



Changing the World

Charles Petrie • Stanford University, retired

Steve Jobs changed the world. He did amazing work and produced amazing products that went from cult to mainstream. But what does that mean, that he “changed the world”? This is interesting to consider. I’m not going to do my usual deconstruction because “changing the world” isn’t a technical term but rather polemic to indicate how much everyone’s lives are now different. Rather I want to consider how he not only developed technology but also innovated business models, and to point-out one world-changing technology that might not have been had he not promoted it in his typical visionary way.

I should preface any discussion with the background that I’m not an Apple fan. I’m even less a Microsoft fan. As I’ve mentioned previously in this space, for the past two decades, I’ve begun all of my talks with the announcement that “No Microsoft products were used in the making of this presentation.” Increasingly, this announcement is met with cheers rather than bewilderment.

But I’m not keen on Apple for much the same reasons that I don’t like Microsoft, except that Microsoft’s business policies have been more “evil” because of their perversion of standards.¹ What I like are open platforms and standards. Microsoft pretends to adapt open standards and then changes them so that only its proprietary software works properly. Apple at least honestly produces its own proprietary protocols and formats. But they are still proprietary.

The rationale for this is that they do it “better.” People love their interfaces. I can’t speak to this, having no talent for such. In fact, whenever I try to use a new Apple product, I don’t find it intuitive, and I usually quickly manage to hang the system because I’m trying to use it in a way for which it wasn’t designed. I do like the

modern Apple OS because it’s based on Unix-like Next and there is a terminal I can use. But I appreciate that other people love these products and that Steve Jobs was apparently a genius at satisfying their needs.

Okay, enough context: Did Apple products change the world? Everyone seems to think the answer is obvious, but I have to think about it a bit. What changed for whom, and why was the technology so successful?

Innovative Design for the Rest of Us

Let’s start with one of Apple’s most famous mottos – that they make products “for the rest of us.” Obviously, this is not me, but who are “us”? Is it all the people in the world who couldn’t afford a PC? Clearly not. I would hypothesize that “us” are the upper middle class (or their children) who can afford Apple products and who have a good appreciation of design. Apple products aren’t for people who are saving or have little money. Ubiquity is certainly not the source of the claim that Jobs and Apple changed the world.

And it’s not the technology. Okay, many of my computer scientist geek friends love Apple, but it has never been clear to me why, given that the underlying Linux is available in better ways. Apple laptops aren’t for those of us who want lightweight portables running an open version of Linux (MacAir is three times heavier than some alternatives.) Apple isn’t for people who want cheap (or even free) music with no restrictions on selections (there are a few little-known alternatives.) Apple wasn’t even the first commercial computer to have windows with a GUI designed for office work. (That would be the Xerox Star workstation that came out in 1981 and was used extensively – at least inside Xerox.) Smart phones have been around since the early ’90s, and the first phone marketed as

a “smart phone” came from Ericsson in 1997. Finally, most apps are just mobile-optimized Web applications. Where’s the beef?

Maybe it’s all about the design. The iPhone, with its touch screens, sensors, and attention to visuals, was a revelation, quickly imitated. This was genius design. It shows through on all Apple products and even in Apple stores. It’s technology designed by an artist, as so many have pointed out. I know it inspires insane cult-level loyalty and appreciation.

But does such genius design and marketing warrant the term “world-changing”? I think something else is going on that’s over-shadowed by the brilliant design of these expensive products. I think Jobs was even smarter than people give him credit for, and they miss this point while writing glowing tributes to his artistry.

More Important than Design

One of the Silicon Valley lessons everyone learns is that it’s all about the business model. Now, this isn’t strictly true, as I will go into shortly. But it sure seems to be true about Apple under Jobs. The original Apple computer products didn’t make the company wildly successful. I think it was something that Jobs probably figured out on the way when simply beautiful design continued to lose out to the lowest common denominator of Windows.

Apple stores were a brilliant business model. While Dell is selling online, and everyone else is pushing specs and price points, Apple provides a high-end buying experience. Apple saw the computer commodity market and opted out with a really “think different” option. You don’t buy the computer: you buy the experience, including the design and service. Jobs saw where the commodity computer market was headed and chose to sell something else.

Despite this, the computers didn’t take off by themselves. Jobs saw what

was missing and built on the idea of developing a new market so that Apple wouldn’t be competing in the same market as Wintel products. Apple’s computer products, as different as they were, didn’t initially have a built-in business ecosystem. The iPod and iPhone did.

Apps are important because of the apps market. Here’s a way to harness the talents of many people and companies, make money, and still retain Apple’s design and branding. This isn’t only brilliant, it’s viral (as they say today.) This changes the world, because it forces every competitor to play, and offers a way for individuals to play too.

It’s a similar story with iTunes. The iPod was another design revelation, but it would have been just an expensive, cool alternative MP3 player, which are a commodity; lower-priced alternatives would have taken more market share without iTunes.

business ecosystems for them that would grow their markets both quickly and sustainably.

If we look at Amazon, eBay, and, of course, Google, we can easily see the power of having a business model with well-thought-out ecologies that draw in suppliers as well as consumers. Border’s is out of business; we navigate using Google maps on our smart phones, with annotations provided by users and tie-ins to businesses.

So, who else has changed the world with respect to Internet technologies? Certainly, the (by now) well-known fathers of the Internet. And Tim Berners-Lee, because what else has changed the world more than the World Wide Web? Are business models important to these most fundamental, world-changing Internet technologies? It’s arguable, both ways.

Although Lawrence Roberts might have foreseen the Internet’s commercial implications, neither he

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Jobs had enough insight to see that not only was the music distribution system dead, regardless of how many teenagers it sued, but an opportunity existed to create another market in which musicians, like apps designers, could play. It was a market that Apple could not only make money from, but control. This was huge, and though there are alternatives, nothing really comes close in terms of market share. CD stores were out, and iTunes was in: this was world-changing.

Jobs changed the computer-mediated communications and media world by single-handedly envisioning not only new high-end products but

nor the developers of TC/IP had a business model in mind. Neither did Berners-Lee. Nor did Karlheinz Brandenburg have a business model in mind for MP3. These world-changing technologies were the antithesis of Jobs’ planned techno-ecosystems. What should a technologist who wants to change the world think?

Such developments as these inspired many technologists to think that if they had a good idea and built a good system, “they would come.” The huge caveat to this line of thought is that even if you don’t plan it, some business model must arise. The Internet spread when the Web did, and *that* spread because of commercial viability.

The Internet didn't become world-changing until it became ubiquitous, with the conversion of the NSFNET to the commercial Internet in 1995. The Web didn't initially have a business model, but many soon developed, and after the shake-out of the bogus ones at the turn of the century, no one can even hope to run a business without a website.

Yes, cool new technology spreads because people want to buy it. But such technology isn't often that important, much less world-changing: it's more like fashion. What changes the world is when the technology supports a commercial ecosystem, whether designed or organic, that allows many players. Above all, technology succeeds when there is a good business case for it.

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An Overlooked Jobs' Contribution

Sadly, John McCarthy also passed away at the time I wrote this. He was a giant of computer science. He changed my world and that of other computer scientists. But the general public doesn't understand why he was important. A recent website noted that he anticipated cloud computing and then showed a picture of a robot because they understand that he had something to do with artificial intelligence – without really understanding his fundamental contributions (www.ucl.ac.uk/commonsense07/john-mccarthy/) at all. The only thing they understood was something that was of commercial importance. Most sadly, there was never a good

business case for Lisp, and much against it. This is a good example of how great technology needs a good business model to change the world.

Which brings me to Wi-Fi. This started with the business case of wireless cash registers and Victor Hayes at NCR, who is arguably its primary inventor. But this wasn't the ultimate business case for Wi-Fi.

I mentioned in my last column that I was mistaken in believing that Wi-Fi would be a user-based emergent collective. Maybe it was briefly, but that died out under pressure from the telecoms. I wasn't mistaken when I said in an international telecom workshop in 2001 that it was a superior "wireless Internet" to 3G (www-cdr.stanford.edu/~petrie/802.11-Stockholm-2001/).

Did you know that 33 percent of data is delivered to smart phones and related devices via Wi-Fi? And that only 18 percent is delivered by Verizon and only 8 percent by AT&T?² Wi-Fi is finally almost ubiquitous. If my US smart phone doesn't connect to GSM in Europe, at least the Wi-Fi does, and I can use all the Internet (and GPS) functionality.

Additionally, security has flipped from the open sites being mostly private to public access points, mostly web-sign-on, either for free to attract business (small businesses such as hotels and coffee shops) or for pay. Wi-Fi offloads the overloaded cellular connections³ and is infinitely more scalable: access points are much cheaper to add than are cell towers, and we can all do it ourselves,

although now businesses do it for us. How did Wi-Fi come to be so popular, and spawn so much business?

It's because the iBook came out in 1999 with Wi-Fi as its wireless connection. Wi-Fi was a nascent technology, only recently really standardized, and consumers had no access. The wireless laptop market didn't exist yet.

Jobs (again) foresaw a whole new way to use the Internet. He saw that Wi-Fi was the key to selling laptops. Suddenly the business value was clear, and competitors were forced to follow. So first the rest of us got plug-in Wi-Fi cards, and later, built-in Wi-Fi was standard. Then we got better standards.

This was the foundation for the evolving complex interplay of consumers, small businesses, and telecoms all using Wi-Fi, leading to us all walking around with smart phones, tablets, and very light-weight laptops, expecting Wi-Fi everywhere, even on our trains and planes. We have Steve Jobs to thank for this as well. ☐

References

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Charles Petrie retired from Stanford University as a senior research scientist with the CS Logic Group. He will be a guest professor at Karlsruhe University, Germany, in 2012. Petrie has a PhD in computer science from the University of Texas at Austin. He was a founding member of the technical staff of the MCC AI Lab, founding editor in chief of *IEEE Internet Computing*, founding executive director of the Stanford Networking Research Center, and founding chair of the Semantic Web Services Challenge. Contact him at petrie@stanford.edu.