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## Interview with Tim O'Reilly: Straight in the *fahrwasser* of the Mac OS X conference

Switch Staffs

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## Interview with Tim O'Reilly

Straight in the *fahrwasser* of the Mac OS X conference  
Switch Staffs on Mar 10 2003

issue 18

This interview took place on Thursday, October 3rd, 2002 at the O'Reilly Mac OS X conference in Santa Clara, California and was conducted by SWITCH co-editors Matt Mays and Stephan Hechenberger.

**Stephan Hechenberger:** What is the open source community? Is there really one or are there many? How are they organized?

**Tim O'Reilly:** I guess my response first of all would be that I don't think there's a single open source community unless it is the community of all people who are connected to the Internet and potentially communicating with each other. There's a historical story behind open source which has to do with the rise of a certain group of people with similar values and ideas, but there's also some broad social dynamics that are driving it. I always felt that the focus on licenses as the defining characteristic of open source missed the point. I believe that the real driver for open source has been the rise of communications networks and the way that people share information. In fact USENET, followed by the web and various other mechanisms for easily transmitting information, is what has really driven a lot of the booming attention that's come to open source and its effectiveness. Going even back before that, open source is an outgrowth of a tradition of sharing scholarship which goes all the way back to Renaissance. You publish your ideas, you share your ideas and you have your ideas critiqued. **Western science is effectively an open source project.** You have to put out reproducible results. When it comes to computer software, how do you do reproducible results except by sharing the source code? So there's a whole research and education component of how people shared their ideas when it came to computers that was accelerated by the network.

**Stephan Hechenberger:** The science community is highly competitive and often elitist. What about the open source community?

**Tim O'Reilly:** Well I think in any of these fields there's a tradition of cooperation and competition. I would have to say that while there is pretty serious competition in science, there has been an awful lot of cooperation over the years. There's also competition in open source. Have you ever seen Perl and Python people pissing all over each other? What about BSD and Linux people. Then there's Richard Stallman saying, "Hey, you're not giving me my credit! I was really the guy who should be getting recognition, not this Linus Torvalds guy!" That's not that different from a couple of scientific researchers claiming pride of place. I think that it has less to do with open source or science and more to do with human nature. I have to say there is also altruistic element of open source. You have to tease apart the various aspects of a historical movement like this. In the beginning it's very easy to be altruistic because there's a lot to gain and not a lot to lose. **When Larry Wall decided to give away Perl he didn't have any prospect of profiting from it.** One of the things that drives open source is you're trying to solve your own problem, or as I think Eric Allman put it first, "scratch your own itch." Then the payoff is solving your problem. Then you can get the extra benefit of giving away your software and it being useful to someone else. That's the altruistic impulse.

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**Stephan Hechenberger:** Do you still think it is like that, or do you think that maybe it was just an important element in the beginning and at a certain point it became something else? I totally agree that in the beginning solving a little problem is really interesting. It just feels good.

**Tim O'Reilly:** You have to look at this almost like a wave front. A lot of the areas that are originally altruistic and oriented towards sharing become the focus of possible profit-making and there starts to be less of the altruism. This is because people have a calculus and ask themselves, "is it better for us to share and get those benefits or is it better for us to try to make money?" So you see a move to the middle. Meanwhile out on the fringes, where the new development is and where the money hasn't yet come into play, the same altruism is going on. I think it's a natural evolution. Look at a field like bioinformatics or some of the other cool things that people are doing just out on the fringes of open source. They're not saying, "oh yeah, we can really profit from this." It's the same dynamic and that dynamic just moves on. I often think of it like the old images we got in school about the frontier myth in Western American History. First you had the Daniel Boone-type guys who are out there in the wilderness. It gets too settled after a while and they move on in search of the new frontier. A lot of the open source people who are really motivated by doing cool stuff and sharing their work eventually move on to new areas. For example, there's a huge open source impulse happening right now in bioinformatics which is a very cool new area having to do with gene research. I do think there's some very strong idealism even in the face of capitalism and potentially big money. A year or two ago I asked a group of well-known open source developers, "what do you think most significant act of open source in the last year?" They all scratched their heads and were mostly thinking about the things that were happening with Linux. Then I said I'll give you one example that I bet you haven't thought of but I bet you will all agree with as soon as I say it. It's this guy named James Kent at UC Santa Cruz. He basically worked night and day for 3 months to build the gene assembler that kept the human genome in the public domain because someone else was going to patent it. They had this big commercial effort going and he said, "man, I don't like that." Everybody said, "yeah, you're right!" His software, I don't remember quite what his license is, it was less about the software and more about the impulse to say that some of this stuff belongs to all of us and we don't want to see it go private. A big part of open source is about collaboration. Creativity is an activity that may not even be motivated by generosity or idealism. Sure there's always the myth that you're going to write the great American novel and you'll become famous and rich and so on. Then you think about the amount of work that people put into writing and publishing poetry. I think the average poetry book published in American sells 200 copies! It's not like someone is sitting there saying, "I'm going to make my fortune." They want to share. **Sharing is a basic human impulse.** It's kind of interesting because the whole rise of networking is changing the opportunities for creativity. This is why I find the positions of media companies, such as the recording industry or the MPAA, relatively short-sighted by trying to restrict the pirating of intellectual property. People are already doing their own voiceovers of movies or doing mixing of music in different ways, and this is part of the creative ferment that eventually leads to new revenue opportunities. Everybody is concerned about losing what they have now when they need to be thinking more about what's going to be possible. It's kind of ironic that are being pushed by the RIAA and the commercial music industry would actually cut off one of their own revenue sources. Think of the amount of sampling that goes on in rap for example. Is that suddenly illegal?

**Matt Mays:** O'Reilly is a publishing company that's primarily dealing with software. The software you often focus on is created in an open model where the information, the code itself, is distributed openly. In your keynote you made a comparison between software publishing and software piracy by pointing out that obscurity, not piracy, is the worse fate a book can encounter. So with O'Reilly you have this constant play and intermingling of literature and software that I find very interesting. How do you see software acting as literature?

**Tim O'Reilly:** In some ways I think that software is already literature in an odd way. The foundation of literature, of course, is speech. One of the things that people who are outside of the software industry forget, or don't think about, is that software is basically speech with computers. It is a gradation of speech in the sense that there's canned speech. This is a lot of what the programs that ordinary people interact with are. They're effectively working within a framework that someone else creates. A lot of what programmers, power users and hackers do is they're doing more free-form speech with the computer. I think as we get better and better at working with our devices and our devices get smarter you're going to see a real blurring of the boundaries between software and other kinds of expression. We've already see this around some of the encryption debates, where someone asks, "when is it a program and when is it an expression?" Obviously that's not yet artistic, but what do people do with computers? People don't really think of a web page as a software artifact but it certainly has many elements of a software artifact. They can be expressive. For example, the whole weblog movement is very much a literary and personal

communications phenomena. You have software that communicates with the computer to help you communicate with other people. Increasingly computers are about communication, and communication is something that we have traditionally regarded as both functional and aesthetic. Take what I do. There's certainly a functional element to it, but it's also aesthetic. One of my personal books that I think with is actually an essay by the poet Wallace Stevens. It's called "Notes Toward a Supreme Fiction." He said ultimately we're all trying to persuade other people of our vision of reality. That's the fundamental aesthetic act. He said we used to think it was about finding the truth, but in some ways it may be more finding something that we want to believe in. That it's a fiction, not necessarily a truth. It's finding an acceptable fiction. So I put that together with the quote I used the other by Edwin Schlossberg, "the skill of writing is to find a context in which other people can think." I'm trying to build fictions, if you like, or stories that help people see the world the way I see it. Now at what point does that stop being a functional communication and start being an aesthetic communication? That's something that you have to really look at. A work of art is an attempt to get other people to see the world the way you do. When it works, it works because someone recognizes it. They say, "yeah, wow! I didn't think about it that way." You think about Van Gogh and you think, "wow, what kind of mind does it take to see the world in that way?" Or take something like music. I'm a big opera fan and I when I listen to an opera I think, "somebody make this up! That's amazing!" (laughter) They are able to create an artifact that makes me think at least a little bit like they did. So I think ultimately it's becoming very hard to draw a line between our functional daily communications and our aesthetic communications. What I think is really wonderful about where we're going with computers is they allow people who care about something interesting to find other people. That's really another big lesson from open source. It's really changed the social dynamics around finding an affinity group. It's not just about open source. Think about the Linux kernel for example. The number one guy was from Finland, now he's in California. The number two guy is from Wales. When was the last time that Wales was the place that you could easily connect with high tech? In the old days you would have had to get these guys together in some place. They would have had to physically migrate to some center where these types of things were happening, but now they find each other in cyberspace. Take Perl. A lot of the core Perl developers are spread all over the world. The Apache developers are spread all over the world. Similarly, take the blogging community. It's people who all know each other. A conference like this is wonderful because people who met through this wonderful communications medium come together in the physical world. They're able to find each other and collaborate. You can find people that care about the same things you do, or think the same way, or even "Think Different" as Apple likes to say. "Differently" my editor hat says. (laughter)

**Stephan Hechenberger:** The way the Internet is addressed is largely topographic. It's not based on interest or on physical communities. Jan Hauser is actually developing a network addressing system that addresses people according to their interest and their knowledge and not according to where they are located. Because as you said, it doesn't really make sense as it is now. How do you think that could function in the open source community?

**Tim O'Reilly: The thing we really have to get is that there's way more "Internet time" ahead of us than behind us.** We're going to see immense change in all these things. People are going to invent new ways of connecting, new ways of relating. I'm fairly confident that there will continually be new ways for people to find each other, new ways for them to associate, new ways for them to show their interests. I agree, the dynamics that are so familiar to us, the dynamics of physical space as being the principle, primary way of organizing people and organizations is breaking down and we really will see some fairly large changes over the next decades.

**Matt Mays:** One thing you touched on in your Keynote that connects with Jan Hauser's JINI project is Rendezvous and pervasive computing. How do you see that operating in the open source community?

**Tim O'Reilly:** Jan's also done some very cool stuff with putting 802.11 domes over National Parks by the way. There's a concept that Cory Doctorow uses in his science fiction book that I mentioned, *Down and Out in the Magic Kingdom*, that he calls the ad-hocracy. It's about this whole idea that ad-hoc associations are really something that's part of our future and that people are getting together for a purpose as opposed to having very fixed, long-term relationships. He really gets into it from the point of view of reputation economies and the idea that if you want to take something over you have to get people to think that you're the right person to do it. You get a group of people, get some momentum and excitement going and before long you're in charge. You see that dynamic happen in open source projects. **Projects are associated with individuals more than they are with organizations.** There are hybrid projects where there is an organizational sponsor or somebody leaves the organization and keeps it, but in a lot of cases a person is associated more strongly with it and they form an ad-hoc group. If Linus Torvalds decides to leave Transmeta tomorrow,

Transmeta doesn't have any stake in Linux. He shows up somewhere else and Linux is still associated with him until perhaps someone takes it away because they've managed to persuade the technical community that they have a better vision than he does. It's those sort of ad-hoc networks that are forming at the level of people, but the whole Rendezvous concept is also about ad-hoc networks of devices and services. A lot of policy debate around peer-to-peer says "oh my God, this is the end of copyright as we know it, how are we going to stop this." Actually this is a fundamental change in the way technology is making it possible for people, objects and services to associate. And I think it's exciting. It's a real opportunity. Yes, it will create dislocation. But so did, for example, the introduction of the automobile or the introduction of mass production. It's exciting to be in a time when new technologies are creating fundamental changes. The thing that's even more significant, of course, is that the changes that are happening in the software industry are just the tip of the iceberg. We're getting pretty serious advances in biotech, and nanotech is starting to come out of the pages of science fiction. You start thinking about that one and we're not just talking about software or music being shared. **We're talking about designs being shared.** Already there are relatively primitive machines where you can make things, physical objects, from a computer design. We had a talk at one of our conferences where a guy called it "Napster-fabbing." They have these fabbing machines that cut things out of plastic or assemble them with effectively a 3D inkjet printer design. The armies are already using these. They have a truck break down in the field and they make new parts on the spot. All of a sudden you're sharing designs for physical things. What happens when you can make stuff? There are radical, radical changes ahead of us. Some of it's going to be functional, some of it's going to be aesthetic and some of it's going to be both. As I said, I think it's a really exciting time. You can always make a choice: you're going to be afraid of the future and you're going to try to keep things like they are, or you're going to embrace the future. I think it makes a lot more sense to be excited about it and do your best to make it a good one.

**Stephan Hechenberger:** Where do you see yourself in the field of open source? More on the frontier, the core, or both?

**Tim O'Reilly:** I'm really a commentator on open source. I'm somebody who assists it. I've done a little software development in my life but at this point I'm an executive. I run a company. Most of my energy has been as a writer and commentator on this so I don't see myself as central in any way to open source. My concern always has been to try to articulate what I think is important. People think of us as primarily a publisher, but there's another way I think about what we do as a company. I actually articulated this 4 or 5 years ago in one of these sort of famous "mission statements." There's a wonderful book about business called *Built to Last* by James Collins and Jerry Porras that says companies should have "big, hairy, audacious" goals. That was his line. So I sat down and said, "what's my big, hairy, audacious goal?" What I wrote down, and what I think really captured a lot of what we really do, is "we want to change the world by capturing the knowledge of innovators." In others words find people who are doing really new stuff and then help spread the word. So we do that through books, we do it through conferences, we do it through online publishing and other methods. We also do a lot through advocacy. We say hey, this is what's important, this is a way to think about it. If I were to say what my role in open source is, it's really to try to help people think through what's important about it and where of some of the pitfalls I see are. I hope that I can help the good things to spread and the bad things to go away.

**Matt Mays:** I think that evangelist role is fascinating, how you help convince people about your ideas of open source, patent reform, fighting DRM and those types of things. Sounds like you got a lot of that from Brian Erwin and the Sierra Club. Your books are about software, and in the community there's this ongoing political question of the dominance of software companies like Microsoft in the global marketplace. How do you see software as political, acting politically, specifically in regard to America's dominance in the world economy?

**Tim O'Reilly:** Interesting question. I have to say I'm not sure I think of software as any more political than any other aspect of American culture. In fact, there's certainly some people who think that the Internet, television, and these sorts of things are a part of a Western imperialism where we're shoving our own culture down others' throats. There's obviously some truth to it because there are cultures that are being radically changed, but we're also being changed by them. I guess I don't see the software industry as any more intrusive or dominant than, say, agri-business. I happen to be dealing with software because I think it's one of those inflection points that's changing the world right now. Realistically, if you think about things that have impact on all of us, some of the decisions that have been made in less sexy fields are pretty mind-blowing. You think about what's happening with antibiotics because farmers feed the antibiotics to the pigs and cows and all of the sudden they don't work for human diseases anymore. Then there's the genetically-modified organisms debate. There are pretty big issues out there about the way technology, business and society interact. There's certainly a lot of thoughtless imperialism in American culture, but there's also a

lot of wonderful generosity and optimism about the future. There's good and bad and all of us, and as I said we have to try to help the good and impede the bad where we are.

**Matt Mays:** You spoke in your keynote about the philosophy of UNIX and modularity. It made me think of Lawrence Lessig and how he talks about modularity in a constitutional context, about how the "code" is open and may include the system of *stare decisis*. There's also this issue in open source of empowerment, where users of technical systems are able to modify the systems themselves. Apple's OS X is this interesting node where, to use ESR's terms, you've got the bazaar of open source meeting the cathedral of a large company, a notoriously secret company that is very protective of its intellectual property. How do you see that conflict working itself out?

**Tim O'Reilly:** You know, it's an interesting question. I can't really do more than try to lobby for what I see. I really don't have all that much influence, but I just had lunch with a fairly senior Apple executive talking about some of those issues. The thing I would have to say that's important, going back to your point about Lessig and architecture. Larry influenced me immensely. His book *Code: and the Other Laws of Cyberspace* is just a must-read book for anybody who's trying to think about the issues that are facing us right now. The idea about architecture that he articulates there is something that someone like Apple really needs to take to heart. **It's less about how open they are or how secret they are than it's about building an architecture where their stuff plays well with other people.** If you take some of the iApps, say iPhoto or iTunes, they have some really great stuff. They're thinking about what people want to manage today, but they haven't followed through on some of the architectural implications of this coming network world. You can say, "here's my iTunes," but what about his iTunes? You can say, "here's my iPhoto," but what about the one on my wife's laptop? How do they share? What do we say is public? What do we say is private? So you have to start thinking about this idea that architecturally these devices are going to communicate. I've been lobbying for them to think through the user interface guidelines of the next generation of Mac applications, and one of them is, "assume Rendezvous." Everybody should assume Rendezvous. You've got to think about what that means. You've got this wonderful piece of the puzzle but you haven't taken it all the way through your stack. That's more important than whether it's open or closed. Because the fact is, if it's going to have to rendezvous with other people, what immediately follows is that certain things have to be open because you're not going to be able to rendezvous with people unless you control both ends. And so you start getting into this question of whom might I rendezvous with and that gets you into this UNIX and internet communications philosophy where you have to assume that you don't necessarily control all the pieces. **I think that is where Apple is oddly in a stronger position than Microsoft because they don't control everything. They have to figure out places where they can play well with others.** I like to think they can also figure out how to move away from secrecy. For example, if you take iTunes, iPhoto, Address Book or whatever, you want to figure out various kinds of openness. I mentioned in my talk the whole Watson versus Sherlock thing. Watson has plug-ins, Sherlock, at least right now, doesn't. I think they're working on it, but how do you build a plug-in architecture that lets other people add to your product? I think one of the things open source teaches us is that even if something like Perl or Linux is "open source," the fact is it's pretty tightly controlled. You don't get a patch into the Linux kernel unless Linus or Alan say "yeah, we like this." What's the difference at the end of the day?

**Stephan Hechenberger:** The difference would be you could do it yourself.

**Tim O'Reilly:** Oh yes. Eric Raymond talked about it in "Homesteading the Noosphere." There's a lot of implicit property rights. People act as though there are property rights. It's a big act to fork something and there's some resistance to it. Yes, it's possible. I agree there is some fundamental value in the right to do that. I'm not saying that there's no difference. What I'm saying is that in practice, where a lot of the interesting open source activity happens is not in the project core, but further out. Larry Wall in one of his keynotes at the Perl conference brought up this image of an open source project as an onion, or more specifically Perl as an onion. He said (paraphrased) "here am I, a very little part of the onion. **And if you like onions I'm the least important part.**" Because all of the stuff is in the outer rings. Well-designed open source projects have many rings, so what I say to Apple is you can be as secretive you want about the core. It would be nice if you could figure out ways to be open, but what you really have to do is enable some outer rings where people can contribute stuff, where people can add either commercial plug-ins, or they can add free-plugins, or whatever. So develop that open outer layer. I also think it would be really neat if they can develop an open core as well, but I'm actually not a purist who believes that everything has to be open. To me open source is a strategy. I know Richard Stallman and some others think it's some sort of fundamental right. I'm maybe more libertarian than that. I don't believe that anyone has the right to the fruit of anyone else's labor unless they want to give it. I wrote a piece called "My Definition of 'Freedom Zero.'" Richard thinks that "Freedom

Zero" is the right of users to change and modify their software. I say "Freedom Zero" is the right of someone who creates something to decide what terms they're going to give it away on. If somebody says "I'm going to create this and I'm going to sell it" then more power to them, because the other person has the right to say "I don't want it. I'm not going to pay you." So there's always that calculus. Where I've always gotten on Microsoft's case is not that their stuff is proprietary, but because they got into a position of market power that they then abused. They had the monopoly and said "you have to take it on my terms or I'm going to screw you." That's where you get over the boundaries. If Microsoft was like Borland, who would care? **The fact is they've got everyone by the short hairs at this point and they use it.** That's also the heart of the anti-trust case; you have to act differently when you have that much market power. So you have to say when do you want to share, when do you want to keep something private, and what are your objectives. I often believe that if you do that consciously you'll often find that it is beneficial to share and that's it's good for you. It builds your success, but I don't think that it's a moral imperative. I respect those that do feel that way, but I have to disagree with them.

**Stephan Hechenberger:** Isn't it the case that most of the time when you create something you use pieces from other people? That you basically steal from all over the place to put the thing together and all of a sudden it's yours and it's only yours?

**Tim O'Reilly:** We'll there's a couple of issues that come up there and one is yes, there is the idea of the public domain. That was something that Larry Lessig brought out in *The Future of Ideas*. We have a society in which copyright has gone mad. It was funny because I remember back as a young author when the copyright law changed sometime in the 70s. Before that if you didn't put an explicit copyright notice on something it was in the public domain. You had to actually put "copyright," a little "c" with a circle, the year, and your name or else it was in the public domain. Then they changed it where with no copyright notice it's automatically copyrighted, not to mention extending the duration of copyright. All of the sudden nothing goes into the public domain, and that's a very scary situation. That's an abuse going way in the other direction, particularly now that copyright lasts lifetime of the author plus 70 years. So we look at our culture and see how someone like Disney profited so much from work that was in the public domain. You look at most of their successful stories and they came from the Brothers Grimm. **Sure they created Mickey Mouse and Donald Duck but they also made huge amounts of money from Cinderella and Snow White, not to mention the story of Pocahontas and the Hunchback of Notre Dame.** The kinds of things that they're profiting from, they're not sharing. So I've lobbied software companies to put their stuff in the public domain if they're no longer profiting from it.

**Matt Mays:** Couldn't you make a comparison to Apple? Aren't they profiting off software that's not technically in the public domain but is distributed openly?

**Tim O'Reilly:** I see nothing wrong with that. The fact is that if someone put it out and said you're free to use this, that's great. I had that discussion back with Bob Scheifler, who is one of my open source heroes. Bob was the director of the X Consortium. When we were first doing our books on X we were a little company and there were some people giving us heat because we were basically improving the documentation and putting it out under an O'Reilly copyright and selling it. We weren't just putting it out under a free copyright. Bob said, "that's exactly what I want. I want people to take what we do, build on it, profit from it. That's what all the hardware vendors do, that's what all the software vendors do, that's the model we have with the X Consortium. " We took the X documentation, we incorporated it into our books and we profited from it. On the other hand, when we wrote a book about GNU Emacs we said OK, here's our choice: we could take the free software documentation and improve it, in which case we would need to abide by terms in which that is written. In fact Richard didn't want us to improve it because he didn't want us to resell it. So we wrote our own. You make that choice and the fact is that Apple can incorporate anything they want that's been put out freely and I think that's really important, The issue that's really a problem is things that are no longer being used are still being held hostage. You look at where someone has done some really cool piece of software, the company went out of business, and it ends up in IBM's patent portfolio or somewhere in vaults. You guys have probably seen Raiders of the Lost Ark where they end up putting this thing in a crate in this endless warehouse. **There's this sort of endless warehouse of intellectual property that we're building where there's all this stuff that no one is ever going to see again and it's all for the sake of "there might be something valuable in there."** We're making a big a mistake there. I think you want to give people the right to say, hey, I'm going to have some restriction on this, and again this is the original intent of copyright. It reserves for someone for a limited time the exclusive right to profit from their creation. I think that's a reasonable trade-off for a society to make. We say you can keep it secret and profit from it and trade secrets still exist. There are some extremely valuable ones like the Coke formula or the Kentucky Fried Chicken formula. Then there are other things that people say "hey, we'll

put it out there." That's the original idea of patents. You'd have to disclose the way your invention worked. It's kind of funny because, like so many things, it's gotten corrupted over the years. It used to be you had to provide a working model. **I'd love to see where in order to have a software patent you'd have to provide the source code and make it the public.** That would be right with the original intent. You have to have a working model. What's the working model of a program? Well, the source code. So the idea was that you get the patent in exchange for disclosing how it works. Again, patents, for all the abuses, are actually in some ways not as bad as copyright right now. I always liked copyright better than patent as a protective mechanism. They have advantages except for the length of time. I think going back to the much shorter time period is something that's pretty important. That's why Larry Lessig has started talking about the Founder's Copyright idea. Something we are going to start doing is saying "OK, after 14 years this is in the public domain." We have to figure out the legal mechanism for that because it's sort of hard to actually disclose that. That's part of what Creative Commons is trying to do, how do you actually declare to the world that yes, you can actually use this stuff now because the assumption now is you can't use it. (laughter) It's kind of a backwards situation.

**Stephan Hechenberger:** It was great when open source projects actually accomplished something. I'm thinking of post-Linux software where you could actually download something and it worked. Nevertheless it's still always associated with incredible difficulty in setting it up. Even if the software is free to use, isn't there profit you can make from the set-up and putting the pieces together that would elevate it to another level? Do you see development like that occurring?

**Tim O'Reilly:** Absolutely. **And that's one of the reasons I think that proprietary software companies and music companies that are afraid of filesharing don't have to worry about it.** I made this point in one of my talks here. It really might not be quite as real to people who weren't around the pre-commercial internet. Here was something that was completely free and completely cooperative. It started for me not with TCP/IP but the UUCP net. UUCP was this dial-up computer network. You found someone, preferably in your town, maybe they were somewhere else, that you could call on the phone and arrange a time where your computer would call theirs. It might be in the middle of the night. You'd have this little slot. You'd set up a cron job and your UUCP daemon would call them up and you'd exchange mail and news. It sometimes took 24 hours to 3 days for an email message or a USENET message to propagate across the net. But bit by bit that started to change. Rick Adams, the boss at Seismo, told about how they had become a sort of central site because they had the transatlantic link. He asked himself "why are our phone bills so big?" He realized he had to set up something where people would pay for access and so they set up a non-profit originally. Bit by bit everyone realized that it was better to pay and get better connectivity, and that was the birth of the whole ISP industry. UUNET eventually switched over to TCP/IP. The same kind of dynamics happened; people were doing it all cooperatively and now everybody pays. No one does it cooperatively. Except, actually, you see it now with wireless. Rob Flickenger... I don't know if you guys saw his talk about wireless community networking but you can go to a site like nocat.net and read more about it. **People are climbing on rooftops, trying to find line of sights and building these homebrew antennas so they can extend the range of their wireless connections. They're sharing in the exact same kind of way that in the UUCP days we would share.** Someone would call up and say "hey, can I dial into you," and you would say "yeah, would you relay for me?" Same thing. Some guy says "hey, I see your house from mine, can I put an antenna on your roof?" Actually Rob lost a kidney falling off a roof because he was setting up an antenna. For the true die-hard believer pioneers, that's great. But will people eventually be paying a monthly subscription fee for wireless internet access? Absolutely. Because it's going to be easier. So similarly, right now people are pirating music because that's the only way you can do it. If you want to get music to play on your computer, what they call "piracy" is the only way you can do it. (laughter) As someone said to me earlier today, **the music industry is complaining that everyone is shoplifting from their store, but there's no check-out!** You know? There's no cash register! So I guess all that I'm saying is that all of these things move. So going back to free software, specifically. The hackers, the pioneers... yeah, they're willing to go through the pain of setting it up. But even the move of people from Linux to OS X shows that even the hackers say, "hey, I've got better things to do then to try to get my base system to work, I want to actually work on the stuff that matters to me!" So you see that even when things are free it's possible for someone to package it up very attractively. Obviously Red Hat has done this with Linux distributions. But that also hides the fact that that does change some of the financial dynamics. That's where there's some deception in all of the marketing around these issues. For example where the RIAA is saying, "everything will be pirated." I don't think they really believe that. What they're really saying is "someone might make some of the money that we're making now."

**Matt Mays:** Well I think even more so than that they're wanting to control the market.



**Tim O'Reilly:** That's absolutely right.

**Matt Mays:** They want to control the distribution channels so that everybody has to listen to Britney Spears. Because given a choice, they probably wouldn't. Going back to people hacking with antennas on their roof, do you see a threat... or the reality at this point... of creating an architecture of control in hardware? I'm thinking of the TCPA and Palladium. Do you think that threatens that kind of culture and that an underground hardware culture could develop?

**Tim O'Reilly:** Absolutely, if in fact we get wide deployment of things like Palladium. It's funny, like so many things, it has elements of a good idea. So many parts of what we do are badly broken because we don't have security built-in. The down side of course is it is now being coupled with a whole set of ideas of building an architecture of control. **Who's in the control seat is the question.** If some of the things that are in Palladium had been done early in the history of the Internet and had been done just a little bit differently we might have all really thought it was great. The problem is it's being done for the wrong reasons by the wrong people at the wrong time. There's actually this great quote from T.S. Elliot from his play "The Murder in the Cathedral." This character says, "the last temptation that's the greatest treason is to do the right thing for the wrong reason." Building security into the network is a good idea; building security into the network so you can control what people see, when they see it, and make sure that they pay for it... that's a very bad idea. The thing that I guess I would say about this architecture of control, again that's one of Larry Lessig's key ideas in *Code: and the Other Laws of Cyberspace*, is that the internet architecture that we appreciate is not a given. People are working to change that architecture into something fundamentally different that can be an architecture of even greater control. But I have to say that's almost always the case in virtually everything that we do. There's a good side and a bad side. You trade off convenience for privacy. For example, Fastrack, the thing where you drive through the toll booth. Then all off the sudden they start monitoring you somewhere else as well. Or GPS... "we'll start watching how fast you drive." They are really some very scary things but there are also some benefits associated with those things. Going back to your question about underground hardware culture. I agree, for every attempt at control there are also going to be countermeasures. The thing that I think is probably a bit of a warning for those of us who would like to think that it all will pay off is that we're actually a relatively small minority. I'm letting my political leanings show a bit too much, but look who we have for our President. There's a lot of people in America who don't share the value of freedom and people's creativity. There's a lot of people who want to be a part of that consumer culture, the couch potato that Cory Doctorow said people would like to be. Some people are living in, I don't want to single out any particular state, but people are living there in what someone in Stewart Brand's CoEvolution Quarterly called "the fat middle waist of America." (laughter) They're happy with consumer culture. They're happy with the fact that McDonald's is the restaurant in town. **They're happy with the fact that they buy their clothes in all the same stores and watch the same T.V. shows.** They don't think about this creative fringe culture that matters to us.

**Stephan Hechenberger:** They can't just jump on there, it takes a vast amount of knowledge to participate in open source. It takes a lot of preparation, a lot of education.

**Tim O'Reilly:** I agree and disagree. I think it takes a vast amount of knowledge to participate in any specialized field and we all think software is a specialized field. But if you look at open source with a much broader brush and look at it as a cultural phenomena, open source is about participating in your culture. Like in the Rodney King trial where someone had videotaped a beating by the police. That's a kind of open source, open source journalism, and open source journalism is something that's on its way. More and more people are going to be carrying cell phones with little video cameras in them. Something's going to happen. This points to a book called *Transparent Society* by David Brin where he talks about where there are going to be all these tools of surveillance, but there's also going to be all of these tools where citizens are going to be able to watch what's going on. Counter-surveillance. So you starting thinking about how you are going to deal with it. There's a lot of interesting surprises ahead of us. **I'm not just talking about open source, it's the impulse to participate.** Thousands of people are now on LiveJournal or whatever. Their personal stuff, whatever it is. People are using the more technical-oriented blogging tools. That's part of the open source impulse. Open source is much bigger than just software. Software was just the first expression because they people that were using software and developing software are really the first to understand its impact. What showed up first in the high-tech software development culture, these ad-hoc networks where people are working on common projects, I think is really spreading beyond software development. So in some sense open source is a choice between a participatory culture and a couch potato culture. If you basically want to be in the couch potato culture, then you're choosing different than if you're choosing the participatory culture. **So art has always been kind of an open source culture.** People are building things,

sharing things, trying to get them out there. There's always a creative fringe. Open source is just the creative fringe of the software movement and the creative fringe of every field is being impacted more and more. Meanwhile there is a passive consumer culture and I think one of the exciting opportunities is building tools that make it possible for people to be more proactive, be more participatory, to share more things, whatever they may be. I actually think the impact of open source is going to be seen way beyond software and that's going to be exciting.

**Matt Mays:**In a way open source has a counter-surveillance element to it. You're starting to see countries like China, Mexico and France moving to open-platforms in schools and government. In some cases it's an economic choice, but it's also because if you have the source you know what's there. Governments would like to, for instance, have encryption systems that they have a key to. There's always conspiracy theories about how certain software has back doors built into it by the government or corporations. How do you see that aspect of open source developing in other countries as a reaction against companies such as Microsoft?

**Tim O'Reilly:** I guess I would say that ultimately I'm not all that convinced that open source, software particularly, is going to have that impulse. Take Red Flag Linux. It's great, China is saying "hey, we're going to develop Linux and adopt Linux and we don't need no stinkin' windows." Right? But for the vast majority of people in China who are not open source developers, whatever they get they're going to get from someone. They're going to get it from the Chinese Government. Yeah sure, people who are smart enough could go hack it, they could go download it from somewhere else or patch it.

**But the fact is most people are going to take what they are given.** You really have to frame this in the context that open source is an attitude, open source is in some sense a privilege of an educated elite. What the obligation is for the people who are involved in that elite is to try to take the benefits of that mindset, the benefits of that culture out in a broader way recognizing that 99 percent of the world doesn't care. We can make things a little better for them, we can make things a little more open, but the fact is it's part of a creative fringe. Now the creative fringe is absolutely critical, it's part of the mix that's so important to society because that's where all the new important, valuable things happen. There's two things that I really think are the sources of value in cultures in an odd way: one is the creative fringe, and the other oddly enough is in the other extreme, in concentrations of wealth. Which is sort of odd because they are often very opposed. **If you think all about all the world's great treasures, they're almost always the product of someone who in that time would have made us say "what an asshole."** Because it's the guy that has accumulated all the "stuff" and built a palace that was a patron of the arts. What do you visit when you go some other place? You tend to visit the artifacts of someone who was that day's equivalent of Bill Gates. Meanwhile, what was he accumulating? He was accumulating the work of all these creative people. So there's an odd way that the two complement each other. Then there's everyone in the middle, and they benefit to a greater or lesser extent. What we're offering is to people who are in that middle is, hey, you can be a part of this participatory creative culture, or you can be a part of the passive culture. What's most important to me is that people have a choice, and of course having a choice is partly a product of education. There's an immense amount of luck to it. This is a side of the Internet we often don't think about, but it often brings choice to those who otherwise didn't have it. We've invested quite a lot over the years in, for example, the Internet Society has a Developing Countries workshop. We've always donated books and support. While you guys have this incredible opportunity to program and have computers, imagine if you were basically this genius and you're living in this little village somewhere in Africa where they don't have computers. You can't begin to exercise that choice. That's a real choice that missing. So part of it is that there are people that are happy to go home and open a 6-pack and watch the ballgame and they don't care. Then there are other people who would love to be part of this creative participatory culture. I think our challenge is to make opportunities for those people as wide as possible and to make sure that those who are short-sightedly and for their own benefit trying to restrict the ability of people to become part of the creative or participatory fringe don't create more roadblocks than there already are.

**Matt Mays:**On an end note, I'm curious about your classics background.

**Tim O'Reilly:** I originally decided to study classics because I was really interested in the evolution of consciousness. I got into this idea that there was something that happened back in the beginnings of our Western Culture that was significant, where there was a certain set of ideas that had come into play, a certain way of relating to the world. I wanted to explore that. So it was kind of a version of what I'm doing now. Rather than exploring the kind of changes that are happening now I was asking "what was the last big inflection point, the beginning in some ways of our modern western tradition?" So that was why I decided to go study classics. I actually wrote my thesis about Plato's *Dialogues*. As you know, when you write a thesis it's usually about some minor point and you try to make big things out of it. I took some passages from Plato's *Dialogues* where people had gotten these ideas that he was a mystic and influenced by

the Pythagoreans and all this other kind of stuff, and I said, "what do you mean?" He may have been, but what I really see here is that these ideas that he was wrestling with were new. **New ideas are incredibly exciting, and they have power in a way that is very different then when they've been rehearsed for 2000 years.**

(laughter) This is a description of how it feels when you wrestling with this amazing stuff! That was the gist of it, that this extravagant language he was using really had to do with the fact that this stuff was so new. That the idea of an exploration of "what is truth" was such a turn-on, and it is. Some of those things are very intense. But the thing that was sort of interesting about classics and how it fit when I started getting into computers is that a lot of studying language is patterns and pattern recognition. A lot of what I've really tried to do with computers as well is try to see what the patterns are in things and tell the stories of those patterns.

**Stephan Hechenberger:** Something like finding what you're not looking for?

**Tim O'Reilly:** Yep.

*Transcribed and edited by Matt Mays.*



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