect.

[0:42:06.6] JM: Maybe, but also — It's undefined whether people really want VR, how much people want VR. We could certainly make predictions about that.

[0:42:15.9] QL: You could say there's anything, if you're looking at Apple Newtons, or Palm Pilots. It wasn't clear that people were going to want mobile phones, but now it is clear. I think that if you look at the science fiction, VR is prominent. Holodecks are prominent, and I think holodecks may be a possibility within the next 20 or 30 years. We don't know what's possible.

Facebook already has a huge — Are in the edge on all of those things, and they can basically get out ahead of trends. They've got, by far, the most powerful machine learning algorithms and they're doing amazing stuff, like rivaling Google in a lot of areas of artificial intelligence. It's going to be very difficult to outflank them, and they are moving into other horizontals — I'm sorry. Other verticals. They are already extremely vertically integrative and they're going to

swallow up video, which is something they've been working on for a while. They're going to start offering original content as well.

Like I said, I think VR is going to be huge, and they're so far out ahead of everybody else, that it's going to be very difficult to unseat them. They already have this massive engagement, audience of 2 billion users. If they release some sort of beta of a product, they've already got 2 billion users and they could take a very small server of that and test it and then just gradually roll it off to everybody. It's a huge competitive advantage.

[0:43:34.0] JM: Zuckerberg came out with this manifesto where he basically said, "The world is going to towards globalization. Facebook wants to be a facilitator of globalization." Ben Thompson did a really good piece on this. He actually did two pieces; he did a piece and then he did a podcast about it, the Exponent Podcast. It's one of my favorite podcasts.

What he said was — So Ben Thompson and the cohost of that show, James Allworth, have been talking about Facebook for a long time. For a long time, Ben has basically said, "Facebook's potential monopoly on media is not a problem, because if Facebook were to start making subjective decisions, editorial decisions about the content that did well on Facebook, it would damage their credibility, it would hurt their potential business model, because their business model is to not arbitrate them."

What Ben Thompson is not suggesting with the whole manifesto thing is that Zuckerberg is making a strong political statement when he says Facebook is going to be the tool for globalism. He says that this is so worrying that you have now somebody who is such a massive arbitrator of information who is taking aside that is essentially partisan, and he started to suggest things that Facebook should be disallowed from doing, for example, buying other social networks. He says that every social network should allow you to export contact so that you can easily move your social network between providers. What do you think of this idea that we need to start taking regulatory mechanisms against Facebook?

[0:45:18.2] QL: I'm not sure exactly how we would do this, because this is an unprecedented situation. Facebook, unlike other physical utility monopoly is and attention monopoly. It's probably the most intractable situation ever in terms of anti-trust, because it's just so

unprecedented and I'm not going to tell people to delete Facebook. I'm not deleting Facebook. I think that it is valuable in many respects. I'm not going to jump on — People launch these different social networks recently, Ello. Twitter itself has proven to be mostly a domain for the ists, the economists, and the futurists, and the journalists —

[0:46:04.2] JM: Podcastists.

[0:46:05.3] QL: Yeah, podcastists and not so much a domain for the everyday person, which is unfortunate, because I get a lot of value out of Twitter too. It's not clear what you would replace Facebook with, or how you would even compete with it. I think it's going to be some totally out of left field disruptive force that disrupts Facebook. Who knows how many decades that could be down the road?

[0:46:28.8] JM: All right. We're up against time. I know you are giving a talk at South by Southwest. I think when this airs, probably, you will have given that talk already. Hopefully, it will be online. Maybe we could put that in the show notes or something. It's called, well I think it's part of a series of talks that is called *Tech Under Trump.* Can you maybe just in two or three minutes, give an overview of what are the other things that we haven't discussed that are relevant in the *Tech Under Trump* world.

[0:47:01.0] QL: I'm going to talk a lot about Ajit Pai, the commissioner of the FCC, which is only organization that has the ability to really regulate the ISPs. I'm going to talk about him being appointed and the fact that they have a two-thirds majority. Two of the seats on the FCC are empty right now. Basically, it's two anti-regulation versus one pro-regulation.

They're basically able to do whatever they need to do and they're carrying out the agenda of the ISPs and the ISP lobby. I'll talk about that a little bit. I'll also talk about the role of Facebook and Google and kind of centralizing the web. I will also give some basic insights about why I think net neutrality is so important to small businesses and just everyday people who want to be able to use the internet and want to have the open Library of Alexandria that we have now. We want to see that going forward.

[0:47:57.8] JM: All right Quincy, I want to thank you for coming on Software Engineering Daily once again, and it's always a pleasure to speak to you. It's so regrettable that I don't have you in San Francisco anymore to go on runs with and debate these topics in person. I do look forward to seeing you next time I see you.

[0:48:14.8] QL: Likewise Jeff. I'll be out there soon and we'll go on another run.

[0:48:18.3] JM: Okay. Sounds good man, thanks a lot.

[0:48:21.1] QL: All right, cheers.

[END OF INTERVIEW]

[0:48:26.5] JM: A few quick announcements before we go. Software Engineering Daily is conducting our annual listener's survey, which is available on softwareengineeringdaily.com. You can click on the survey link. The survey really helps us understand our listeners and gives us data that we can show to advertisers that help get us better sponsorship deals.

Also, the Software Engineering Daily community has started working on Mineranker. This is an open source newsfeed platform. We are trying to democratize the idea of a newsfeed so that the only newsfeeds in town are not necessarily Twitter, or Facebook, or any other centralized newsfeed. We'd like to make it possible for anybody to make a newsfeed.

You can check out the Mineranker Project at mineranker.com. You can check out and implementation of Mineranker at softwaredaily.com. You can find links to all of these stuff at softwareengineeringdaily.com. There you can also find a link to join our Slack Group, to follow us on Meet Up for future meet ups, and other information.

Thanks again for listening.

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