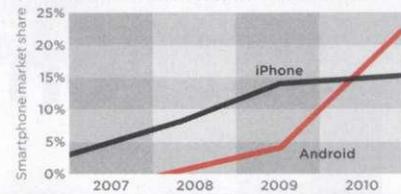


THE ANDROID EXPLOSION

How Google's freewheeling smartphone ecosystem threatens to overwhelm the iPhone.

BY FRED VOGELSTEIN

In 2010, Android's share of smartphone sales exceeded Apple's for the first time.



NDY RUBIN NEEDED A HIT. It was January 2009, three years since Google had bought the company he cofounded, a little startup called Android. Rubin had created a slick operating system for mobile phones that allowed customers to surf the web, send email, play music, and install apps. He had hoped that Google's money and power would help turn Android into a major force in the burgeoning smartphone industry. Instead, Android had been a disappointment. Despite months of press buildup, the first phone to run the system, HTC's T-Mobile G1, was greeted with tepid reviews and lackluster sales. Rubin had tried to find a bigger wireless carrier that would agree to partner with Android—he and his team, including Android cofounders Rich Miner and Nick Sears, had lobbied Verizon for the better part of a year—but without success. And then there was Android's biggest competitor, the iPhone. Introduced in 2007, it had become an instant commercial and cultural phenomenon. Unless

Rubin could come up with a breakthrough Android phone, and quick, he might have to concede the entire business to Steve Jobs.

Fortunately for Rubin, Sanjay Jha was in just as dire a position. Jha, the new co-CEO of Motorola, had been talking to Rubin for months, hoping to persuade him to let Motorola build the next Android phone. Once the dominant mobile device maker in the world, Motorola hadn't had a major success since the Razr—in 2004. Jha had been hired in August 2008 to resurrect Motorola's handset business, and he had pur-

Rubin's eyes, they looked nothing like the designs Jha had presented. Indeed, they were hideous. Yes, there is always a gap between a manufacturer's sketches and the eventual prototype, but Rubin and his team had so much faith in Jha that they expected him to deliver a phone much closer to the one he had pitched. Despair set in. "It looked like a weapon. It was so sharp and jagged and full of hard lines. It looked like you could cut yourself on the edges," says someone who saw the prototype. "We were really concerned. There were a lot of con-

come up with a list of possibilities—including Dynamite—that few liked. As late as Labor Day, the phone still went by its code-name, Shoals. Feeling cornered, Stratton reached out to McGarry Bowen, a young ad agency known for its unconventional approach. "We told them they had a week," said someone who was involved in the discussions. "A few days later, cofounder Gordon Bowen comes back and says, 'What do you think when I say *Droid*?'"

In retrospect, what the agency had done was simple: It turned the phone's menacing looks into its biggest asset by marketing it as an anti-iPhone. The iPhone was smooth and refined, so they would pitch the Droid as rough and ready for work. The iPhone's electronics and software were inaccessible, so they'd market the phone's hackability. "If there had been a phone in the movie *Black Hawk Down*, it would have looked like the Droid," Bowen told the executives.

A few weeks later, in early October 2009, Verizon and its new agency presented the Droid campaign to a group of 200 Android staffers. One ad featured stealth bombers dropping phones on a farm, in the woods, and by the side of a road. Another attacked the iPhone as a "digitally clueless beauty pageant queen." A third listed all the things the Droid could do that the iPhone couldn't. When they were over, the room erupted in applause. The Android team had been demoralized, but "when they decided they were going to do this full-on attack on the iPhone—that we were going to war—we got really excited," says an Android employee.

Apparently you didn't have to work at Google to love the campaign. When the Droid launched, on schedule, it was a tremendous hit, outpacing sales of the original iPhone in its first three months. Motorola started to make an amazing turnaround; today, thanks to the Droid, it is profitable again. Verizon started wirming more new subscribers. It also improved its bargaining position with Apple. Less than two years later, when the two companies introduced the Verizon iPhone, the carrier managed to get a better deal from Apple than AT&T had.

Motorola came back with the first prototype of the new Android phone. It was hideous.

sued an all-or-nothing strategy, laying off thousands and betting Motorola's future on his ability to build a hit Android phone.

Now Jha had come to Google headquarters to unveil his design—and it was impressive. Jha promised a device that would be far faster than any other smartphone. He said its touchscreen would have a higher resolution than the iPhone. He said it would come with a full keyboard, for customers who didn't like the iPhone's virtual keys. He promised a phone that was thin and sleek, one that could compete with the iPhone on pure aesthetics. And, thanks to his long-standing relationship with Verizon, he offered the potential of a partnership with the country's then second-largest wireless carrier; in fact, Motorola and Verizon had already discussed building a smartphone together. "We were all kind of jazzed," says Hiroshi Lockheimer, one of Rubin's chief lieutenants, who was at the meeting. "I think we said OK on the spot."

But that optimism faded a few months later, in the spring of 2009, when the first prototype arrived in the Android offices. To

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versations where we asked, 'Is this really the device we want to do? Should we try to talk Motorola out of it?'"

The implications of canceling the project were huge. Another dud, right on the heels of the disappointing G1, might cement the public's perception of Android as a flop. Executives at Verizon, who had agreed to serve as the phone's exclusive carrier, would look inept. They were still taking heat for passing on the iPhone. Apple had gone to AT&T instead, signing an exclusive deal and bringing the carrier millions of new customers. And a failure would likely mean the end of Motorola, the company that invented the cell phone. "There was a lot riding on it," Rubin says. "I was betting my career on it."

A sense of doom pervaded the whole summer. Google engineers worried the phone wouldn't sell but still found themselves working weekends and holidays to develop the software. Jha spoke almost every day with John Stratton, Verizon Communications' chief marketing officer at the time, trying to figure out a way to tweak the design without having to reengineer all the electronic components. Meanwhile, they were facing a November deadline.

And the phone still didn't have a name. McCann, Verizon's longtime ad agency, had

Most important, the Droid halted Apple's march toward smartphone dominance. In fact, it is by some measures outpacing its rival, powering 23 percent of all smartphones worldwide in 2010—more recent estimates are even higher—compared with the iPhone's 16 percent. (Symbian still accounted for 38 percent of smartphones, on average, in 2010, while the BlackBerry OS accounted for 16 percent, but both were trending sharply downward.) Users activate more than 300,000 new Android devices every day; by comparison, as of October, combined iPhone, iPad, and iPod touch sales accounted for about 275,000 daily activations. Even Steve Jobs seems rattled; last October, he dropped in on an investors' phone call to deliver a rant on what he sees as Android's flaws.

The competition is only going to grow more heated. Android doesn't just use different carriers, different manufacturers, and different software than the iPhone; it represents a different vision for the entire mobile industry. Apple exerts complete control over the iPhone. It builds the hardware. It designs the operating system. It runs the marketing campaigns. And it curates and polices its App Store, refusing programs it deems potentially offensive or a threat to its own business. (A quick sampling of apps that Apple has rejected, at least temporarily: Google Voice, iBoobs, and a political cartoon app from Pulitzer Prize winner Mark Fiore.)

Android, by contrast, prides itself on its lack of control. It gives away its operating system for free to anyone who wants it—though manufacturers must submit their phones for testing if they want to access its app market or run optimized versions of Google apps. Android doesn't review apps before they're added to its marketplace, pulling them only if users complain, and manufacturers can and do modify the look and feel of the OS on their phones.

Different Approaches

Android and Apple have divergent strategies for the booming smartphone market.

NUMBER OF DEVICES ON THE MARKET THAT RUN THE ANDROID OS:

170

NUMBER OF DEVICES ON THE MARKET THAT RUN APPLE'S IOS:

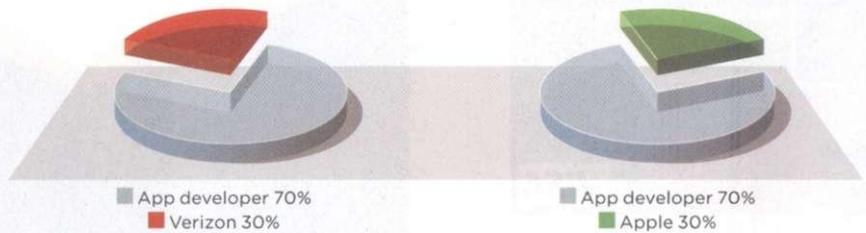
5*

* iPhone 3GS, iPhone 4, iPad, iPad 2, iPod touch.

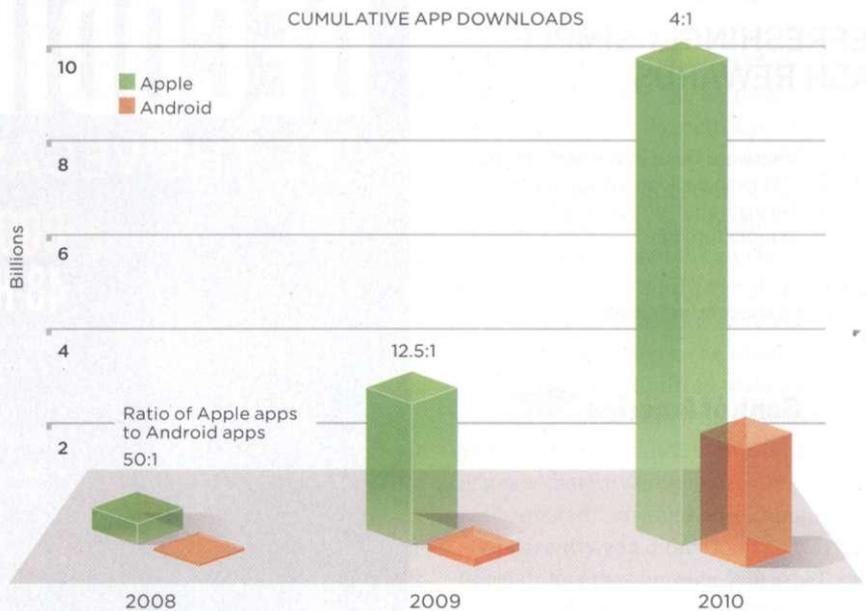
In its deal with Verizon, Android agreed to give the carrier 30 percent of app sales (minus credit card processing fees). Apple keeps that cut for itself.

REVENUE DISTRIBUTION, ANDROID MARKET

REVENUE DISTRIBUTION, ITUNES APP STORE



Both companies launched their app stores in 2008. Since then, Apple users have downloaded far more apps, but Apple is losing ground to Android.



This is not just about phones. Mobile devices are quickly becoming our primary computers. In the fourth quarter of last year, sales of smartphones topped sales of PCs and laptops. And tablets—such as the iPad and new Android devices like the Motorola Xoom—are widely seen as potentially replacing the personal computer. The split is reminiscent of the PC platform wars

back in the 1980s and '90s, only now Apple is competing with Google instead of with Microsoft. Customers are squaring off into separate camps, identifying themselves as iPhone or Android users much as desktop users declare themselves Mac or PC people. And just as in the formative days of the PC industry, the result of this showdown will ultimately shape the future of computing.

IN A CONFERENCE ROOM down the hall from his office in Building 44 on the Google campus, Andy Rubin flips open his laptop and punches a few keys. The monitor fills with a map of the world—gray oceans and black continents. He's about to run a time-lapse movie of Android activations, from its 2008 launch to the present. Every time an Android phone is activated, a light blue pixel will appear.

For the first 25 seconds—which correspond to the launch of T-Mobile's G1—so few dots light up that they barely register. "Europe is looking pretty good, probably better than the US," Rubin says. A few more seconds tick past. "And then here is the Droid," he says, starting to smile. Instantly, the US part of the map goes from dark to a pulsating blue. Fifteen seconds later, courtesy of another hit phone—the Samsung Galaxy S—South Korea, Japan, and Europe light up the same way.

Rubin, like most engineers, is usually soft-spoken. But this seems to make him giddy. As he narrates, he speaks faster and his voice grows louder. He points out South Korea and Japan going "apeshit" for the Galaxy.

You can't blame him for gloating, especially considering all the obstacles he's overcome—many of them created by his own bosses. While Rubin and his team were trying to form a partnership with Verizon, senior Google executives seemed to be going out of their way to antagonize the carrier. Sergey Brin, Larry Page, and Eric Schmidt talked about the need to overturn the carriers' business model. Verizon and the other telcos traditionally exercised complete control over every phone they supported, dictating the features and software that manufacturers could install so as to hamstring the phones and curtail bandwidth demand on their networks. To Google, a company that touted its commitment to the open exchange of information, the wireless companies were innovation-squelching corporatists.

The carriers, for their part, saw Google as an unruly upstart and a threat. The animosity reached its apogee in 2007, when Google joined an auction for spectrum that Verizon wanted to purchase. Google executives never intended to buy the spectrum; they just wanted to push the bidding high enough to trigger some FCC requirements for the eventual buyer. Thanks to Google's actions, Verizon, one of the eventual victors, had to allow other devices to operate on its spectrum. Around the time of the auction, Verizon chair and CEO Ivan Seidenberg told author Ken Auletta that Google was in danger of "waking up the bears"—powerful mobile phone carriers—who would "come out of the woods and start beating the shit out of" the company.

The iPhone changed all that, helping Google and Verizon realize that they were not actually each other's worst enemies. For Google, the iPhone—and in particular, the runaway success of the iPhone 3G and the accompanying App Store—was a

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threat to Android's future. If Rubin didn't move quickly, Apple might soon sign up so many customers that his platform would be unable to compete. Verizon had come to a similar conclusion. It was clear that carriers could no longer control how customers used their phones, and if Verizon wanted to compete, it would have to offer a smartphone with the same kind of freedom and functionality. The company had tried, spending—according to one source—\$65 million on marketing the LG Voyager in 2007 and roughly \$75 million on the BlackBerry Storm in 2008. But neither offered the power and flexibility of the iPhone, and both were critical and commercial disappointments. "We needed to get in the game," Stratton says. "And we realized that if we were going to compete with the iPhone, we couldn't do it ourselves."

Slowly, the two companies got to know each other. Stratton and Schmidt spent time together after Google lost a bid to become

When you buy an iPhone app, AT&T gets nothing. When you buy an Android app, Verizon gets a cut.

Verizon's preferred search engine. Stratton was impressed by Schmidt's reasonable attitude in person; he was nothing like the bomb thrower he seemed to be in his public statements. And Schmidt was taken by Verizon's seemingly sincere commitment to opening up its phones and networks. Meanwhile, Verizon's engineers had come to respect Android. They had been poring over every smartphone operating system on the market—and even tried building their own—and had concluded that Android was one of the best. Most operating systems were written so the phones could serve as adjuncts to desktop PCs. But from the very beginning, Android was written with the assumption

that one day everyone would use their smartphones as their primary Internet device.

Ultimately, the two companies agreed to work together and hammered out a unique revenue-sharing deal. Google would sell apps and mobile advertising on the new phone. In exchange for letting Android take over the operating system, Verizon would get a cut of both those revenue streams. It was a more generous offer than AT&T received from Apple—customers were downloading billions of iPhone apps, but the carrier wasn't getting a share of that revenue. And if Google's mobile ad business became anywhere near as successful as its online advertising, even a tiny portion could

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someday represent a billion dollars a year.

Today that agreement serves as the model for Android's relationship with all major carriers—fundamentally changing the wireless industry. The iPhone, revolutionary as it was, didn't alter one underlying dynamic: Phone manufacturers—who wanted to make the most capable, feature-rich phones—were still at odds with the carriers that provide the pricey bandwidth to power those features. That had led to conflict between Apple and its carrier partners, especially AT&T. Apple wanted users to take full advantage of the iPhone's capabilities, but carriers then had to spend billions to keep up with the demand on their overtaxed networks. Android finally rewrote that calculus. Because carriers get a cut of app

winner-take-all laws of platform economics kicked in—Windows machines could run a rich selection of programs, so customers gravitated to them, which further encouraged developers to ignore other platforms.

Rubin is hoping some of those same market dynamics will apply to Android. By letting any manufacturer use his operating system, free of charge, Rubin is hoping to foster thousands of different Android devices. No single model may be as successful as the iPhone, but taken together they could represent a much larger user base—and thus, a more attractive market for app developers. Already that strategy has helped Android cut into Apple's two-year lead. Since 2007, Apple's iOS has been installed on 160 million devices. Android had

They want pleasing designs and magical interfaces, and nobody is better at delivering those things than Apple.

Meanwhile, no matter how many Android phones are out there, developers' early excitement for Android apps won't last unless they become more lucrative. According to recent estimates, iTunes apps have brought in almost \$3 billion. Android apps have garnered just over \$100 million. In part, that's a vote for Apple's curated model—by overseeing which apps get into the App Store, and by featuring particularly outstanding apps in its ads and on its homepage, Apple helps customers find software they're likely to enjoy. The Android Market, by contrast, can be difficult to navigate and is full of apps that work only on specific phones. That's the downside to Android's come-one, come-all app policy. (Amazon.com has launched an Android app store of its own, which may help solve this problem.)

Apple is also making aggressive moves to keep Android from spreading. Verizon began offer-

ing the iPhone in March, giving Apple access to millions of potential new customers. And Apple has jumped out to a commanding lead in the tablet wars. The company announced the second generation of its iPad just as the first Android-powered tablets were coming to market. The Motorola Xoom, widely seen as the first real competitor to the iPad, is just the first tablet to run on Honeycomb, the version of Android optimized for tablets.

For the moment, consumers' insatiable demand for mobile devices will allow the iPhone and Android to coexist. Fourth-quarter smartphone sales nearly doubled last year to 101 million units, and tablet sales are expected to more than triple this year. But once the market is saturated—say, in three to five years—sales will slow. Then the only growth opportunity will lie in poaching customers from other companies. The company with the largest and most loyal user base is likely to win that fight, and that's what both Apple and Google are currently trying to establish. But make no mistake: As is often the case in technology, only one platform will prevail. 

One downside to its open-door policy is that Android's app marketplace can be overwhelming.

sales and ad revenue, they stand to make money when subscribers surf the web or download applications. For once, the interests of software designers, manufacturers, carriers, and customers are all aligned.

42 percent as many installations in 2010 alone. It now has 27 manufacturers making devices for 169 carriers with access to more than 150,000 apps.

But history won't repeat itself exactly. During the OS wars of a generation ago, it was hard to write software for one platform, let alone two, and developers were pressured to pick either Mac or PC, and quickly. But today, user-friendly software development tools make it easier to churn out apps. In other words, software companies will feel less compelled to choose sides.

And Jobs may be better suited to the mobile industry than he ever was to the old PC business. Twenty years ago, the Apple CEO's obsession with aesthetics and a precisely curated user experience didn't prove to be the best business strategy. Most PC customers were corporations that were utterly indifferent to what the machines looked like or how user-friendly they were—that's what IT staffs were for. But today, companies don't buy smartphones, consumers do. And people won't buy ugly phones that are hard to use, even if they are cheap.

RUBIN DOESN'T LIKE being compared to Bill Gates. That's not surprising. Google has long considered itself the anti-Microsoft. And yet there is something familiar about Rubin's view of the mobile market. Gates saw the PC not as a single machine to be fussed over and perfected—the way Apple did with the Macintosh and arguably does with the iPhone and iPad—but as a category of devices that needed a common software platform. Instead of writing a program for thousands of different machines, developers could write it once for Windows and have it run on every PC, no matter who built it. The potential for such wide distribution persuaded developers to spend more time writing software for Microsoft's operating system than for Apple's. Eventually, the