Facebook Case

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Note: this is an earlier version of the chapter. All chapters updated after July 2009 are now hosted (and still free) at http://www.flatworldknowledge.com. For details see the 'Courseware' section of http://gallaugher.com

INTRODUCTION

Here's how much of a Web 2.0 guy Mark Zuckerberg is: during the weeks he spent working on Facebook as a Harvard sophomore, he didn't have time to study for a course he was taking, "Art in the Time of Augustus," so he built a website containing all of the artwork in class and pinged his classmates to contribute to a communal study guide. Within hours, the wisdom of crowds produced a sort of custom Cliff Notes for the course, and after reviewing the web based crib sheet, he aced the test. Turns out he didn't need to take that exam, anyway. Zuck (that's what the cool kids call him[1]) dropped out of Harvard later that year.

Zuckerberg is known as both a shy, geeky, introvert who eschews parties, as well as for his brash Silicon Valley bad-boy image. After Facebook's incorporation, Zuckerberg's job description was listed as "Founder, Master and Commander [and] Enemy of the State."[2] An early business card read "I'm CEO . . . Bitch."[3] And let's not forget that Facebook came out of drunken experiments in his dorm room, one of which was initially to have compared classmates to farm animals (Zuckerberg, threatened with expulsion, later apologized). For one meeting with Sequoia Capital, the venerable Menlo Park, California, venture capital firm that backed Google and YouTube, Zuckerberg showed up in his pajamas.[4]

By the age of 23, Mark Zuckerberg had graced the cover of *Newsweek*, been profiled on *60 Minutes*, and was discussed in the tech world with a reverence previously reserved only for Steve Jobs and the Google guys, Sergey Brin and Larry Page. But Mark Zuckerberg's star rose much faster than any of these predecessors. Just two weeks after Facebook launched, the firm had 4,000 users. Ten months later it was up to 1 million. The growth continued, and the business world took notice. In 2006 Viacom (parent of MTV) saw that its core demographic was spending a ton of time on Facebook and offered to buy the firm for three quarters of a billion dollars. Zuckerberg passed.[5] Yahoo offered up a cool $1 billion (twice). Zuck passed again, both times.

As growth skyrocketed. Facebook built on its stranglehold of the college market (85% of four year college students are Facebook members), opening up first to high schoolers, then to everyone. Web hipsters started selling shirts emblazoned with "I Facebooked your Mom!" Even Microsoft wanted some of Facebook's magic. In 2006, the firm locked up the right to broker all banner ad sales that run on the U.S. version of Facebook, guaranteeing Zuckerberg's firm $100 million a year through 2011. In 2007, Microsoft came back, buying 1.6% of the firm for $240

[1] For an insider account of Silicon Valley Web 2.0 startups, see Sarah Lacy's, *Once Your Lucky, Twice You're Good*, Gotham Books, 2008.
[2] McGinn, 2004
[3] Lashinsky, 2007
[4] Hoffman, 2008
[5] Rosenbush, 2006

million, and securing the rights to sell banner ads on all Facebook sites worldwide (60% of Facebook users are outside the U.S.).

The investment was a shocker. Do the math, and a 1.6% stake for $240 million values Facebook at $15 billion. That meant that a firm with only 500 employees, $150 million in revenues, and helmed by a 23- year-old college dropout was more valuable than General Motors. Then in May 2008 Facebook hit another major milestone: It passed MySpace to become the world's largest social network. That month, comScore's numbers showed Facebook with 123.9 million unique visitors and 50.6 billion page views worldwide; MySpace garnered 114.6 million unique visitors and 45.4 billion page views. While MySpace was twice as big as Facebook in the United States, Zuckerberg had leveraged the world to claim the top spot. Rupert Murdoch, whose News Corporation owns MySpace, engaged in a little trash talk, referring to Facebook as "the flavor of the month".[6] Murdoch, the titan who stands atop a media empire that also includes the *Wall Street Journal* and Fox, had been outmaneuvered by "the kid."

Why Study Facebook?

So what is Facebook and how valuable is it? Looking at the "flavor of the month" and trying to distinguish the reality from the hype is a critical managerial skill. In Facebook's case, there are a lot of folks with a vested interest in figuring out where the firm is headed. If you want to work there, are you signing on to a firm where your *stock options* and *401(k)* contributions are going to be worth something or worthless? If you're an investor and Facebook *goes public*, should you *short* the firm or increase your holdings? Would you invest in or avoid firms that rely on Facebook's business? Should your firm rush to partner with the firm? Would you extend the firm credit? Offer it better terms to secure its growing business, or worse terms because you think it's a risky bet? Is this firm the next Google (underestimated at first, and now wildly profitable and influential), the next GeoCities (Yahoo paid $3 billion for it – no one goes to the site today), or the next Skype (deeply impactful with over three hundred million accounts worldwide, but not much of a profit generator)? The jury is still out on all this, but let's look at the fundamentals with an eye to applying what we've learned. No one has a crystal ball, but we have some key concepts that can guide our analysis.

Zuckerberg Rules!

Many entrepreneurs accept startup capital from venture capitalists (VCs), investor groups that provide funding in exchange for a stake in the firm, and often, a degree of managerial control (usually in the form of a voting seat or seats on the firm's board of directors). Typically, the earlier a firm accepts VC money, the more control these investors can exert (earlier investments are riskier, so VCs can demand more favorable terms). VCs usually have deep entrepreneurial experience, a wealth of contacts, and can often offer important guidance and advice, but strong investor groups can oust a firm's founder and other executives if they're dissatisfied with the firm's performance.

At Facebook, however, Zuckerberg owns an estimated 20% to 30% of the company, and controls three of five seats on the firm's board of directors. That means that he's virtually guaranteed to remain in control of the firm, regardless of what investors say. Maintaining this kind of control is unusual in a startup, and his influence is a

[6] Morrissey, 2008

testament to the speed with which Facebook expanded. By the time Zuckerberg reached out to VCs, his firm was so hot that he could call the shots, giving up surprisingly little in exchange for their money.

What's the Big Deal?

Last decade's golden boy, Netscape founder Marc Andreessen, has said that Facebook is "an amazing achievement one of the most significant milestones in the technology industry in this decade."[7] Why is Facebook considered such a big deal?

First there's the growth: In the hypergrowth period before the firm passed MySpace, Facebook was adding 150,000 users a day. It was as if every 24 hours, fans at three sold-out major league stadiums filed into Facebook's servers.[8] From May 2007 to May 2008, Facebook's user base grew 162%, compared with 5% for MySpace. In the United States, Facebook grew 34%, versus MySpace's 7%.[9]

The number of visitors to the site jumped 300% to 100 million in February, up from 24.8 million in February 2007.[10] Two-thirds of its users visit the site every single day,[11] with the majority of users spending over half an hour getting their daily Facebook fix.[12] And it seems that Mom really is on Facebook (Dad, too); users 35 years and older account for more than half of Facebook's daily visitors.[13]

Then there's what these users are doing: Facebook isn't just a collection of personal home pages, and a place to declare your allegiance to your friends. The integrated set of Facebook services encroaches on a wide swath of established Internet businesses. It's not just that the site offers tools for messaging and chat, it's the *first-choice* messaging tool for a generation. E-mail is for your professors, but Facebook is for friends. In photos, Google, Yahoo, and MySpace all spent millions to acquire photo sharing tools (Picasa, Flickr, and Photobucket, respectively). But Facebook is now the biggest photo sharing site on the Web, taking in some 14 million photos each day. ABC News cosponsored U.S. presidential debates with Facebook, while major news outlets, including the *New York Times*, now offer Facebook icons accessible from every online story, encouraging users to "share" content from the *Times* on their profile pages. All of a sudden Facebook gets space on a page along side Digg.com and Del.icio.us, even though those guys showed up first.

So What's It Take to Run This Thing?

Technology Review recently ran a profile looking at the innards of the Facebook *cloud*[14] (the big group of connected servers that power the site). This hardware sits at three hosting facilities: in San Francisco, Santa

[7] Vogelstein, 2007. While still in his 20s, Andreesen founded Netscape, eventually selling it to AOL for over $4 billion. His second firm, Opsware, was sold to H-P for $1.6 billion. He joined Facebook's Board of Directors within months of making this comment.
[8] Hoffman, 2008
[9] Musgrove, 2008
[10] Hempel, April 2008
[11] Lacey, 2008
[12] CrunchBase, June 2008 and Krivak, 2008
[13] Hagel and Brown, 2008
[14] Zeichick, 2008

Clara, and northern Virginia. The innards that make up the bulk of the system aren't that different from what you'd find on a high end commodity workstation. Standard hard drives and eight core Intel processors - just a whole lot of them lashed together through networking and software. Much of the software that powers the site is *open source.* A good portion of the code is in PHP (a scripting language particularly well suited for website development), while the databases are in MySQL (a popular open source database), and the cache (that holds frequently accessed objects in chip-based RAM instead on slower hard drives) is managed through the open source product called Memcache. Other code components are written in a variety of languages, including C++, Java, Python, and Ruby, with access between these components managed by a proprietary code layer the firm calls Thrift. The site receives some 15 million requests per second, and 95% of data queries can be served from a huge, distributed server cache that lives in 15 terabytes of RAM (objects like video and photos are stored on hard drives).

Hot stuff (literally), but it's not enough. The firm raised several hundred million dollars more in the months following the fall 2007 Microsoft deal, focused largely on expanding the firm's server network to keep up with the crush of growth. Of the $100 million raised in May 2008, CFO Gideon Yu said "It will be used entirely for servers."[15] Facebook will be buying them by the thousands for years to come.

The Social Graph

At the heart of Facebook's appeal is a concept Zuckerberg calls the *social graph*. This refers to Facebook's ability to collect, express, and leverage the interconnections between the site's users, or as some describe it, "the global mapping of everyone and how they're related."[16] Think of all the stuff that's on Facebook as a node or endpoint that's connected to other stuff. You're connected to other users (your friends), photos about you are tagged, comments you've posted carry your name, you're a member of groups, you're connected to applications you've installed - Facebook links them all.[17]

While MySpace and Facebook are often mentioned in the same sentence, from their founding these sites were conceived differently. It goes beyond the fact that Facebook, with its neat, ordered user profiles, looks like a planned community compared to the garish, Vegas-like free-for-all of MySpace. MySpace was founded by musicians seeking to reach out to unknown users and make them fans. It's no wonder the firm, with its proximity to LA and ownership by News Corporation, is viewed as more of a media company. It has cut deals to run network television shows on its site, and has even established a record label. It's also important to note that from the start anyone could create a MySpace identity, and this open nature meant that you couldn't always trust what you saw. Rife with bogus profiles, even News Corporation's Rupert Murdoch has had to contend with the dozens of bogus Ruperts who have popped up on the service![18]

Facebook, however, was established in the relatively safe cocoon of American undergraduate life, and was conceived as a place where you could *reinforce* contacts among those who, for the most part, you already knew. The site was one of the first social networks where users actually identified themselves using their real names. If you wanted to be distinguished as working for a certain firm or as a student of a particular university, you had to verify that you were legitimate via an email address issued by that organization. It was this "realness" that became Facebook's

[15] Ante, 2008
[16] Iskold, 2007
[17] Zeichick, 2008
[18] Petrecca, 2006

distinguishing feature – bringing along with it a degree of safety and comfort that enabled Facebook to become a true social utility and build out a solid social graph consisting of verified relationships. Since "friending" (which is a link between nodes in the social graph) required both users to approve the relationship, the network fostered an incredible amount of trust. Today, many Facebook users post their cell phone numbers, their birthdays, offer personal photos, and otherwise share information they'd never do outside their circle of friends. Because of trust, Facebook's social graph is stronger than MySpace's.

There is also a strong *network effect* to Facebook. People are attracted to the service because others they care about are more likely to be there than anywhere else online. Without the network effect Facebook wouldn't exist. And it's because of the network effect that another smart kid in a dorm can't rip off Zuckerberg in any market where Facebook is the biggest fish. Even an exact copy of Facebook would be a virtual ghost town with no social graph (see following "It's Not the Technology" below). But there's also a *congestion effect* to "friending," as well (see the Network Effects chapter for more details). Alex Iskold, the CEO of personalization firm AdaptiveBlue, puts it this way: "there is a mismatch between what individuals and companies want from social networks. . . . As [the social network] grows, the incentive to share information like social graph and attention with others diminishes." We want to be part of Facebook because that's where all our friends are likely to be. But we're also unlikely to let our friend groups get too big, because they become too difficult to manage and monitor.

The *switching costs* for Facebook are also extremely powerful. A move to another service means recreating your entire social graph. The more time you spend on the service, the more you've invested in your graph and the less likely you are to move to a rival.

It's Not the Technology

Does your firm have Facebook envy? KickApps, an 80-person startup in Manhattan, will give you the technology to power your own social network. All KickApps wants is a cut of the ads placed around your content. In its first two years, the site has provided the infrastructure for 20,000 "mini Facebooks", registering 300 million page views a month[19]. NPR, ABC, AutoByTel, Harley Davidson, and Kraft all use the service (social networks for Cheez Whiz?).

There's also Ning, run by former Goldman Sachs analyst Gina Bianchini (Netscape founder Mark Andreessen is her CTO). Ning has over 750,000 mini networks organized on all sorts of topics families, radio personalities, church groups, vegans, diabetes sufferers and is adding 1,500 to 2,000 a day.

Or how about the offering from Agriya Infoway, based in Chennai, India? The firm will sell you Kootali, a software package that lets developers replicate Facebook's design and features, complete with friend networks, photos, and mini-feeds. They haven't stolen any code, but they have copied the company's look and feel. Those with Zuckerberg ambitions can pony up the $400 bucks for Kootali. Sites with names like Faceclub.com and Umicity.com have done just that – and gone nowhere.

Mini networks that extend the conversation (NPR) or make it easier to find other rapidly loyal product fans (Harley Davidson) may hold a niche for some firms. And Ning is a neat way for specialized groups to quickly form in a secure environment that's all their own (it's just us, no "creepy friends" from the other networks). While every

[19] Urstadt, 2008

market has a place for its niches, none of these will grow to compete with the dominant social networks. The value isn't in the technology, it's in what the technology has created over time. For Facebook, it's a huge user base that (for now at least) is not going anywhere else.

FACEBOOK FEEDS – EBOLA FOR DATA FLOWS

While the authenticity and trust offered by Facebook was critical, offering News Feeds concentrated and released value from the social graph. With feeds, each time a user performs an activity in Facebook – makes a friend, uploads a picture, joins a group – the feed blasts this information to all of your friends in a reverse chronological list that shows up right when they next log on. All of an individual user's activities are also listed within a Mini Feed that shows up on their profile. Get a new job, move to a new city, read a great article, have a pithy quote – post it to Facebook – the feed picks it up, and the world of your Facebook friends will get an update.

Feeds are perhaps the linchpin of Facebook's ability to strengthen and deliver user value from the social graph, but for a brief period of time it looked like feeds would kill the company. News Feeds were launched on September 5, 2006, just as many of the nation's undergrads were arriving on campus. Feeds reflecting any Facebook activity (including changes to the relationship status) became a sort of gossip page splashed right when your friends logged in. To many, feeds were first seen as a viral blast of digital nosiness – a release of information they hadn't consented to distribute widely.

And in a remarkable irony, user disgust over the News Feed ambush offered a whip crack demonstration of the power and speed of the feed virus. Protest groups formed, and every student who, for example, joined a group named Students Against Facebook News Feed, had this fact blasted to their friends (along with a quick link where friends, too, could click to join the group). Hundreds of thousands of users mobilized against the firm in just 24 hours. It looked like Zuckerberg's creation had turned on him, Frankenstein style.

The first official Facebook blog post on the controversy came off as a bit condescending (never a good tone to use when your customers feel that you've wronged them). "Calm down. Breathe. We hear you," wrote Zuckerberg on the evening of September 5. The next post, three days after the News Feed launch, was much more contrite ("We really messed this one up," he wrote). In the 484-word open letter, Zuckerberg apologized for the surprise, explaining how users could opt out of feeds. The tactic worked, and the controversy blew over.[20] The ability to stop personal information from flowing into the feed stream was just enough to stifle critics, and as it turns out, a lot of people really liked the feeds and found them useful. It soon became clear that if you wanted to use the Web to keep track of your social life and contacts, Facebook was the place to be. Not only did feeds not push users away, by the start of the next semester subscribers had nearly doubled!

F8

In May 2007, Facebook followed News Feeds with another initiative that set it head and shoulders above its competition. At a conference called f8 (pronounced "fate"), Mark Zuckerberg

[20] Vogelstein, 2007

stood on stage and announced that Facebook was opening up the screen real estate on Facebook to other application developers. Facebook published a set of *APIs* that specified how programs could be written to run within and interact with Facebook. Now any programmer could write an application that would run inside a user's profile. Geeks of the world, Facebook's user base could be yours! Just write something good.

Developers could charge for their wares, offer them for free, and even run ads. And Facebook let developers keep what they made. This was a key distinction; MySpace initially restricted developer revenue on the few products designed to run on their site, at times even blocking some applications. The choice was clear, and developers flocked to Facebook.

To promote the new apps, Facebook would run an Applications area on the site where users could browse offerings. Even better, News Feed was a viral injection that spread the word each time an application was installed. Your best friend just put up a slide show app? Maybe you'll check it out, too. The predictions of $1 billion in social network ad spending were geek catnip, and legions of programmers wanted a little bit for themselves. Apps could be cobbled together on the quick, feeds made them spread like wildfire, and the early movers offered adoption rates never before seen by small groups of software developers. People began speaking of the Facebook Economy. Facebook was considered a platform. Some compared it to the next Windows, Zuckerberg the next Gates (hey, they both dropped out of Harvard, right?).

And each application potentially added more value and features to the site without Facebook lifting a finger. The initial event launched with 65 developer partners and 85 applications. There were some missteps along the way. Some applications were accused of accidentally spamming friends with invites to install them. There were also security concerns, and apps that violated the intellectual property of other firms (see "Scrabulous" sidebar), but Facebook worked to quickly remove errant apps, improve the system, and encourage developers. Just one year in, Facebook had marshaled the efforts of some 400,000 developers and entrepreneurs, 24,000 applications had been built for the platform, 140 new apps were being added each day, and 95% of Facebook members had installed at least one Facebook application. As Sarah Lacy, author of *Once You're Lucky, Twice You're Good*, put it, "with one masterstroke, Zuck had mobilized all of Silicon Valley to innovate for him."

With feeds to spread the word, Facebook was starting to look like the first place to go to launch an online innovation. Skip the Web, bring it to Zuckerberg's site first. Consider iLike: within the first three months, the firm saw installs of its Facebook app explode to 7 million, more than doubling the number of users the firm was able to attract through the website it introduced the previous year. iLike became so cool that by September, platinum rocker KT Tunstall was debuting tracks through the Facebook service. A programmer named Mark Pincus wrote a Texas hold 'em game at his kitchen table, scoring 130,000 users in less time than it takes to get through a semester of college.[21] Today his social gaming site, Zynga, has 33 apps and nearly 50 million installs. Seth Goldstein, the CEO of SocialMedia, which developed the Food Fight app, claimed that a buffalo wing chain offered the firm $80,000 to sponsor virtual wings that Facebook users could hurl at their friends.[22] Lee Lorenzen, founder of Altura Ventures, an investment firm

[21] Guynn, 2007
[22] Blakely and Copeland, 2007

exclusively targeting firms creating Facebook apps, said "Facebook is God's gift to developers. Never has the path from a good idea to millions of users been shorter."[23]

I Majored in Facebook

Once Facebook became a platform, Stanford professor B. J. Fogg thought it would be a great environment for a programming class. In ten weeks his 73 students built a series of applications that collectively received over 16 million installs. By the final week of class, several applications developed by students, including: KissMe, Send Hotness, and Perfect Match, had all received millions of users, and class apps collectively generated more than $500,000 in ad revenue. At least three companies were formed from the course.

Some of the folks developing Facebook applications have serious geek cred. Max Levchin, who (along with Peter Theil) founded PayPal, has widely claimed that his widget company, Slide, would be even bigger than his previous firm (for the record, PayPal sold to eBay for $1.5 billion in 2002). Legg Mason and Fidelity have each already invested at levels giving the firm a $500,000 valuation.[24] But is there that much money to be made from selling ads and mining data on SuperPoke? Levchin's firm is working to craft new advertising measures to track and leverage engagement. Just what are users doing with the applets? With whom? And how might advertisers use these insights to build winning campaigns? Levchin thinks Slide can answer these questions and capture a ton of business along the way.

The application framework sounds great, and the numbers are astonishing. But legitimate questions remain. Are Facebook apps really a big deal? Just how important will apps be to adding sustained value within Facebook? And how will firms leverage the Facebook framework to extract their own value? A chart from FlowingData showed the top category, Just for Fun, was larger than the next four categories combined. That suggests that a lot of applications are faddish time wasters. Yes, there is experimentation beyond virtual Zombie Bites. Visa has created a small business network on Facebook (Facebook had some 80,000 small businesses online at the time of Visa's launch). Educational software firm Blackboard offered an application that will post data to Facebook pages as soon as there are updates to someone's Blackboard account (new courses, whether assignments or grades have been posted, etc.). We're still a long way from Facebook as a Windows rival, but f8 helped push Facebook to #1, and it continues to deliver quirky fun (and then some) supplied by thousands of developers off its payroll.

Scrabulous

Rajat and Jayant Agarwalla, two brothers in Kolkata, India, who run a modest software development company, decided to write a Scrabble clone as a Facebook application. The app, named Scrabulous, was social – users could invite friends to play, or they could search for new players looking for an opponent. Their application was a smash, snagging 3 million registered users and 700,000 players a day after just a few months. Scrabulous was featured in *PC World*'s 100 best products of 2008, received coverage in the *New York Times*, *Newsweek*, and *Wired*, and was pulling in about $25,000 a month from online advertising. Way to go, little guys![25]

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23 Guynn, 2007
24 Hempel and Copeland, 2008
25 Timmons, 2008

There is only one problem: the Agarwalla brothers didn't have the legal rights to Scrabble, and it was apparent to anyone that from the name to the tiles to the scoring – this was a direct rip off of the well-known board game. Hasbro owns the copyright to Scrabble in the United States and Canada; Mattel owns it everywhere else. Thousands of fans joined Facebook groups with names like Save Scrabulous and Please God, I Have So Little: Don't Take Scrabulous, Too. Users in some protest groups pledged never to buy Hasbro games if Scrabulous is stopped. Even if the firms wanted to succumb to pressure and let the Agarwalla brothers continue, they couldn't. Both Electronic Arts and RealNetworks have contracted with the firms to create online versions of the game.

ADVERTISING & SOCIAL NETWORKS: A WORK IN PROGRESS

If Facebook is going to continue to give away its services for free, it needs to make money somehow. Right now that means advertising. Fortunately for the firm, online advertising is hot. In 2007, spending on online advertising grew 26% (the only medium growing in double digits). And while 20% of media consumption happens online, the Net attracts just 6% of advertising dollars, suggesting there's plenty of growth still ahead.[26] Firms spend more advertising online than they do on radio ads, and the Net will soon beat out spending on cable TV and magazine ads.[27] But not all Internet advertising is created equal. And there are signs that social networking sites are struggling to find the right ad model.

In early 2008, Google founder Sergey Brin stated "I don't think we have the killer best way to advertise and monetize social networks yet." Brin went on to state that social networking ad inventory as a whole was proving problematic and that the "monetization work we were doing there didn't pan out as well as we had hoped."[28] When Google ad partner Fox Interactive Media (the News Corporation division that contains MySpace) announced that revenue would fall $100 million short of projections, News Corporation's stock tumbled 5%, analysts downgraded the company, and the firm's chief revenue officer was dismissed.[29]

Why aren't social networks having the success of Google and other sites? Problems advertising on these sites include content adjacency, and user attention. The *content adjacency* problem refers to concern over where a firm's advertisements will run. Look at all of the creepy titles in social networking news groups. Do advertisers really want their ads running alongside conversations that are racy, offensive, illegal, or that may even mock their products? This is a major problem with any site offering ads adjacent to free-form social media.

Now let's look at the user attention problem.

Attention Challenges: The Hunt versus the Hike

In terms of revenue model, Facebook isn't even close to being in the same league as the most successful ad-supported services, nor does Facebook have the focus that advertisers are willing to pay for. Users of Google and other search sites are on a *hunt* – a task-oriented expedition to collect information that will drive a specific action. Search users want to learn something, buy something, research a problem, get a question answered. To the extent that the hunt overlaps

[26] Urstadt, 2008
[27] Sweeney, 2008
[28] The Economist, 2008
[29] Stelter, 2008

with ads, it works. Just searched on a medical term? Google will show you an ad from a drug company. Looking for a toy? You'll see Google ads from eBay sellers and other online shops. Type in a vacation destination and you get a long list of travel agents aggressively courting your spending. Even better, Google only charges text advertisers when a user clicks through. No clicks? The ad runs at no cost to the firm. From a return on investment perspective, this is extraordinarily efficient. How often do users click on Google ads? Enough for this to be the single most valuable activity among any Internet firm. In 2007, Google revenue totaled $16 billion. Profits exceeded $4.2 billion, almost all of this from pay per click ads.

While users go to Google to hunt, they go to Facebook as if they were going on a *hike* – they have a rough idea of what they'll encounter, but they're there to explore and look around, enjoy the sights (or site). They've usually allocated time for fun and they don't want to leave the terrain when they're having conversations, looking at photos or videos, and checking out updates from friends.

These usage patterns are reflected in click-through rates. Google users click on ads around 2% of the time (and at a much higher rate when searching for product information). At Facebook, click-throughs are about 0.04%.[30]

Most banner ads don't charge per click, but rather via something called *CPM* – that's cost per thousand *impressions* (an impression being each time an ad appears on someone's screen). The holy grail of Internet advertising is *targeting*. The more focused an audience, the more likely a firm is to attract advertisers willing to pay a higher CPM to reach those users. Rates vary widely. In 2008, MySpace lowered its banner ad rate from $3.25 CPM to less than $2. By contrast, TechTarget, a web publisher focusing on technology professionals, is able to command CPM rates of $100 and above (an ad inventory that valuable helped the firm go public in 2007). *Technology Review* magazine boasts a CPM of $70. The social networking blog Mashable has CPM rates ranging between $7 and $33. But Facebook ads go for much, much less. Lookery, an ad network that buys ad space on Facebook in bulk, had been reselling inventory at a CPM of 13 cents (note that Facebook does offer advertisers pay-per-click as well as impression-based, or CPM, options). Even Facebook ads with a bit of targeting are poorly priced (Facebook's Social Ads, which allow advertisers to target users according to location and age, have a floor price of 15 cents CPM.[31]) Of course, Facebook has a long way to go when it comes to effective ad targeting. Recently, male, over 40 Facebookers were bombarded with alternating ads for hair replacement and fat reduction. Not exactly what you want to see when checking your profile!

[30] Urstadt, 2008
[31] Urstadt, 2008 and Hempel, 2008

Unwelcome Targeting? The ads below were recently seen in regular rotation by older male Facebook users.

Getting Creative With Promotions: Does It Work?

Facebook and other social networks are still learning what works. Ad inventory displayed on high-traffic home pages have garnered big bucks for firms like Yahoo. With MySpace and Facebook offering advertisers greater audience reach than most network television programs, there's little reason to suggest that chunks of this business won't eventually flow to the social networks. But even more interesting is how Facebook and widget sites have begun to experiment with relatively new forms of advertising. Back to Max Levchin's point, Facebook has a unique opportunity to get consumers to engage with their brand. Some initial experiments point where this may be heading.

The Disney Backlot area on Facebook contains contests, movie trailers, reviews, and upcoming releases. Users can also "become a fan," and get access to advance screenings, premiere tickets, opportunities to meet the stars, visits to movie sets, and other freebies.

Many firms have been engaging users by making their products part of the Facebook fun. COO Sheryl Sandberg recently discussed Ben and Jerry's promotion for the ice cream chain's free cone day event. To promote the upcoming event, Ben and Jerry's initially contracted to make 250,000 "gift cones" available to Facebook users; they could click on little icons that would gift a cone icon to a friend, and that would show up in their profile. Within a couple of hours, customers had sent all 250,000 virtual cones. Delighted, Ben and Jerry's bought another 250,000 cones. Within 11 hours, 500,000 people had sent cones, many making plans with Facebook friends to attend the real free cone day. The day of the Facebook promotion, Ben and Jerry's website registered 53 million impressions, as users searched for store locations and wrote about their favorite flavors.[32] The campaign dovetailed with everything Facebook was good at: it was viral, generating enthusiasm for a promotional event, and even prompting scheduling.

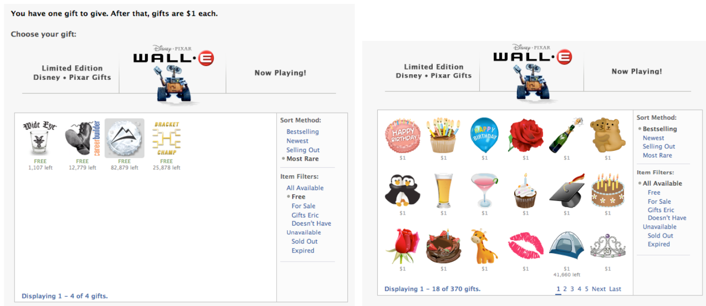
In other promotions, Paramount Pictures gave away 250,000 virtual fedoras for *Indiana Jones and the Kingdom of the Crystal Skull*. "They sold out within hours, with users rallying friends, family, and colleagues to see the movie." The Dr. Pepper Snapple Group offered 250,000 virtual Sunkist sodas, which earned the firm 130 million brand impressions in 22 hours. Says Sunkist's brand manager, "A Super Bowl ad, if you compare it, would have generated somewhere between 6 to 7 million."[33]

Of course, even with this business, Facebook may find that it competes with widget makers. Slide also offers wacky advertising programs through its own Facebook apps (the firm sits atop the most popular application developer rankings). Fox Searchlight went to Slide to allow friends to throw orange Tic Tacs at each other as part of a promotion for *Juno*. Coke used Slide to distribute virtual Vitamin Water.

It's quirky and fun, but is it even effective? Some of these programs are considered successes; others, not so much. Jupiter Research surveyed marketers trying to create a viral impact online and found that only about 15% of these efforts actually caught on with consumers.[34] While the Ben and Jerry's gift cones were used up quickly, a recent visit to Facebook saw CareerBuilder, Wide Eye Caffeinated Spirits, and Coors Light icons lingering days after their first appearance. Brands seeking to deploy their own applications in Facebook have also struggled. *New Media Age* reported that applications rolled out by top brands such as MTV, Warner Brothers, and Woolworths were found to have as little as five daily users. Congestion may be setting in for all but the most innovative applications, as standing out in a crowd of over 23,000 applications becomes increasingly difficult.[35] Efforts around engagement opportunities like events (Ben and Jerry's) or products consumer are anxious to identify themselves with (a band or a movie) may have more success than trying to promote consumer goods that otherwise offer little allegiance, but efforts are so new that metrics are scarce, impact is tough to gauge, and best practices are still unclear.

[32] Hardy, 2008
[33] Wong, 2008
[34] Cowan, 2008
[35] New Age Media, 2008

Facebook sells "gifts," icons that show up on friends' profiles, for $1 each. Firms also pay Facebook for promotions. Below, Wide Eye caffeinated spirits, Coors Light, and CareerBuilder are among the options offered.



BEACON BUSTED

Conventional advertising may grow into a great business for Facebook, but the firm was clearly sitting on something that was unconventional compared to prior generations of web services. Could the energy and virulent nature of social networks be harnessed to offer truly useful, consumer information to its users? Word of mouth is considered the most persuasive (and valuable) form of marketing,[36] and Facebook was a giant word of mouth machine. What if the firm worked with vendors and grabbed consumer activity at the point of purchase to put into the News Feed and post to a user's profile? Then, say, when you rented a video, bought a cool product, or dropped something in your wish list, your buddies could get a heads up and they might ask you about it. The person being asked feels like an expert, the person with the question gets a frank opinion, and the vendor providing the data just might get another sale. It looked like a home run.

This effort, named Beacon, was announced in November 2007. Some 40 e-commerce sites signed up, including Blockbuster, Fandango, eBay, Travelocity, Zappos, and the *New York Times*. Zuckerberg was so confident of the effort that he stood before a group of Madison Avenue ad executives and declared "Once every hundred years, the way that media works fundamentally changes."

Like News Feeds, user reaction was swift and brutal. The commercial activity of Facebook users began showing up without their consent. The biggest problem with Beacon was that it was "opt out" instead of "opt in." Facebook (and its partners) assumed users would agree to sharing data in their feeds. A pop up box did appear briefly on most sites supporting Beacon, but it disappeared after a few seconds.[37] Many users, blind to these sorts of alerts, either clicked through or ignored the warnings. And well . . . there are some purchases you might not want to broadcast to the world.

"Facebook Ruins Christmas for Everyone!" screamed one headline from MSNBC.com. Another from *U.S. News and World Report* read "How Facebook Stole Christmas." The *Washington Post*

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[36] Kumar, Petersen, and Leone, 2007.
[37] Nakashima, 2007

ran the story of Sean Lane, a 28-year-old tech support worker from Waltham, Massachusetts, who got a message from his wife just two hours after he bought a ring on Overstock.com. "Who is this ring for?" she wanted to know. Facebook had not only posted a feed that her husband had bought the ring, but also that he got it for a 51% discount! Overstock quickly announced that it was halting participation in Beacon until Facebook changed its practice to opt in.[38]

MoveOn.org started a Facebook group and online petition protesting Beacon. The Center for Digital Democracy and the U.S. Public Interest Research Group asked the Federal Trade Commission to investigate Facebook's advertising programs. And a Dallas woman sued Blockbuster for violating the Video Privacy Protection Act (a 1998 U.S. law prohibiting unauthorized access to video store rental records).

To Facebook's credit, the firm acted swiftly. Beacon was switched to an opt-in system, where user consent must be given before partner data is sent to the feed. Zuckerberg would later say regarding Beacon: "We've made a lot of mistakes building this feature, but we've made even more with how we've handled them. We simply did a bad job with this release, and I apologize for it."[39] Despite the Beacon fiasco, new users continued to flock to the site, and loyal users stuck with Zuck. Perhaps a bigger problem was that many of those 40 A-list ecommerce sites that took a gamble with Facebook now had their names associated with a privacy screw up that made headlines worldwide. A manager so burned isn't likely to sign up first for the next round of experimentation. Several months later, some 30 firms were using the opt-in system, but uptake was limited and that hundred-year change Zuckerberg talked about looked like it had been put on hold.

PREDATORS AND PRIVACY

While spoiling Christmas is bad, sexual predators are far worse, and in October 2007, Facebook became an investigation target. Officials from the New York State Attorney General's office had posed as teenagers on Facebook and received sexual advances. Complaints to the service from investigators posing as parents were also not immediately addressed. These were troubling developments for a firm that prided itself on trust and authenticity.

In a 2008 agreement with 49 states, Facebook offered aggressive programs, many of which put it in line with MySpace. MySpace had become known as a lair for predators and after months of highly publicized tragic incidents, had become very aggressive about protecting minors. To get a sense of the scope of the problem, consider that MySpace claimed that it had found and deleted some 29,000 accounts from its site after comparing profiles against a database of convicted sex offenders.[40] Following MySpace's lead, Facebook agreed to respond to complaints about inappropriate content within 24 hours and to allow an independent examiner to monitor how it handles complaints. The firm imposed age-locking restrictions on profiles, reviewing any attempt by someone under the age of 18 to change their date of birth. Profiles of minors were no longer searchable. The site agreed to automatically send a warning message when a child is at

[38] Nakashima, 2007
[39] McCarthy, 2007
[40] Reuters, May 8, 2008

risk of revealing personal information to an unknown adult. And links to explicit material, the most offensive Facebook groups, and any material related to cyberbullying were banned.

Busted on Facebook

The Web 2.0 chapter warned that your digital life will linger forever, and that employers are increasingly plumbing the depths of virtual communities in order to get a sense of job candidates. And it's not just employers. Sleuths at universities and police departments have begun looking to Facebook for evidence of malfeasance. Oxford University recently fined graduating students more than £10,000 for their post-exam celebrations, evidence of which was picked up from Facebook. Police in Vermont have made underage drinking busts and issued graffiti warnings based on Facebook photos, too. Beware – the Web knows!

WALLED GARDEN OR OPEN FIELD?

Sitting atop the largest number of social network users, the largest set of online photos, and the largest number of gadgets and widgets, Facebook seems to have found the sweet spot. Network effects suggest that users and application developers will show up first to the place where all the action is. As Facebook continues its influence, its control becomes more and more absolute.

But Google has a different vision. The site is trying to establish a set of standards that rival Facebook's APIs. The effort, called *OpenSocial*, would allow a developer to write an application for one service, then let it run on any site that adopts the OpenSocial framework. Google, along with other sites, is also pushing data portability. In the grand vision, users would be able to consolidate all of their social networking information regardless of where it was created. Friends on MySpace, LinkedIn, and Gmail could all be reachable through a single contact list and inbox. Feeds would be consolidated in one view regardless of where these actions were performed. A photo posted on Flickr, a Twitter tweet, an article gets a Digg or bookmark – in theory you could combine these in a single site so that you'd have just one place to look instead of many. Other efforts, like *OpenID*, promise a single sign-on – just one password that could grant access across all complaint sites. It's a neat vision, one where social networks could grow from anywhere, linked via a sort of connective tissue of openness that lets data and features flow, regardless of where they were created.

But there are major problems with this, most notably: lock-in, security, and revenue sharing. First, lock-in. Mark Zuckerberg's geeks have worked hard to make their site the top choice for most of the world's social networkers and social network application developers. Right now everyone goes to Facebook because everyone else is on Facebook. Facebook has little incentive to support efforts that undermine the firm's two most compelling sources of competitive advantage: network effects and switching costs.

Then there's security. Allowing data streams that contain potentially private posts and photographs to squirt across the Internet and land where you want them raises all sorts of concerns. What's to say an errant line of code doesn't provide a back door to your address book or friends list? To your messaging account? To let others see photos you'd hoped to only share with family? Security breaches can occur on any site, but once the data is allowed to flow freely, every site with access is, for hackers, the equivalent of a potential door to open or a window to crawl through.

Finally, there's revenue sharing. As mentioned earlier, hosting content, especially photos and rich media, is a very expensive proposition. What incentive does a site have to store data if it will just be sent to a third-party site that will run ads around this content and not share the take? Too much data portability presents a *free rider problem* that, unless solved, offers little incentive for the dominant sites to participate.

The approach of keeping users nestled in the cocoon of a single service is sometimes called the *walled garden*. In this approach, a closed network or single set of services is controlled by one dominant firm. The term is often used when referring to cell phone providers. While this is changing, U.S. phone carriers were typically able to decide which handsets worked on their networks, which features they could offer, and which services can be accessed (see the Google chapter to learn how the firm is working to change this, too). While Facebook has announced some data initiatives, like Friend Connect, there's little incentive for the company to embrace the sort of openness envisioned by many of its rivals. It is not unprecedented for walled gardens to fall. The walled garden AOL employed eventually fell as users and developers flocked to the more open World Wide Web, and when ATMs were first developed, Citibank was eventually forced to drop its proprietary system for shared networks, like NYCEs, that allowed cash withdrawals by customers of other banks. But the extended dominance of Windows in operating systems, Intel in processors, and Apple in music players shows that a standard, once established, can be extraordinarily difficult to topple.

Social Networking Goes Global

MySpace and Facebook will soon see stellar growth start to slow as the law of large numbers sets in. The shift from growth business to mature one can be painful, and for online firms it can occur relatively quickly. That doesn't mean these firms will become unprofitable, but to sustain growth (particularly important for keeping up the stock price of a publicly traded company), firms often look to expand abroad.

Facebook has already ridden global growth to pass MySpace, despite the latter's dominance in the United States. The firm's *crowdsourcing* localization effort, where users were asked to look at Facebook phrases and offer translation suggestions for their local language, as we saw in the Web 2.0 chapter, helped the firm rapidly deploy versions in dozens of markets. But network effects are both quick and powerful. The lessons of eBay also show that late market entry can doom a business reliant on the positive feedback loop of a growing user base. And the global competition is out there. Worldwide, Facebook wannabes include "Studiverzeichnis" (German for "student index"), a site with millions of users; Vkontakte ("in contact"), Russia's most popular social networking site; and Xiaonei, Chinese for "in the school," which is said to have registered 90% of China's college students.

China's Internet is booming. The nation now has the world's biggest populaton of online users and is attracting venture capital to match. Xiaonei, which was sold to Oak Pacific Interactive in 2005, recently received a $430 million investment to help growth.[41] That's more than any single group has invested in Facebook, and about as much as the firm has raised in total since its founding.

[41] Greenberg, 2008.

There are over a hundred social networks operating in China.[42] And if competing with clones weren't bad enough, now there are clones of clones. Wang Xing, who created Xiaonei, has created another social networking service, Hainei, aimed at adults rather than students. Cover up the logo on Xiaonei, Hainei, and the Chinese Facebook (which launched mid year 2008), and you'd be hard pressed to tell the difference. China is proving a particularly difficult market for foreign Internet firms. Google, eBay, Yahoo, and MySpace have all struggled there (News Corporation is particularly committed to MySpace China; the effort is being led by Wendi Deng Murdoch, Rupert's wife). And don't be surprised to see some of these well capitalized overseas innovators making a move on U.S. markets, too.

Is Facebook Worth It?

It has often been said that the first phase of the Internet was about putting information online and giving people a way to find it. The second phase of the Web is about connecting people with one another. The Web 2.0 movement is big and impactful, but is there much money in it?

While the valuations of private firms are notoriously difficult to pin down due to a lack of financial disclosure, by mid 2008 it was almost certain that Facebook was not valued at the $15 billion that made headlines a few months earlier. This isn't to say definitively that Facebook won't be worth $15 billion (or more) someday, but several factors suggest a real valuation that is quite a bit lower. Microsoft did spend $240 million for 1.6% of Facebook, but the deal was also done in conjunction with an agreement to let Microsoft manage the sale of Facebook's banner ads worldwide. While the specifics of the deal haven't been disclosed, they may have enabled Facebook to get better terms from Microsoft. Since fall 2007, several others have invested private money into Facebook, as well, including Founders Fund and Li Kai Shing, the Hong Kong billionaire behind Hutchinson Whampoa. Press reports and court documents suggest that these deals were done at valuations that were lower than what Microsoft accepted. [43] Taking the numbers: at the time of the deal, if Facebook were a publicly traded company, it would have a price to earnings ratio of 500; Google's at the time was 53, and the average for the S&P 500 is historically around 15. That's quite a price to pay, even for deep-pocketed Microsoft.

Another argument can be made for Microsoft purposely inflating the value of Facebook in order to put it out of reach from most rival bidders. As users spend more time on Facebook, they create more content that lives behind Zuckerberg's walled garden. This content remains dark, unreachable by Google and other search engines because it can only be accessed by friend-approved users. To the extent that users might want to search for information squirreled away on their friends' pages, the ability to link Facebook content to a secure search engine could be incentive enough for Microsoft (or Google) to make Mark Zuckerberg a buyout offer.

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Steve Rubel recently wrote the following on his Micro Persuasion blog: "the Internet amber is littered with fossilized communities that once dominated. These former stalwarts include AOL, Angelfire, theGlobe.com, GeoCities, and Tripod." Network effects and switching cost advantages can be strong, but not necessarily insurmountable if value is seen elsewhere and if an effort becomes more fad than must have. Time will tell if Facebook's competitive assets and constant innovation are enough to help it avoid the fate of those that have gone before them.

[42] Einhom, 2007
[43] Kirkpatrick, May 9, 2008 and Ante 2008

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This reading is available to faculty for non-commercial use. Enjoy! If you do use it, please send an e-mail to john.gallaugher@bc.edu. More chapters and cases will follow in Professor Gallaugher's forthcoming book "Information Systems: A Manager's Guide to Harnessing Technology", to published (in both free online and low-cost print version) by Flat World Knowledge (FlatWorldKnowledge.com). Thanks!

REFERENCES

Ante, Spencer. “Facebook: Friends with Money.” *BusinessWeek*, May 9, 2008.

Blakely, Lindsay, and Michael Copeland. “The Facebook Economy.” *Business 2.0*, August 23, 2007.

Cowan, Matt. “Marketers Struggle to Get Social.” Reuters video, June 19, 2008.

Das, Anupreeta. “Facebook, 49 U.S. States Agree on Web Safety Steps.” Reuters, May 8, 2008.

Einhorn, Bruce. “Facebook in China? Not So Fast” *BusinessWeek*, November 20, 2007.

“Everywhere and Nowhere.” *The Economist*, March 19, 2008.

“Facebook Targets China, World’s Biggest Web Market.” Reuters, June 20, 2008.

Fast Company staff. “Facebook by the Numbers.” *Fast Company*, May 2007.

“Briefing: Framed by Facebook.” *Time*, January 17, 2008.

Gajilan, Arlyn. “My Big Break: Facing the Future Mark Zuckerberg.” *Forbes*, September 13, 2006.

Goldie, Luan. “For Facebook Success Brands Must Stand Out.” *New Media Age*, May 1, 2008.

Greenberg, Andy. “Facebook’s Foreign Clones.” *Forbes*, June 12, 2008.

Greene, Jay. “Microsoft and Facebook Hook Up.” *BusinessWeek*, October 25, 2007.

Greenwood, Bruce. “MySpace, Facebook, Google Integrate Data Portability.” *Information Today*, June 2008.

Guynn, Jessica. “A software industry @ Facebook.” *Los Angeles Times*, September 10, 2007.

Hagel, John, and John Seely Brown. “Life on the Edge: Learning from Facebook.” *BusinessWeek*, April 2, 2008.

Hardy, Quentin. “Facebook Thinks Outside Boxes.” *Forbes*, May 28, 2008.

Hart, Kim. “Social Networking Meets Madison Ave.” *Washington Post*, June 5, 2008.

Hempel, Jessi. “Finding Cracks in Facebook.” *Fortune*, May 13, 2008.

———.“Meet Facebook’s New Number Two.” *Fortune*, April 12, 2008.

Hempel, Jessi, and Michael Copeland. "Are These Widgets Worth Half a Billion?" *Fortune*, March 25, 2008.

Hoffman, Claire. "The Battle for Facebook." *Rolling Stone*, June 26, 2008.

Iskold, Alex. "Social Graph: Concepts and Issues." ReadWriteWeb Blog, September 12, 2007.

Kirkpatrick, David. "Why Microsoft Isn't Buying Facebook." *Fortune*, May 9, 2008.

Krivak, Thomas. "Facebook 101: Ten Things You Need to Know About Facebook." *Information Today*, March 2008.

Kumar, V., J. Andrew Petersen, and Robert Leone. "How Valuable Is Word of Mouth?" *Harvard Business Review*, October 2007.

Lacy, Sarah. *Once You're Lucky, Twice You're Good: The Rebirth of Silicon Valley and the Rise of Web 2.0.* New York: Gotham Books, 2008.

Levy, Steven. "Facebook Grows Up." *Newsweek*, August 20, 2007.

Media Week staff. "The Big Three Varied Ad Revenue Successes for News Corp, Bebo, and Facebook." *Media Week*, June 24, 2008.

McCarthy, Caroline. "Facebook's Zuckerberg: 'We simply did a bad job' handling Beacon." *CNET.com*, December 5, 2007.

McGinn, Timothy. "Online Facebooks Duel over Tangled Web of Authorship." *Harvard Crimson*, May 28, 2004.

McGirt, Ellen. "Hacker. Dropout. CEO." *Fast Company*, May 2007.

Morrissey, Brian. "Murdoch: Facebook Is 'Flavor of the Month.' " *Media Week*, June 20, 2008.

Musgrove, Mike. "Facebook Passes MySpace with Global Boost." *Washington Post*, June 24, 2008.

Nakashima, Ellen. "Feeling Betrayed, Facebook Users Force Site to Honor Their Privacy." *Washington Post*, November 30, 2007.

Naone, Erica. "Who Owns Your Friends?" *Technology Review*, July/August 2008.

Pavia, Will. "Oxford University Fines Students with the Aid of Facebook", *Times* (London), April 18, 2008.

Petrecca, Laura. "If You See These CEOs on MySpace . . ." *USA Today*, September 25, 2006.

Pattison, Kermit. “Why Facebook Is Even Bigger Than You Think.” *Fast Company*, May 19, 2008.

Popkin, Helen. “Facebook Ruins Christmas for Everyone!” MSNBC.com, December 2, 2007.

Quittner, Josh. “Who Will Rule the New Internet?” *Time,* June 16, 2008.

Rosenbush, Steve. “Facebook’s on the Block.” *BusinessWeek,* March 28, 2006.

Rubel, Steve. “The Promise and Peril of Ubiquitous Community.” MicroPersuasion Blog, May 15, 2008.

Serwer, Andy, and Adam Lashinsky. “Facebook Grows Up.” *Fortune,* May 29, 2006.

Stelter, Brian. “MySpace Might Have Friends, but It Wants Ad Money.” *New York Times,* June 16, 2008.

Sweeney, Mark. “Internet Ad Spending Will Overtake Television in 2009.” *Guardian,* May 19, 2008.

Timmons, Heather. “Online Scrabble Craze Leaves Game Sellers at Loss for Words.” *New York Times,* March 2, 2008.

Urstadt, Bryant. “The Business of Social Networks.” *Technology Review,* July/August 2008.

Vogelstein, Fred. “How Mark Zuckerberg Turned Facebook into the Web’s Hottest Platform.” *Wired,* September 6, 2007.

Wong, Elaine. “Ben & Jerry’s, Sunkist, Indy Jones Unwrap Facebook's 'Gift of Gab.' ” Brandweek.com, June 1, 2008.

Zeichick, Alan. “How Facebook Works.” *Technology Review,* July/August 2008.