TIM O'REILLY INTERVIEW PART ONE - INTRO

Hello Ars Technica listeners. This is the latest serialization of an episode of the After On podcast. We're splitting this one into three segments, starting today. And I'll be talking to Tim O'Reilly. who's been one of the most original and innovative thinkers in the tech world for quite an impressive string of decades.

Rob Reid: Tim is by far the best-known publisher in an industry in which books matter immensely. Software developers, IT people and other technical folks can easily consume dozens to hundreds of books during their careers, keeping up with the ever-changing programming languages and skillsets that are core to their jobs. A huge share of those books are published by O'Reilly Media, and multiple billionaires have publicly stated that their startups got going on a couple of O'Reilly Media books. The company has also organized innumerable conferences, has a popular online training platform and more.

But significant as it is to be tech's preeminent publisher, that characterization doesn't even begin to convey the influence Tim O'Reilly has on the industry. Starting in the earliest days of the World Wide Web, he has repeatedly convened conclaves of tech's most thoughtful, prominent and/or powerful people to face important industry transitions to plot courses through them and, quite often, to name them.

Tim's prescience was on full display in 1992 when he published a thorough guide to the World Wide Web as part of a broader survey of the internet. This was so early there were only 200 websites in the world at that point. The New York Public Library put that guide on its very short list of Books of the Century for its influence and foresight.

Not long after that, Tim's troublemaker-in-chief, Dale Dougherty, convened the now-legendary World Wide Web Wizards Workshop, where leading web pioneers like Tim Berners-Lee and Marc Andreessen actually met for the first time.

In 1998, Tim summoned a similarly impressive cadre of people from the world of open-source software, a vital and vibrant sector of technology that the internet largely runs on. For those not familiar, open source refers to software created by large egalitarian groups of unpaid volunteers. Important as it already was when Tim gathered the tribe, open source didn't even have a name yet; the group settled on the name open source, obviously, as well as core elements of the open source philosophy, which help guide the community to this day.

Tim struck again in 2004 with articles at a conference dedicated to the concept of Web 2.0, a term which the industry quickly latched onto and which will forever more define the era when interoperable sites and services built around user-generated content first emerged. Things like social networks, blogs, wikis, micro blogs like Twitter, sharing sites like YouTube, and, of course, podcasting.

Not long after that, hardware and tinkering started taking center stage for the first time in decades in tech. As always, Tim and his company were there a couple years before things started happening, having already launched MAKE magazine, which itself launched the Maker Faire and, of course, gave us the word "maker" itself. The aptly-named maker movement quickly gave rise to such marvels as consumer-grade drones, 3D printers, the amazing Arduino and Raspberry Pi platforms, and so much more.

Tim always gives credit to the people who actually invented the terms he's done so much to popularize. But important as names are, the real seminal energy has come from the gatherings and settings that Tim curates, both during these periodic industry sea changes and at various annual pow-wows that Tim playfully calls Foo camps. Foo stands for, "friends of O'Reilly." Invitations to these are coveted, cherished, and eagerly accepted by industry leaders throughout the world.

Tim's long-awaited retrospective book on this amazing career, which includes deep ruminations on where we go from here, was released on the day thate I originally posted this podcast to my main feed - which is to say October 10th, 2017. The book is called WTF, and no, it doesn't stand for that, but What's The Future? In our interview, Tim and I appropriately discuss the future as well as his book and also his remarkable history.

On that topic, it's worth noting that Tim did not spend his college years studying the ancient forerunners of modern programming languages like Java and Python, but rather, the truly ancient languages of Latin and Greek. As someone who studied for his own career in tech by studying Arabic, I think that's pretty awesome.

A quick note: I'd like to apologize in advance for the sound quality of this episode, which is not up to my standards. Ironically, the indirect reason for the poor sound quality is that I'm trying to maintain a lunatic fringe standard when it comes to conducting things in person.

Few podcasters attempt this because they are smarter than me. This in-person stuff involves lots of travel, wear and tear and expense because I'm based in New York City and so many of my interviewees are in California. The other problem with venturing out into the field is you occasionally do stupid things like leaving a small but critical component of your recording apparatus in the Lyft car that takes you to Tim O'Reilly's home.

Yes, I did get it back because Lyft is very good at reuniting lost items with the knuckleheads that lose them, but Tim and I ended up recording the interview on our iPhones because, like most normal human beings, Tim does not have a home recording studio.

Now, luckily I have an amazing editor. Thank you, Jason. We were able to create a perfectly intelligible interview; you will understand every word we say. It'll just sound weird when we're both talking at the same time, and it'll occasionally seem like the interview's being conducted by two different guys who sound like me: high-fidelity Rob and low-fi Rob.

For what it's worth, making the interview intelligible required that I work the second all-nighter of my entire life, the first and only other one being in college. So, between that, the hustling to California and the forgetting of my recording gear, which would not have happened if I'd been sitting at my desk in Manhattan, I will be reconsidering my Skype policy in the near future.

Anyway, without further ado or excuses, it's my honor to present Tim O'Reilly.

TRANSITION MUSIC

Thank you so much for inviting me into your lovely home, Tim. I appreciate that a great deal. I often like to start by talking about people's backgrounds and what brought them to their current professional station. In your case, if it's okay, I'd be interested to start at the very beginning. You were born outside of this country, weren't you?

Tim O'Reilly: That's right. I'm an immigrant, although an immigrant as a small, small child.

Rob Reid: Yeah.

Tim O'Reilly: But it does highlight the fact that America has always been the land of opportunity. My dad was trained as a neurologist, and he realized at some point he wanted to do research. He realized at some point that the only way he would ever get to do the work that he wanted to do in the UK was if somebody died. He was from Ireland, of course, but he had been trained in the UK. So, he came to the US.

Rob Reid: And you were three months old at that point?

Tim O'Reilly: I was three months old.

Rob Reid: Well, I appreciate the significance of that. By a very hair-splitting, technical definition, I was an orphan for a few months at roughly the same age, and I was adopted very quickly. So, I agree that things that happen before our memories kick in on a very obvious level are irrelevant, but they still inform your perspective. I do get that.

You spent your childhood mainly in the Bay area, but also in northern Virginia. Correct?

Tim O'Reilly: Childhood was San Francisco and Sebastopol up in Sonoma County. I moved to Virginia when I was about 15 and my dad got a job. He was the head of the neurology department at George Washington University.

Rob Reid: And you got to be a lab rat for 'em, as I think you put it?

Tim O'Reilly: Absolutely. When I was about 14, my best friend and I and my friend's sisters were all control subjects in an early radio conference study of a neurological disease called Wilson's disease, which has to do with abnormal retention of copper in the body. They were just in the early days of nuclear medicine. The way they would do it is we got injected with radioactive copper.

Rob Reid: Wow.

Tim O'Reilly: They put us in the scanner to see where it was going in our body, how long it took to be excreted, and so on. Of course, they did the same thing with the Wilson's disease subjects, because it is a disease of abnormal retention of copper in the liver and the brain. I did not turn into Spider-Man, but ...

Rob Reid: Was there a period when magnets would stick to you?

Tim O'Reilly: Nothing like that, but I did give my body to science. If I ever come down with liver cancer, we'll know why.

Rob Reid: We'll know exactly why. Now, one of the things in our prior conversation that intrigued me is you fell under the spell of this very interesting person. Was it Via Explore Scouts or something?

Tim O'Reilly: Yeah, it's a very interesting story. My older brother was 16 and he actually went ... We were just breaking up, so to speak, with the Catholic church.

Rob Reid: You and your brother, or your whole family?

Tim O'Reilly: No, my brothers and I.

Rob Reid: Oh, wow. And Mom and Dad were still with 'em?

Tim O'Reilly: Oh, yeah. Very, very, very, very Catholic.

Rob Reid: There had to be some very interesting dinner conversations.

Tim O'Reilly: Or not, basically. We were exploring all kinds of alternatives, and my brother, Sean, went to a meditation class at this place called the California Institute of Asian Studies. We studied the work of Sri Aurobindo. He met this guy, George Simon, who was also at the class, who came up to him afterwards and said, "I like the way you meditate. Would you like to join a nest?"

Rob Reid: A nest?

Tim O'Reilly: Yeah, as in, Stranger in a Strange Land.

Rob Reid: Oh, right, right. Yeah, yeah.

Tim O'Reilly: Which was this idea that was from Stranger in a Strange Land that, if you effectively could learn Martian, that it gave you these superpowers.

Rob Reid: Oh, incredible superpowers. I wanted them desperately when I read the book.

Tim O'Reilly: Absolutely. This was probably 1967, '68.

Rob Reid: Not long after the book. Wasn't it early 60s that it came out?

Tim O'Reilly: Yeah, it was early 60s. That was in the air, and George had this idea that actually we could develop a language for consciousness. He basically had been in various kinds of ...

First of all, he'd studied a lot of the work of General Semantics, Alfred Korzybski's idea that language is really a map of the world. Korzybski really developed this experiential training for separating the stories that you tell yourself about the world from just raw perception. He actually had a device he called the structural differential where-

Rob Reid: The hardware device. The hardware device?

Tim O'Reilly: Well, it was really something that you could make for yourself, and I made one as a kid. The idea was that reality is infinite, but our experience of it is limited. Then we limit it even further by describing that experience to ourselves.

Rob Reid: With limiting words.

Tim O'Reilly: With words, yeah. So, basically, Korzybski would make the point that the words that we use often shape our perception. He was trying to get people out of the words and back into the experience, and then beyond the experience, just to look at the thing, itself.

Rob Reid: Now, is this like that famous thing that Eskimos allegedly have all these words for snow, types of snow that we can't even see because we just don't have the words for them? I don't know if that's accurate, but is it that kind of notion?

Tim O'Reilly: Absolutely. In fact, it is true. I've had that experience, myself. When I moved to Sebastopol, which was a place where we had a summer home when I was a kid, and bought six acres and got horses, when I first was there, I'd look at a field and it was just this grass.

Yeah, I could see there were different kinds, but I couldn't really see them. Then, having horses, you learn, "Oh, that's oats. That's vetch. That's ryegrass. That's orchardgrass." All of the sudden, you'd look at the meadow and you'd see six, or seven, or eight different kinds of grass.

Rob Reid: That's wild.

Tim O'Reilly: Because you did have a name for them.

Rob Reid: That's wild.

Tim O'Reilly: You were able to pay attention.

Rob Reid: It's like learning a foreign language and being in a café and suddenly understanding what's being said as opposed to just hearing a bunch of phonemes.

Tim O'Reilly: That's right, and that was a key part of what George worked on. He felt that you could, in fact, train the consciousness with new language that would let you see things that you could not see before.

Rob Reid: And in some cases, that language had to be developed afresh?

Tim O'Reilly: That's right. I actually wrote my thesis at Harvard where I studied classics about this idea that so much of what we think of as knowledge is rehearsed knowledge. We receive this knowledge about, "Here's what Plato said about justice." We read the Socratic dialogue and we ...

But when Socrates and his students were first engaging with those questions, there weren't answers. There wasn't this received knowledge. It's interesting, because if you think about ... How much of what we teach is basically received knowledge as opposed to this first-person experience, going back and wrestling with those questions?

One of George's so-called languages for consciousness had to do with the evolution of the human consciousness. He felt that it proceeded in these big stages. One of them was the development of a kind of individuation and the mental self that we think of as the modern mind. He felt this had really come into focus in Ancient Greece, but that we were actually heading into a new phase, which was a kind of global consciousness.

It's interesting because, of course, I went to Harvard to study the classics. Partly because I wanted to dig into that. I was really focused on this idea that the modern mind, in some sense, was formed at this period. Whether that's true or not we'll never know, 'cause we can't go back.

Anyway, George was ... Of course, here we are in the 70s and he was studying Sri Aurobindo, this Indian mystic, and there was de Chardin, all these people with the idea of this spiritual global consciousness.

Anyway, George died in an accident in 1973. I continued to teach his work for some number of years-

Rob Reid: At Esalen, right?

Tim O'Reilly: Yes, that's right. Again, when I knew him, he was working with teenagers. Then he got discovered by ... I forget quite how it happened, but he got discovered by somebody who was connected to Esalen, and he ended up going down there and teaching workshops for the staff.

Rob Reid: And then you ended up teaching at Esalen.

Tim O'Reilly: I ended up teaching at Esalen.

Rob Reid: As a team.

Tim O'Reilly: That's right.

Rob Reid: That's amazing.

Tim O'Reilly: At 18 years old.

Rob Reid: That's amazing.

Tim O'Reilly: Again, at some point I decided I did not wanna make a living becoming this pseudo spiritual teacher, so I ended up pivoting and getting into computers.

But the irony is here I was, 20-some years later, talking about Web 2.0, about global consciousness, that we had built this technology-mediated global brain, and then I started to realize, "Oh, he was right. We just didn't understand the mechanism by which it would happen." And that's really been a central idea throughout my career, that we are, in fact, building something that is bigger than we are, and there is this collective consciousness that is happening.

And it's interesting because, of course, culture is collective consciousness. It's really interesting how much AI brings this discussion into focus. Actually, I've recently been fascinated by making the connection to this concept that goes back to Lynn Margulis in 1967 where she articulates ...

Actually, it was before that; I think it was first proposed in around 1908. But she picked it up and demonstrated it. The idea of endosymbiosis is that multicellular organisms, eukaryotic cells, are are actually compound beings, that mitochondria and chloroplasts are actually bacteria that have taken up

residence in the cell. Eventually, this was proven by looking at the DNA. There's one set of DNA in the nucleus of the cell, but the chloroplasts and mitochondria and other organelles actually have different DNA.

Rob Reid: I knew about the mitochondria. I did not know that other organelles also had independent DNA. That's interesting.

Tim O'Reilly: You think about that, and then you think about all that we're learning about the microbiome. So, I started really thinking about that in the context of this collective intelligence question. You think about something like Google and you go, "Well, it's this mix of machine DNA," so to speak, this digital code that we've created, "and all this human code." Literally, there are humans inside Google, there are humans inside Amazon. That was one of the key concepts that led me down the path to Web 2.0, or whatever I called Web 2.0.

I hadn't even thought about this collective consciousness stuff since the early 70s, but here I am in the late 90s and I'm thinking about what happened with Microsoft taking over control of the computer industry from IBM. It was that hardware became a commodity with the PC. Microsoft realized there was this new source of lock-in in software.

I always thought, "Well, guess what? Open-source software and the open protocols of the internet are going to break Microsoft's lock. We're gonna commodify the old style of software and the lock-in of software, but something else is gonna become valuable." That's what led me down the path to the idea that it was going to be big data and collective intelligence.

In this period, I started talking about what eventually we now call cloud computing. The insights were, one, that ... I gave this talk around 2003 called the "Open Source Paradigm Shift, and I always would start out by asking people in the audience how many of them used Linux. If it was a Linux audience, it would be 90% of the people; if it was a Microsoft audience, it might be 10%. Then I'd say, "How many of you use Google," and almost every hand in the room would go up.

Rob Reid: Ergo, you use Linux.

Tim O'Reilly: That's right. Of course, this comes back to the idea of maps and language as a map. Everybody had this cognitive blindness that came from the PC world where what you used was the computer on your desk, and the idea that software was somewhere else was invisible to people. So, I was saying, "No, you're all using Linux," because that's what Google is built on. That's what Amazon is built on.

Once I thought about that, I was like, "Okay. Well, what's different about that software?" Microsoft would put out a new release of Windows every few years, a new release of Microsoft Word every few years. It was an artifact.

Rob Reid: A physical thing.

Tim O'Reilly: Yeah.

Rob Reid: It was a physical CD wrong. Yeah.

Tim O'Reilly: Yeah, and it didn't change once you got it, whereas these web applications were dynamic; they were always changing. They would stop working, in fact, if there weren't people inside of them.

I didn't think of this analogy to endosymbiosis at the time, but I literally asked this programmer who'd written a book for us called Mastering Regular Expressions, Jeffrey Friedl. I said, "What what do you do in your job with Perl at Yahoo?" Perl programming language. He said, "Well, I write regular expressions to match up news stories with ticker symbols for finance.yahoo.com."

At the time, I was really just thinking about, "Well, what's different about Perl than other types of languages?" But, "Oh, this guy is basically part of a workflow and a process inside this software. He's a software component.

So this idea that people were inside the application, of course, has continued to show up. You think about how every new AI application is being trained by Mechanical Turks, for example. You think about how Google gets smarter every time somebody links to something, how every time somebody clicks on an ad, every time somebody clicks on a link, how long they spend on the page ... Do they come right back? That means it wasn't the right pages they were looking for. All this implicit data that Google gets from that.

Rob Reid: And this is symbiosis between the people and the machine.

Tim O'Reilly: That's right. There's this symbiotic intelligence, and there's people inside it. The programmers who write the algorithms, and manage the workflows, and then there's people outside who are communicating with it. I eventually came up with this notion that we are the microbiome of these collective organism.

Rob Reid: Now, I know you haven't yet had a chance to read my book, but when I got to this part of your book, I was really happy. Now, this isn't much of a spoiler, because I think if anybody who's heard my book knows there's a super AI in it.

At some point, she comes to the conclusion that humanity is her microbiome. She informs a medical doctor of this fact or this conclusion, and that doctor is not really pleased to be informed that she is part of a computer's gut bacteria. It's a comedic scene, but premised on the notion that we could be seen as the microbiome of a giant technical infrastructure like Google or Facebook.

Tim O'Reilly: I think that's totally right. Even if it's not technically correct, it-

Rob Reid: Of course. It's an analogy. It's a powerful one.

Tim O'Reilly: ... is a very useful metaphor for helping us to see the world. That goes back to this idea of, "What do you see with a different map?" When you see that map ...

And this really becomes a central theme through the core of the book, is really the question of, "If this is a compound organism of people," and the nature of its intelligence is going to be very different. We are part of it.

Rob Reid: Right. Now, just to finish bringing folks up to speed on your background, you got out of Harvard in the late 70s, and within just a couple of years, you started what became O'Reilly & Associates and then, later, O'Reilly Media. Correct?

Tim O'Reilly: That is correct. Originally it was a tech writing/consulting firm. I had a friend that was a programmer who got asked to write a manual. I thought of myself as a writer; I'd written a book about Frank Herbert, this science fiction writer, so I said I'd help him out.

We went into partnership together writing manuals. This theory that, "Well, you have a programmer and a writer. They can do a better job." It was actually a key to what we did in the early days at O'Reilly.

Rob Reid: So, manuals for software people were creating.

Tim O'Reilly: Manuals for software, yeah.

Rob Reid: Yeah.

Tim O'Reilly: Then, starting around '84, I broke up with my original partner, the company that was originally O'Reilly & Associates later became O'Reilly Media, was actually incorporated in '83 after five or so years of doing this partnership.

But I very quickly wanted to make products, and I realized that many of my customers were asking for the same manual. I started retaining the rights and say, "Well, you want a [inaudible 00:24:33] manual, you can have us develop one up for six months or we can do it in six weeks by simply adapting this one we already have."

That led us to Unix, and then we had a big downturn in our business around '85. We started turning some of these Unix manuals into books, just because we thought, "Hey, let's see if we can sell 'em directly to consumers." Eventually, that really took off and we stopped doing the consulting. We became this technology publishing company.

Anyway, one thing led to another and we became very involved in the early adoption of the World Wide Web.

END INTERVIEW ELEMENT OF PART ONE

Hey Ars Technica listeners. Tim and I will continue our conversation tomorrow. If you can't wait to hear the rest of it – or, if you'd like to browse my other 30-ish episodes, you can just head on over to my site, at after-on.com. Or, type the words After On into your favorite podcast player. This interview originally ran on October 10th of last year. There, you'll find lots of episodes concerning about life sciences - above all, genomics and synthetic biology. Conversations about robotics, privacy and government hacking, cryptocurrency, astrophysics, drones, and a whole lot more.

If you like what I do, I hope you'll consider subscribing to my podcast and listening to some of the episodes in archive - all of which were designed to have long shelf lives, and none of which have gone stale yet.

And of course you can join me here tomorrow on Ars, when we'll continue with Part Two of this interview.

OUTRO MUSIC