A Walled Garden Turned Into a Rain Forest

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More than ten months after the iPhone was introduced, Lev Grossman in *Time Magazine*, reflected upon the most valuable invention of 2007. At first he could not make up his mind. Admittedly, he argued, there had been a lot written about the iPhone —and if truth be told, a massive amount of articles, extensive media coverage, hype, "and a lot of guff too." Grossman hesitated: he confessed that he could not type on the iPhone; it was too slow, too expensive, and even too big. "It doesn't support my work e-mail. It's locked to AT&T. Steve Jobs secretly hates puppies. And—all together now—we're sick of hearing about it!"

Yet, when Grossman had finished with his litany of complains, the iPhone was nevertheless in his opinion, "the best thing invented this year." He gave five reasons why this was the case. First of all, the iPhone had made design important for smartphones. At a time when most tech companies did not treat form seriously at all, Apple had made style a trademark of their seminal product. Of course, Apple had always knew that good design was as important as good technology, and the iPhone was therefore no exception. Still, it was something of a stylistic epitome, and to Grossman even "pretty". Another of his reasons had to do with touch. Apple didn't invent the touchscreen, but according to Grossman the company engineers had finally understood what to do with it. In short, Apple's engineers used the touchscreen to sort of innovate past the GUI, which Apple once pioneered with the Mac, to create "a whole new kind of interface, a tactile one that gives users the illusion of actually physically manipulating data with their hands."

Other reasons, in Grossman view, why the iPhone was the most valuable invention of 2007, was its benefit to the mobile market in general. On the one hand, the iPhone was built to evolve, and in years to come (as we now know) he expected numerous upgraded versions. On the other hand, the device would also push smart phone companies to invent new products that would work even better, not the least in regards to service

providers. Cell phones are lame, because "cell-phone-service providers hobble developers with lame rules about what they can and can't do."

The main reason, however, why Lev Grossman decided to pin down the iPhone as tech-invention of 2007 was as simple as it was technologically complex. In his view, the iPhone was not a phone—but rather a computing platform. When Apple came up with the idea and produced the iPhone, "it didn't throw together some cheap-o-bare-bones firmware", Grossman praised. It took OS X, and "squished it down to fit inside the iPhone's elegant glass-and-stainless-steel case." In his opinion this made the iPhone into more than just a gadget; rather it seemed to him the first genuine walk-around computer. Thus, as a potent hardware it could potentially be filled with numerous wonderful programs and applications. In fact, one of the trends of 2007, as Grossman finally put it, was the idea that computing did not only belong in cyberspace, but more so in the real world. The iPhone simply got "applications like Google Maps out onto the street, where we really need them."[1]

The iPhone as Platform

The notion of 'platform' is one of the terms most frequently associated with the web 2.0 phenomena. As is well known, from 2005 and onwards, social media and user driven content became more common on the net; Facebook and YouTube began their rise to fame, and the Web started changing in a cumulative rather than technological way. Identifying the iPhone as a mobile computation platform, fits nicely into this new digital pattern. Indeed, already in 2007 it promised an endless array of differentiated usage—which gradually became a fact. Today, the iPhone is not only a great e-mailing device and game console, it can transform itself into a flute, a blood pressure machine or even an 8 mm vintage camera. In short, perceived—and increasingly promoted by Apple—as a software platform, the iPhone has rapidly become a universal device with a seemingly endless array of possibilities.

Nevertheless, such a teleological way of looking at technological devices remains a poor way of understanding computer history. On the contrary, it needs to be stressed that at the time of Lev Grossman's writing there was no tech-determinational factor regulating the development. In fact, looking at Apple's initial iPhone tv-commercials for

example, nothing is mentioned about “apps”—let alone a mobile computing platform. When launched the iPhone was rather perceived and marketed as a *smart* phone to surf, mail and call with. Nothing else. True, it had an innovative design and screen. But it was still hardware that Apple had manufactured and hence obtained control over, which made it no different from other company products.

Nonetheless, 2007 saw quite a lot of debate and discussion as to whether Apple would allow other, external developers to write code for the iPhone. Initially, the company would only accept, what was by then called “web applications”, which ran through the browser Safari. It seems, however, that Steve Jobs gradually changed his mind regarding these third party applications in spite of the Apple tradition. All likely, this was one of his most important changes of mind (in the light of what was to come). In mid October 2007, some weeks prior to Grossman’s article, Jobs uploaded a short blog post on Apple’s Hot News—simply signed “Steve”—where he promised to release a “software development kit” (SDK) for the iPhone iOS.

> Let me just say it: We want native third party applications on the iPhone, and we plan to have an SDK in developers’ hands in February [2008]. We are excited about creating a vibrant third party developer community around the iPhone and enabling hundreds of new applications for our users. With our revolutionary multi-touch interface, powerful hardware and advanced software architecture, we believe we have created the best mobile platform ever for developers. [...] It will take until February to release an SDK because we’re trying to do two diametrically opposed things at once—provide an advanced and open platform to developers while at the same time protect iPhone users from viruses, malware, privacy attacks, etc.”[2]

Lev Grossman’s vision of the iPhone as a mobile platform was a direct consequence of Jobs posting—and maybe the core reason for him why it was a significant invention. Nevertheless, Grossman made the ironic comment, that “after a lot of throat-clearing”—not to mention the claimed Apple “protection” from “attacks”—Jobs finally decided to open up the iPhone. Furthermore, Jobs even hoped to create a vibrant “community” around the devise, a term (like the notion of platform) often used in relation to web 2.0.

In effect, as Grossman stated, this meant that “you” and other people than Apple employees “will be able to develop software for it too. Ever notice all that black blank space on the iPhone’s desktop? It’s about to fill up with lots of tiny, pretty, useful icons.”[3]

And fill up it did. If Jobs envisioned “hundreds of new applications” in his blog post, today there are more than 300,000 apps available in the App Store. Apple has certainly created a lively community around the iPhone, which is as vibrant as it is profitable. Indeed, perceiving the iPhone as an “open platform” in many ways makes it resemble sites as YouTube, at least in an economical sense. Like YouTube, Apple’s App Store is a kind of hybrid economy, where free programs and apps intermingle with ad funded and purchasable apps. The SDK kit is essentially open to any developer—even if the resulting code always needs to be approved by Apple. The core difference, hence, between web 2.0 enterprises and the App Store is that Apple remains in total control. Google does not supervise the uploading process on YouTube, which after all is the reason for the sites popularity and dominance. Apple’s App Store works the other way around—on its “open platform” all apps are controlled prior to usage—but nonetheless resulting in the same public supremacy.

In spite of this peculiar and extraordinary market situation—and some would indeed say, compelling circumstances—Apple has managed to develop its App Store into that “vibrant third party developer community”, that Jobs once envisioned. When this universal, kind of old-fashioned general store of code was launched during the summer of 2008—a few months after the initial SDK was released—there were approximately 500 apps available. As few tech-interested persons have missed, the number kept on growing at an exhilarating pace. In March 2009 Apple’s mobile computing platform had already attracted, “new software and new functions in droves”, according to Walt Mossberg. He bluntly stated that owing an iPhone was one thing, but “the App Store is what makes your device worth its price. It’s the software, not the hardware, that makes these gadgets compelling.”[4] In November 2009 Apple boasted more than a hundred thousand available apps, and the rest is in many ways already computer history. In late January 2011 the App Store reached ten billion downloads. As a consequence, it has been argued that the iPhone software platform might be the most innovative in the history of computing, and the very notion of the “app” has certainly led to major

changes how the Internet works. The Web might not (yet) be dead as some proclaim, but the app phenomena has definitely transformed the digital domain, as well as altered basic structures of URLs and links.

Nonetheless, if Apple in 2007 prior to the SDK release, received criticism for the closedness of the iPhone—it still does. Apple are manufacturing closed devices and monitor code and software like no other tech company, the argument goes. On the Web are innumerous sites, blog posts and articles discussing Apple, openness and closedness[5] —not the least regarding the iPhone's iOS and its relation to Google's 'open' and free Android mobile operating system. One of the major topics, intensely debated in the digital domain at present, revolves around the very issue of Apple's 'app universe' versus Google's 'open Web' in general, and which mobile OS that will end up as most victorious in particular. Hence, it comes as no surprise that Google's (recent) CEO, Eric Schmidt, during autumn 2010 proclaimed "closedness" as Apple's core strategy. As a former Apple board member Schmidt should know. "You have to use their development tools, their platform, their software, their hardware", he annoyingly complained. And even when you submit an app, "they have to approve it. You have to use their distribution. That's not open. ... The inverse would be open."[6]

Departing from Schmidt's quote, as well as the unquestionable fact that the App Store recently reached ten billion downloads—despite being a strictly controlled market —the purpose of this article is to dialectically reflect on the critique of Apple's business strategy. By using the iPhone as a particular case, as well as to discuss 'open versus closed' in relation to innovative technology in general, I will argue that a restricted and controlled digital domain seems to have its advantages. If open platforms have been seen as to promote innovation more effectively than proprietary ones, then the App Store does prove the opposite. Criticism delivered by a commercial opponent (Google) is naturally biased, but the sheer number of (positive) app developers working for Apple do testify that even though Eric Schmidt might be right—he is also wrong. Apple is not about being open; on the contrary, control and restraint is, and has been fundamental— and key to success. The intention of the article is, hence, to question and problematize the common held belief that openness is *always* preferred vis-à-vis digital development, a claim fundamental for open source philosophy for example.

On Tethered and Generative Technologies

During the last years a number of media savvy critics have expressed a kind of love-hate-relationship with Apple. Their arguments are basically the same as Eric Schmidt's —Apple's products are as excellent as they are closed. John Batelle, for example, admitted that once in the 1980s he had two sentiments regarding Apple; on the one hand he liked the company a lot, but on the other he also detested it. Today, once again he wrote in a blog post in March 2010, "Apple has created an extraordinary new environment for developers and entrepreneurs [the App Store], and once again, it has fostered pretty much the same two sentiments."[7] From a more academic perspective the critique of Apple has often included a dash of social net activism and hacker idealism. Jonathan Zittrain, for example, has lately been one of the most fervent critics of closed devices like the iPhone, Xbox or TiVo. Right from the advent of the Arpanet in the 1960s, the subsequent Internet was perceived as an open communication platform. Tim Berners-Lee certainly saw the World Wide Web as a collaborative medium, which his notion of the Read/Write Web testifies to. Yet, according to Zittrain this kind of general openness, which has been the underlying tech-philosophy of the net and the code and machines used for constructing it, has gradually been undermined in the last couple of years by a new wave of technologies that cannot be more or less modified by users, be they specific developers or general consumers.

Because of the success with Apple's iPhone, Zittrain has by and large focused his critical skills on this device, maliciously nick-naming it an iBrick. "The iPhone ... is sterile. Rather than a platform that invites innovation, the iPhone comes preprogrammed", is one of many harsh quotes taken from his book, *The Future of the Internet – and How to Stop It* (2008). According to Zittrain, the iPhone's functionality is locked, and Apple can in fact change it via remote updates. Even if the phone lies in your hand, Apple is still controlling it from a distance, he has stated. And to those "who managed to tinker with the code to enable the iPhone to support more or different applications", Zittrain writes, "Apple threatened (and then delivered on the threat) to transform the iPhone into an iBrick."

As a consequence, Zittrain has argued that the iPhone cannot be generative—basically meaning innovative—"beyond the innovations that Apple (and its exclusive carrier, AT&T) wanted."[8] According to him, this is a shift in Apple's product policy, an

alteration he terms the “arc of Apple”. In the late 1970s, Apple—or rather Steve Wozniak—constructed the reprogrammable Apple II, a machine which was “totally generative”, as Zittrain put it in an interview in *Newsweek*. When Wozniak stepped down at Apple, it was Steve Jobs who then “came out with the Mac that made it so much easier to use while retaining the generative quality and allowing everyone to write code for it.” And now, Zitrain complains, Jobs is “bringing us the iPhone, which in version one is completely locked down.” So, whereas we could all once innovate for the Apple II, he concludes, only Apple are going to innovate for the iPhone.[9]

This *Newsweek* interview was published in May 2008, and Zittrain’s seminal book was all likely finished in late 2007 since he mentions that the announced SDK kit may allow “others to program the iPhone with Apple’s permission.”[10] In other words, the App Store was not even launched when Zittrain’s remarks and comments were made. One might, hence, suspect that given ten billion downloads he would have changed his mind, but Harvard law scholars seldom do. As a consequence, if one reads what has been posted on Zittrain’s book-related blog up until now he has hardly altered his opinion. A number of recent postings are as critical to Apple and the iPhone as ever.[11] In fact, already in the *Newsweek* interview, Zittrain jokingly quoted an announcement from Jobs, saying: “OK, we’re going to allow third-party apps, but you can’t just hand an app to someone, you have to put it through the iPhone store, and we reserve the right to take a cut for every app. And if we don’t like the app, we can kill it.”[12]

Zittrain’s remarks are interesting and can be thought of as belonging to the negative part of the Apple reception spectrum. Certainly, he does deserve credit for articulating early doubts regarding the control mechanism of the App Store, and the subsequent debate that has followed around Apple censorship. When it comes to policing the App Store and the company’s seemingly arbitrary rules for determining whether or not an app contains objectionable content, Zittrain’s early critique is spot on. Yet, his bigger picture remains obscure. If some people within the tech industry see the iOS as fantastically innovative, Zittrain insists that the iPhone cannot by default be a generative technology since it is not essentially open. In fact, the most central thesis in his book, *The Future of the Internet*, claims such “generative technologies” as the most important ones for the development of the digital domain. On a personal computer, for example, anyone can write code and distribute it to anybody. A PC is, hence, generative since it

has “the capacity to produce unprompted, user-driven change”, to use Zittrain’s own phraseology. In his opinion, the problem is that consumers “are increasingly moving away from generative technologies like the PC and towards tethered ones like the iPhone.” In contrast to generative technologies, a tethered device restricts usage—or rather, it can only be used in the manner that the manufacturer has envisioned. Hence, it does not inherently have the capacity to create user-driven change. “Tethered technologies are not adaptable, nor are they accessible, nor, in some cases, are they particularly easy to master”, Zittrain has stated on his blog—a quite remarkable quote in relation to the iPhone (to say the least).[13]

To be fair, Jonathan Zittrain in no way detests Apple’s smartphone. On the contrary, he has actually stated that he thinks “it’s really cool. I just don’t want it to be the center of the ecosystem along with the Web 2.0 apps”. Instead of tetherd devices like the iPhone, he has made a general call for “a more grass-roots dot-org effort to help secure generative systems.”[14] His concern is, hence, far greater than a certain critique of a single product, namely a kind of broader fear that the wide-ranging capacity for innovation and creativity might decline as tethered tech becomes more popular—and maybe sets a new default value for personal gadgets. Of course, one might turn the issue around, and ask oneself if PCs will continue to be the dominant generative computer technology, as Zittrain suggests. Steve Jobs, for once, has stated that he believes personal computers will become a kind of basic workstations in years to come, and where other digital devices (smartphones, tablets etcetera) will be used for general consumption. “When we were an agrarian nation, all cars were trucks. But as people moved more towards urban centers, people started to get into cars. I think PCs are going to be like trucks”, as he put it in a talk at the D8 conference during the summer of 2010.[15]

Since there are more than 300.000 apps in Apple’s App Store—most of them made by third party developers, and accessible through devices as the iPhone, iPad and iPod touch—a claim that these products are not generative, might sound somewhat strange. The broader question, however, is if Apple with its tight control, can continue to be successful in a competitive mobile market where rivals are openly licensing their software to other companies. Recently, other scholars than Zittrain have made similar claims. “There is much more rapid innovation taking place in an open environment,”

David B. Yoffie for example, stated in a *New York Times* article with the illustrative title, "Will Apple's Culture Hurt the iPhone?"[16] Rapid innovation is one thing, however, and no one really knows whether openness will prevail as a business strategy as it did during the PC era. As a matter of fact, the success with the controlled App Store indicates that openness as a key factor to digital development can be questioned.

The App Store is, no doubt, surely among the most policed software platforms in history, as Steven Johnson has argued. And yet "by just about any measure, the iPhone software platform has been, out of the gate, the most innovative in the history of computing." In one of the best articles on the matter, "Rethinking a Gospel of the Web", published in April 2010, Johnson has explained why 'closed' in tech terms sometimes can be—or at least seems to be—preferred to 'openness'. What would have happened if Apple had loosened its restrictions, Johnson asks for example. Would the iPhone ecosystem then have developed into something else, perhaps more innovative, even democratic? He suspect, however, that this view "is too simplistic. The more complicated reality is that the closed architecture of the iPhone platform has contributed to its generativity in important ways."

Hence, for Johnson Zittrain is dead wrong. Quoting him, but without going into polemics, surely, even Zittrain—Johnson seems to argue—must admit and recognize that if external developers using a mobile platform as Apple's iOS can produce way more than a quarter of a million new programs in less than two years, it must be regarded as generative. The iPhone development tools are a delight, and they have consequently been "a boon for small developers", as Johnson states. The economic model used by Apple, the 'one-click-buying', has also helped nurture the ecosystem by making it easy and convenient for consumers to purchase apps impulsively. A third reason for the success, according to Johnson, has to do with Apple's hardware. The fact that all devices hooked up to the App Store run on iOS naturally helps developers, since it means they have a "finite number of hardware configurations to surmount. Developers building apps for, say, Windows Mobile have to create programs that work on hundreds of different devices, each with its own set of hardware features." But developers who are building a game that uses an accelerometer, for example, knows that every iOS device on the planet contains one. To be honest, Johnson does stress that the Apple ecosystem could, or would (perhaps) benefit from a little more openness. And it

does remain troubling to him that one single company can "veto any new application on a whim."[17] But then again there remains no doubt, he believes, that the iPhone is a truly generative technology.

Mobile Strategies to Come

During late autumn of 2010, Mitch Kapor—founder of the Lotus Development Corporation and dubbed a veteran of the 'PC-versus-Mac wars'—asserted that building a "tightly controlled ecosystem, which is what Apple has, is a large short-term advantage". But, as he continued, it also means "a large long-term disadvantage … The question is, how long is the short term?"[18] Distributed out on the Web, the quote generated a lot of responses. One commentator, in fact, wrote the firm answer that "the short term ends right around now." As innovative as Apple and the App Store might be, the argument went, its closed system would not win against an open system, especially in the rapidly changing smartphone market. "Android's openness will foster more innovation."[19]

In the U.S the iPhone still remains the best-selling smartphone. According to Apple's first fiscal 2011 quarter, the company sold more than 16 million units.[20] Yet, since the Android OS is used on many more smartphones, collectively those devices outsell the iPhone. There are naturally different corporate strategies that Apple could use to strenghtened its market position. At the time of writing, for example, the major question is whether Apple will start using other network providers such as Verizon, in order to attract people who might have avoided purchasing an iPhone simply because of AT&T much critized network. But the issue is also broader, and hints at the question how Apple perceives itself as a company—in short, which are the core products and where does most profit come from? Increasingly strong sales of Mac computers suggests that mobile internet devices—from iPhones to iPads–are perhaps not the main business of Apple (as many have guessed) in years to come.

There has been a number of speculations that 2011 will be the year when mobile becomes the new default for the tech industry. Eric Schmidt, for example, recently confessed in the *Harvard Business Review,* that as he thinks about Google's strategic

initiatives in 2011, “I realize they’re all about mobile. We are at the point where, between the geolocation capability of the phone and the power of the phone's browser platform, it is possible to deliver personalized information about where you are, what you could do there right now, and so forth—and to deliver such a service at scale.”[21] Similar thoughts are also well-represented within the blogosphere. Phil Wainewright has for example stated that “in 2011, mainstream means mobile”, basically predicting that a significant numbers of software enterprises will priorities and develop for mobile first, and desktop secondly. The corollary of this prediction, Wainewright writes, is that desktop interfaces will increasingly converge with mobile ones because “the mobile UI will be the bigger sibling that sets the standard for how other UIs behave.”

According to Wainewright this shift will in turn influence the relative positions of iOS, Android and Windows Mobile, giving the open standards an advantage in terms of new development. In short, what Wainewright suggests is that Apple’s current leadership of the smartphone and tablet market will erode beacuse the company does not pay enough attention to the Mac.[22] Apple might then lose the smartphone market to Android because they forgot about OS X. Major components of the Mac OS X, including the UNIX core, are open source, which is not the case at all with iOS. The App Store might be an “open platform” but the code regulating it cannot be altered.

Another blogger who have expressed similar ideas is Jean-Baptiste Soufron. His hypothesis is basically the same as Wainewrights, and Soufron argues that Apple’s abandonment of open source with iOS on the iPhone (and iPad) is the first step of a corporate downturn, which during 2011 will constantly be challenged by the open Android platform. “It’s just a sad thing than Apple doesn’t seem to put much effort into the development of OS X anymore”, he states in blog post—and continues that to him Android was the OS X of 2010. “Being way more open than iOS, it’s coming *en force* with both a solid software, a nice interface, and the possibility to build upon it to innovate even more.”[23] Naturally, the underlying code is one thing, and the programs running the OS another. The open source software community’s immense pool of developers is an advantage for all open mobile operating systems. And the same goes for apps. Android’s Market has just gone beyond 100,000 apps, but it will all likely overtake the App Store in terms of numbers in the near future due to the vast number of developers.

Yet, a comparison between mobile strategies to come also needs to take a closer look at how the digital domain has developed in general. A core reason why Apple's App Store is such a success is that it offers a structured alternative to the open Web. It is simply a controlled digital space without virus, malware, unsecure sites and unstable programs. A gated community of code. And even if Google is doing a great job helping us find necessary information, there is also a public tendency (one might argue) that having access to everything on the Web—means you cannot find anything. With an app, however, you instantly get what you want. The app universe is, thus, a response—or could at least be considere—a reaction to the openness of the Web. Like a newspaper it is an edited space, and as much as we like to be free to read what we want, we also want the news to be delivered to us.

Compared to Android's open Market, the App Store is surely a walled garden, albeit one in which everything *always* works—which is hardly the case at the former. Of course, signed software remains no absolute guarantee that there is nothing malicious inside the code, yet there is (almost) no risk to run into trouble. All App Store apps functions and are secure, stabile and constantly upgraded in the most simple way, which is pretty important since most users are not particularly good at keeping their systems and software up to date. In short, the App Store is a supervised market—wheras Android Market has no controll whatsoever.

The success of the iPhone and its subsequent App Store has, hence, not occurred in spite of control—but rather because Apple are in command. The company has not only designed the product used for access, most noteably the iPhone, but also usage in a broad sense. In fact, as a a structured alternative to the open Web, Apple has constructed an enormously profitable market space, as well as a kind of gated community alternative to access the Internet, with a public appeal on many levels. Customers might of course get annoyed if a single controlled outlet cannot meet *all* needs of *all* users, but as Steven Johnson put it in his article in the *New York Times*: "sometimes, if you get the conditions right, a walled garden can turn into a rain forest."[24]

[1] Lev Grossman, “Invention Of the Year: The iPhone” *Time Magazine* 30 October 2007.

[2] Steve Jobs, “Third Party Applications on the iPhone” *Apple Hot News* 17 October 2007 – http://replay.waybackmachine.org/20071017221832/http://www.apple.com/hotnews/ (15 February 2011).

[3] Grossman 2007.

[4] Walt Mossberg, “Some Favorite Apps That Make iPhone Worth the Price” *The Wall Street Journal* 25 March 2009.

[5] A Google search for “Apple open closed” in January 2011 generates almost 51 million hits.

[6] Eric Schmidt is quoted from, John Paczkowski, “If Google Is the Inverse of Apple, Then is Eric Schmidt the Inverse of Steve Jobs?” *All Things Digital* 29 September 2010 – http://digitaldaily.allthingsd.com/20100929/google-the-inverse-of-apple/ (15 February 2011).

[7] John Batelle, “Thursday Signal—Repeat After Me: Apps Are (Currently) Myopic (Or...We’ve Seen This Movie Before...)” blog post 10 March 2010 – http://battellemedia.com/archives/2010/03/thursday_signal__repeat_after_me_apps_are_currently_myopic_orweve_seen_this_movie_before (15 February 2011).

[8] Jonathan Zittrain, *The Future of the Internet – and How to Stop It* (New Haven: Yale University Press, 2008), 2.

[9] Zittrain is quoted from, Brian Baker, “A Killer Product—Will closed devices like Apple’s iPhone murder the Web?” *Newsweek* 2 May 2008.

[10] Zittrain 2008, 2.

[11] See for example, “Apple opens up?” 28 September 2010 – http://futureoftheinternet.org/apple-opens-up (15 February 2011).

[12] Zittrain quoted from Baker 2008.

[13] “Glossary” – http://futureoftheinternet.org/glossary (15 February 2011).

[14] Zittrain quoted from Baker 2008.

[15] Steve Jobs is quoted from Jason D. O’Grady, “D8 Interview; Steve Jobs unfiltered” ZDNet 1 June 2010 – http://www.zdnet.com/blog/apple/d8-interview-steve-jobs-unfiltered/7067 (15 February 2011).

[16] David B. Yoffie is quoted from, Miguel Helft, “Will Apple’s Culture Hurt the iPhone” *New York Times* 17 October 2010.

[17] Steven Johnson, “Rethinking a Gospel of the Web” *New York Times* 10 April 2010.

[18] Mitch Kapor is quoted from Helft 2010.

[19] Preston Gralla, “Five reasons Androis will beat the iPhone” Computerworld 18 October 2010 – http://blogs.computerworld.com/17179/five_reasons_android_will_beat_the_iphone (15 February 2011).

[20] “Apple Reports First Quarter Results” Apple press release 18 January 2011 – http://www.apple.com/pr/library/2011/01/18results.html (15 February 2011).

[21] Eric Schmidt, “Preparing for the Big Mobile Revolution” *Harvard Business Review* 21 January 2011 – http://hbr.org/web/extras/hbr-agenda-2011/eric-schmidt (15 February 2011).

[22] Phil Wainewright, “In 2011, mainstream means mobile” ZDNet 3 January 2011 – http://www.zdnet.com/blog/saas/in-2011-mainstream-means-mobile/1235 (15 February 2011).

[23] Jean-Baptiste Soufron, “In 2011 Apple will loose the smartphone and the tablet market to Android because they forgot about OS X” Soufron.com 4 January 2011 – http://www.soufron.com/post/2559133301/in-2011-apple-will-lose-the-smartphone-and-the-tablet (15 February 2011).

[24] Johnson 2010.