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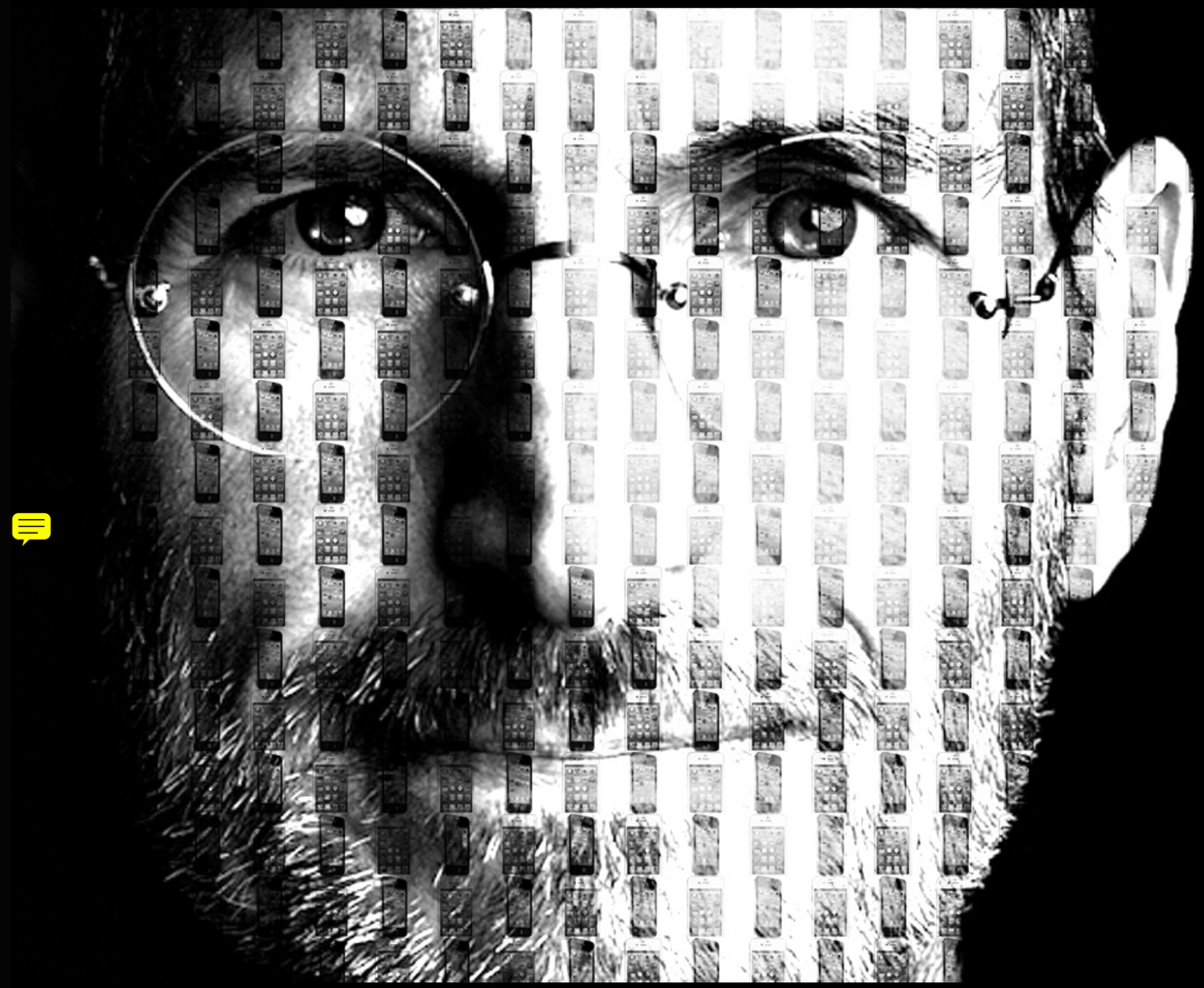
And Then Steve Said,

“Let There Be an iPhone!”

The Myth of Steve Jobs’ Constant Breakthroughs

A story by Fred Vogelstein

The 55 miles from Campbell to San Francisco make for one of the nicest commutes anywhere. The journey mostly zips along the Junipero Serra Freeway, a grand and remarkably empty highway that abuts the east side of the Santa Cruz Mountains. It is one of the best places in Silicon Valley to spot a start-up tycoon speed-testing his Ferrari and one of the worst places for cellphone reception. For Andy Grignon, it was therefore the perfect place for him to be alone with his thoughts early on Jan. 8, 2007.



Jobs with co-founder of Apple Steve Wozniak developing the first macintosh (1975).

Earlier this year, Jobs was portrayed by Ashton Kutcher in the biopic *Jobs* (2013).

This wasn't Grignon's typical route to work. He was a senior engineer at Apple in Cupertino, the town just west of Campbell. His morning drive typically covered seven miles and took exactly 15 minutes. But today was different. He was going to watch his boss, Steve Jobs, make history at the Macworld trade show in San Francisco. Apple fans had for years begged Jobs to put a cellphone inside their iPods sothey could stop carrying two devices in their pockets. Jobs was about to fulfill that wish. Grignon and some colleagues would spend the night at a nearby hotel, and around 10 a.m. the following day they — along with the rest of the world — would watch Jobs unveil the first iPhone.

But as Grignon drove north, he didn't feel excited. He felt terrified. Most onstage product demonstrations in Silicon Valley are canned. The thinking goes, why let bad Internet or cellphone connections ruin an otherwise good presentation? But Jobs insisted on live presentations. It was one of the things that made them so captivating. Part of his legend was that noticeable product-demo glitches almost never happened. But for those in the background, like Grignon, few parts of the job caused more stress.

Grignon was the senior manager in charge of all the radios in the iPhone. This is a big job. Cellphones do innumerable useful things for us today, but at their most basic, they are fancy two-way radios. Grignon was in charge of the equipment that allowed the phone to be a phone. If the device didn't make calls, or didn't connect with Bluetooth headsets or Wi-Fi setups, Grignon had to answer for it. As one of the iPhone's earliest engineers, he'd dedicated two and a half years of his life — often seven days a week — to the project.

> *"Details matter. It's worth waiting to get it right."*

Grignon had been part of the iPhone rehearsal team at Apple and later at the presentation site in San Francisco's Moscone Center. He had rarely seen Jobs make it all the way through his 90-minute show without a glitch. Jobs had been practicing for five days, yet even on the last day of rehearsals the iPhone was still randomly dropping calls, losing its Internet connection, freezing or simply shutting down.

"At first it was just really cool to be at rehearsals at all — kind of like a cred badge," Grignon says. Only a chosen few were allowed to attend. "But it quickly got really uncomfortable. Very rarely did I see him become completely unglued — it happened, but mostly he just looked at you and very directly said in a very loud and stern voice, 'You are [expletive] up my company,' or, 'If we fail, it will be because of you.' He was just very intense. And you would always feel an inch tall." Grignon, like everyone else at rehearsals, knew that if those glitches showed up during the real presentation, Jobs would not be blaming himself for the problems. "It felt like we'd gone through the demo a hundred times, and each time something went wrong," Grignon says. "It wasn't a good feeling."

The preparations were top-secret. From Thursday through the end of the following week, Apple completely took over Moscone. Backstage, it built an eight-by-eight-foot electronics lab to house and test theiPhones. Next to that it built a greenroom with a sofa for Jobs. Then it posted more than a dozen security guards 24 hours a day in front of those rooms and at doors throughout the building. No one got inwithout having his or her ID electronically checked and compared with a master list that Jobs had personally approved. The auditorium where Jobs was rehearsing was off limits to all but a small group of executives. Jobs was so obsessed with leaks that he tried to have all the contractors Apple hired — from people manning booths and doing demos to those responsible for lighting and sound — sleep in the building the night before his presentation. Aides talked him out of it.

Grignon knew the iPhone unveiling was not an ordinary product announcement, but no one could have anticipated what a seminal moment it would become. In the span of seven years, the iPhone and its iPad progeny have become among the most impor-

On the Set of Jobs

Then & Now

2013 MacBook Pro with Retina Display (left)

1984 Macintosh 128K (right)

Creating Apple

Inside Jobs' Mind

tant innovations in Silicon Valley's history. They transformed the stodgy cellphone industry. They provided a platform for a new and hugely profitable software industry — mobile apps, which have generated more than $10 billion in revenue since they began selling in 2008. And they have upended the multibillion-dollar personal-computer industry. If you include iPad sales with those for desktops and laptops, Apple is now the largest P.C. maker in the world. Around 200 million iPhones and iPads were sold last year, or more than twice the number of cars sold worldwide.

The impact has been not only economic but also cultural. Apple's innovations have set off an entire rethinking of how humans interact with machines. It's not simply that we use our fingers now instead of a mouse. Smartphones, in particular, have become extensions of our brains. They have fundamentally changed the way people receive and process information. Ponder the individual impacts of the book, the newspaper, the telephone, the radio, the tape recorder, the camera, the video camera, the compass, the television, the VCR and the DVD, the personal computer, the cellphone, the video game and the iPod.

The smartphone is all those things, and it fits in your pocket. Its technology is changing the way we learn in school, the way doctors treat patients, the way we travel and explore. Entertainment and media are accessed and experienced in entirely new ways.

And yet Apple today is under siege. From the moment in late 2007 that Google unveiled Android — and its own plan to dominate the world of mobile phones and other mobile devices — Google hasn't just tried to compete with the iPhone; it has succeeded in competing with the iPhone. Android has exploded in popularity since it took hold in 2010. Its share of the global smartphone market is approaching 80 percent, while Apple's has fallen below 20 percent. A similar trend is under way with iPads: in 2010 the iPad had about 90 percent of the tablet market; now more than 60 percent of the tablets sold run Android. What worries Apple fans most of all is not knowing where the company is headed. When Jobs died in October 2011, the prevailing question wasn't whether Tim Cook could succeed him, but whether anyone could. When Jobs ran Apple, the company was an innovation machine, churning out revolutionary products every three to five years. He told his biographer, Walter Isaacson, that he had another breakthrough coming — a revolution in TV. But under Cook, nothing has materialized, and the lack of confidence among investors is palpable. Apple product announcements used to routinely send its stock soaring. When Cook presented the latest smartphones in September, the iPhone 5c and the iPhone 5s, Apple's stock fell 10 percent. A year ago the company's stock price was at $702 a share, making Apple the world's most valuable corporation. Today, it's down more than 25 percent from that peak.

“Innovation consists of people looking back at themselves and saying, ‘Here’s something that I really want that doesn’t exist.’”

A conversation with Steve Wozniak, Co-Founder, Apple Computer

A story by Fred Vogelstein

Since doing so in the 1970s with Steve Jobs, Wozniak has turned much of his attention, time and money to education and new businesses. Presently serving as chief scientist at flash storage company Fusion-io, he also readily invests in new technologies and applications. “The best things that capture your imagination are ones you hadn’t thought of before,” says Wozniak, “and that aren’t talked about in the news all the time.”

High on the list of ideal candidates are apps that take a smarter approach to the use of human speech, ones “where you talk to it like a normal person,” he says, “the way you would talk to a human being.” “I want to be able to speak with errors in my wording, errors in my grammar,” he continues. “When you type things into Google search it corrects your words. With speech, I want it to be general enough, smart enough, to know ‘no, he couldn’t have meant these words that I think he said. He must have really meant something similar’. That’s going to take a lot of software, a lot of artificial intelligence work over the next five to ten years.”

Another technology being predicted to develop over that period is the smart watch. One research group has suggested shipments of smart watches in 2014 could hit 8.9 million globally, hitting 214 million units by 2018. But Wozniak has already identified that the current models are too restrictive. “I want the entire smartphone, the entire internet, on my wrist,” he says. “I want a larger display than they’re starting with. They’re starting with [...] displays that are the size of the iPod nano, which is the size of an ordinary watch of the past. I think we’ve got to get a little beyond this watch of the past.” “I hope [a future smart watch is] independent, works on its own and is not connected with Bluetooth to the smartphone in your pocket,” he adds, “but that doesn’t mean it would be bad if it were that way.” Another notable product that will no doubt see considerable development over the next five years is Google Glass and Wozniak’s view on the system is pretty cut and dry: “I think that has a chance too, and the reason is: I want one. I don’t have one because I haven’t enough time to be an early tester. “I hope [a future smart watch is] independent, works on its own and is not connected with Bluetooth to the smartphone in your pocket,” he adds, “but that doesn’t mean it would be bad if it were that way.” Another notable product that will no doubt see considerable development over the next five years is Google Glass and Wozniak’s view on the system is pretty cut and dry: “I think that has a chance too, and the reason is: I want one. I don’t have one because I haven’t enough time to be an early tester. “I hope [a future smart watch is] independent, works on its own and is not connected with Bluetooth to the smartphone in your pocket,” he adds, “but that doesn’t mean it would be bad if it were that way.” “I hope [a future smart watch is] independent, works on its own and is not connected with Bluetooth: I want one.

Wozniak with Steve Jobs in their garage (1975).