

Twitter and the Micro-Messaging Revolution:

Communication, Connections,
and Immediacy—140 Characters
at a Time

An O'Reilly Radar Report

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Foreword

By Tim O'Reilly

Like a lot of people, I didn't think much of Twitter at first. I signed up to check it out, but didn't find much there for me. I wasn't interested in hearing about where people were having coffee, what they had for dinner, or who they were hanging out with. It seemed like a great application for people with too much time on their hands.

But some months later I was back. Because Twitter lets anyone "follow" any other user, rather than requesting a formal declaration of "friendship," and because I'm a well-known person, one day I realized that I had about 5000 people following me on Twitter, waiting to hear from me. Huh? I'd better give them something to follow, I thought.

So I started posting. But because I'm a serious guy, I tended to post links to what I was reading or writing, not what I was eating or drinking. And I noticed that lots of other people were doing that too. Before long, I found myself using Twitter as my principal source of news, forgoing my RSS reader for the more varied and stimulating flow that comes from people sharing the very best things that they've read lately.

And because I was using Twhirl, a Twitter client that has an easy button for "retweeting"—that is, passing on the best tweets from someone you're following, I soon found that I had a great opportunity to bring attention to insights from people who had fewer followers than I did. All those pieces I read that I couldn't get around to writing a full blog post about could be retweeted in an instant. I've now got about 12,000 direct followers, but calculations by some of the Twitter influence measurement sites project that that means I have potential access to millions of Twitter users, as others retweet my most relevant comments. What's more, the network is still young.

At the same time as I found Twitter a great tool in my role as an information switchboard for people who care about new trends in technology, I also came to appreciate its original promise, as a tool for keeping in touch with people's ordinary lives. I learn from my brother's tweets that my niece has a new boyfriend, that his other

daughter is home visiting from college. I gain a new kind of ambient intimacy with members of my own family. And before long, I'm tweeting personal bits too. It's been a long day, I'm relaxing and making raspberry jam. "How much sugar do you use?" asks one follower. "However much you like, if you use Pomona's Universal Pectin," I reply.

And so, through the minutia of casual interaction, we see the power of conversational marketing, as ordinary people share what they do and what they care about.

And of course, from there, I learn to post teasers about my own company's products. I share product announcements, ask for advice about what questions to ask panelists I'm interviewing on stage at my conferences, confident that I can reach thousands of my best customers with a tool so lightweight that it enables conversations that I would never have been able to have otherwise.

So, if you wonder whether Twitter matters for business, remember, if you will, when people new to cell phones used to call each other to report the most trivial details of where they were and what they were doing; remember how blogs at first were thought of merely as personal diaries of no interest to anyone in business, and how they grew up to become the heart of a new media paradigm. For that matter, remember how the personal computer was dismissed by the titans of the computer industry as nothing but a toy.

The future often comes to us in disguise, with toys that grow up to spark a business revolution.

Twitter is like that. Ignore it at your peril. It is already a powerful tool of competitive advantage for companies like O'Reilly Media, Forrester Research, Comcast, and Zappos. This report introduces Twitter, tells war stories from its early practitioners, outlines best practices and the rapidly evolving landscape of third party applications and other tools that help you make use of the Twitter platform.

P.S. I'm @timoreilly on Twitter, just like I'm tim@oreilly.com on email. If your name and brand matters to you, there are advantages to getting on a platform early.

Preface

By Sarah Milstein

On a rainy evening in March 2006, my partner, Tony, came home after work excited. At the time, he was the director of engineering at Odeo, a podcast startup, and he hadn't been energized by his days in a while. So I was surprised when he rushed in talking about one of the engineers in his group and said, "You've gotta try this thing Jack cooked up. It's addictive!"

The URL was www.twtr.com, and the page was white with just a few words in a plain black font asking for my mobile number. It took a few minutes to give Twtr my information and get my phone set up with the service's SMS code, 40404. And then I started answering the question Twtr asked: "What are you doing?"

Right away, that was fun and cool—I could use my phone or laptop to let other people know what I was up to, and they could find out anywhere they happened to be. But then it got better: I could follow other people on Twtr and learn about what they were thinking and

doing—anywhere I happened to be. And none of it sucked up much time because Twtr limited messages to 140 characters (which keeps each update and the username that sent it within the 160-character limit of a single SMS, or short message service, the communications protocol used for mobile-phone texting), and it let me choose whose updates I was going to receive.

From the first day Twtr launched in private beta, I was hooked. I try a lot of web services, but few have staying power in my life, and I rarely predict that any will take off. Twtr, though, struck me right away as interesting and useful and fun. After five minutes of playing with it, I turned to Tony and said, "This is going to be huge, and people are going to use it in amazing ways we can't predict right now." Two and a half years later, I'm shocked to have made a dead-accurate call, but I'm not at all surprised that it's come true.¹

1. Tony and I have no financial stake in Twitter.

Twitter and the Micro-Messaging Revolution

Introduction: What is Twitter?

Twitter² is a device-agnostic real-time message-routing platform—which is a fancy way of saying that it can send messages to and receive them from a variety of devices simultaneously, at the moment a message is sent. That's a powerful communications base.

When you combine it with a short messaging form that not only lets people quickly create and consume updates, but also lets them choose the people they'll receive messages from, Twitter turns out to meet a lot of personal and professional needs. (If you haven't used Twitter yet or aren't familiar with the follower model, the box on page 12 shows you how it works.)

At first, people used Twitter to answer the question it posed: "What are you doing?" People let others know that they were drinking coffee and catching up on email, making a bacon-and-peanut-butter sandwich, or watching the dog sleep. Because they could send updates—sometimes called "tweets"—not only from their computers but from their phones, too, people also Twittered that they were bumping into Robert DeNiro at In-N-Out Burger, stuck in traffic on Route 1, or boarding a plane for Zimbabwe.

Although status updates like that may sound mundane, people on Twitter have found that becoming aware of what your friends, family, and colleagues are doing (without having to respond) leads to a lightweight but meaningful intimacy. Sociologists refer to this

phenomenon as "co-presence," or the sense of being with others.³ Non-academics, when they have a name for it at all, call it "ambient intimacy" or, more commonly in work situations, "ambient awareness."

Over time, people have begun to share not only status updates on what they're doing, but also updates on what they're reading. So although Twitter asks "What are you doing?", people are increasingly using it to talk about what they're reading, watching, and thinking about. Put another way, Twitter is more and more becoming a key player in the attention economy, distributing comments about what its users are paying attention to, what they have opinions about, and what they have expertise in.

In this report, we'll look in detail at ambient awareness and the attention economy, along with other emerging aspects of Twitter and similar services.

Twitter Company Facts

Company name: Twitter, Inc.

CEO and co-founder: Evan Williams

Board chair and co-founder: Jack Dorsey

Additional founder: Biz Stone

Number of employees: 25

Location: San Francisco, CA

Website: www.twitter.com

Blog: www.twitter.com/blog

Early milestones: Service launched in private beta in March 2006 and public beta in August 2006; company incorporated in April 2007

2. The service changed its name from "Twtr" to "Twitter" in August 2006, when the company "bought the vowels," as the founders say. Put more conventionally, they acquired the Twitter.com domain name from its previous owner.

3. For more on co-presence, see Clive Thompson's September 2008 *New York Times* story, "I'm So Totally, Digitally Close to You": <http://www.nytimes.com/2008/09/07/magazine/07awareness-t.html>.

The Power of Ambient Awareness

Tony Hsieh, the CEO of Zappos.com, first learned about Twitter at the SXSW (South by Southwest) conference in 2007. He right away found it useful for discovering after-hours parties at the event. But he was surprised when it turned out to have power in his day-to-day life. "I used it personally with 20 or 30 friends and saw that it was a great way to stay in touch," he says. "For people who are local, it's great for meeting up at night. But for my friends in San Francisco who I see every six months or so, it's great for keeping up."

Many, many people hear about Twitter and think it sounds frivolous, at best. But then they try it. After following a few people for a week or two, the ambient awareness kicks in, and they begin to feel more connected to those people—without having made much effort. Comments like this are typical:

I didn't really get Twitter at first and I thought that it represented all the worst things about blogging (navel gazing, echo chamber).... Eventually, I came around. My family, who are generally far away, have a much better sense of what is going on in my life (even though sometimes I forget to call).

—Randy Stewart (comment on
<http://www.commoncraft.com/Twitter>)

I thought Twitter was the stupidest thing I ever spent time exploring when I first started. (I didn't care what people were having for lunch or the weather in their towns!) However, I found that once I got to "know" people, learning mundane details...interested me!

—Miriam Salpeter (comment on
<http://shiftingcareers.blogs.nytimes.com/2008/09/07/how-twitter-can-help-at-work/>)

Of course, not everyone gets addicted, and as we discuss later, a significant challenge for Twitter is that lots of people stop by the site to try it and can't figure out how or why they'd use it. But for those who stick with it, many discover a deeper layer to ambient awareness: when a user sees in person somebody they've been following on Twitter, they find they have a lot more to talk about than ever before.

Tony Stubblebine, an early user (and partner of report author Milstein), puts it this way:

I have a teenage sister. I used to see her once a month, and when I'd ask her, "What's up?", she'd say, "Not much." Now that I get updates from her three or four times a week, I know that she goes out for cappuccino at lunch, or that she saw Joe Biden drive by the other day. And she knows that I've been playing tennis and that I saw a double feature of the *Godfather* movies. So when I see her, we get right into a conversation.

Co-Presence: The U.S. Becomes Aware of Itself

The idea of co-presence is relatively new in the U.S. But Japanese technology entrepreneur Joi Ito points out that people elsewhere in the world have long shared messages by mobile phone and have done so much more widely than people in the United States.

"The Twitter bottom line is allowing people to be co-present," he says. "America has always been behind on that."

In fact, when Ito first tried Twitter, it struck him as familiar. "I don't think it felt as new to me as it did to other people—I already had this kind of always-on, full-time intimate community. To me, it looked like the U.S. was discovering something that everybody else was already addicted to."

Interestingly, Twitter caught on and grew quickly in Japan. Ito attributes that in part to the API, which let programmers build compelling programs to work with Twitter. We cover the API in more detail later in the report.

The chart below shows international usage estimates.

Share of Traffic To Twitter.com



Traffic to the Twitter site, estimated by Google. To the extent that a majority of updates still flow through their website—which may be less the case outside the U.S.—this graph reflects international reach.

In addition to divulging quotidian details via Twitter, people also post messages about their experience of events. As Twitter has grown, the user base has hit critical mass for certain situations, and sharing a common experience has become significant in several ways.

The first type of shared situation is an organized event, such as a conference or concert. People use Twitter to find each other, organize get-togethers on the fly (known as "Tweetups"), and share impressions (along the lines of live blogging). (The box on page 9 explains how *hashtags* help associate a message with an event.)

In March 2007, attendees of the digital media conference SXSW (South by Southwest) first used Twitter to connect with each other. The event is big, and it can

Twitter Story: It's a Dating Service, Too

Twitter can be good not only for staying connected to people you already know, but for meeting new people, too. An extreme example:

On July 16, 2008, Adam Rugel, an entrepreneur in San Francisco, Twittered: "Working from a coffee shop in the Richmond district. If the Richmond was a car, it would be a gray 1986 Buick Century."

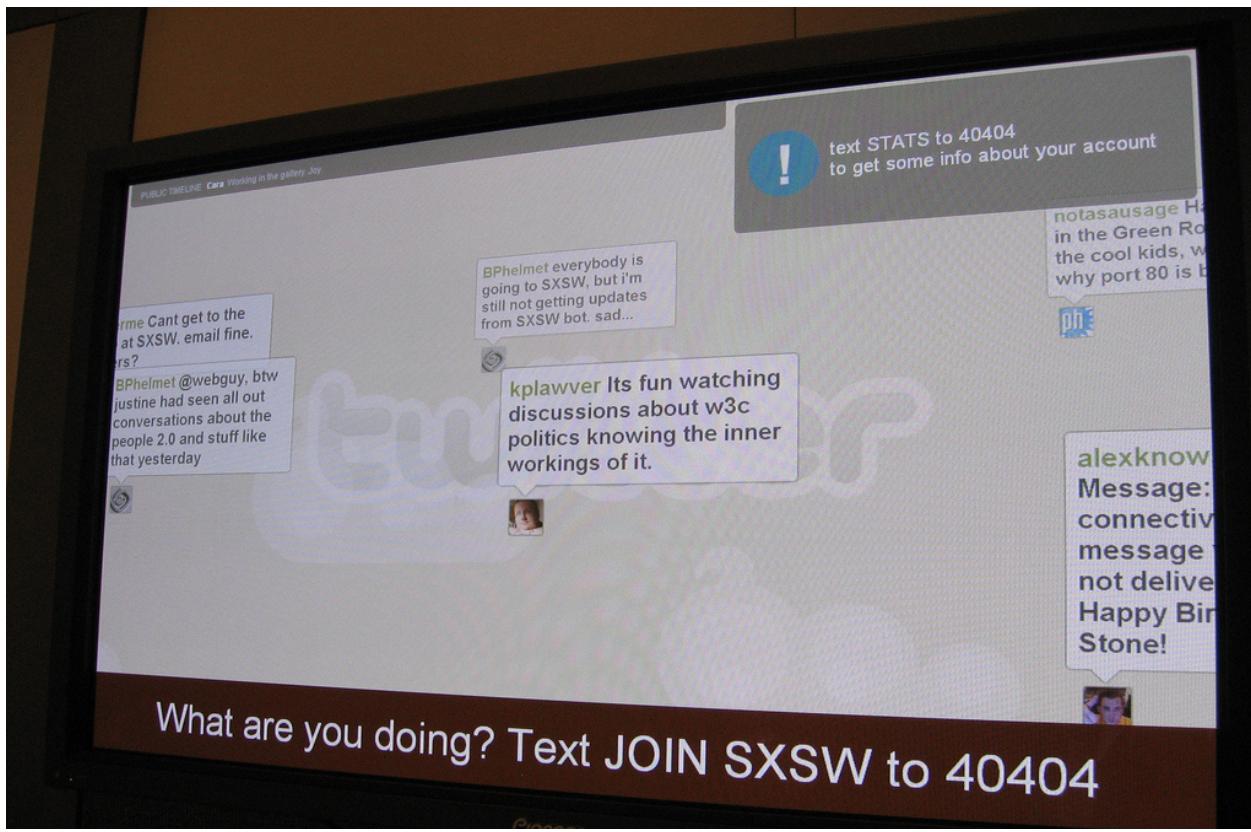
A woman he didn't know had been following his messages (a friend set up her account and included some existing Twitter users as examples of interesting people). She saw his Buick comment and Twittered back, "@Adam watch it, I'm a Rich Dist girl!...I was thinking more 1986 Lincoln Mark VII, '86 Honda Accord? (either way, both are ugly!)."

The two exchanged messages on Twitter for a couple of weeks before meeting in person. At press time, they were still dating happily.

For more Twitter stories, see David Spark's article on Mashable.com, "Sixteen Great Twitter Moments": <http://mashable.com/2008/10/31/great-twitter-moments/>.

be hard to find friends, particularly at the plethora of crowded nightly after-parties. But that year, attendees discovered that they could fill empty bars by Twittering that they were moving to a new location and inviting people to join them. (The photograph below shows how people at the conference found each other.)

"At South by Southwest, we realized a shared event was where Twitter shined," Twitter co-founder Biz Stone explains. "When you look at a flock of birds, and they go around an object, they're doing it because they're getting immediate feedback from a simple set of rules. People didn't have that until they had Twitter."



To keep in touch, SXSW attendees followed their friends at the conference, along with community leaders like Laughing Squid's Scott Beale, on Twitter. In addition, in 2007, Twitter created an ad hoc channel that featured updates from everyone who sent Twitter a text message saying, "JOIN SXSW." The company then set up screens around the conference displaying the aggregated messages as people posted them. Incidentally, Twitter won a SXSW Web award that year.

(Photo source: Jeremiah Owyang)

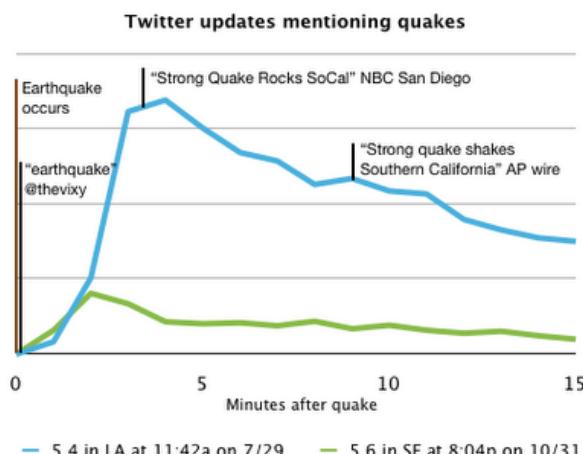
The second type of event is emergencies. People use Twitter to verify what's happening, let others know whether they're safe, and connect with resources.

On July 29, 2008 at 11:42 a.m. Danny Sullivan, a search-engine expert in Southern California, was checking his incoming Twitter updates. "I saw that people were tweeting about an earthquake in L.A.," he says. "I looked around and realized, 'Yes indeed. I am having an earthquake here!'"

A 5.4 earthquake shook the Los Angeles area that morning. "We had 50,000 tweets before the AP reported it nine minutes later," Biz Stone says. "You get to read stuff that's on its way to the Web." Other earthquakes, from Mexico City to Sichuan, China have been first reported on Twitter, beating even the U.S. Geological Survey.

In a blog post on the afternoon of the Los Angeles quake, Stone noted, "Twitter is increasingly being described as a personal news-wire" and he included the chart below, which shows the dissemination of news about the trembler, starting with Twitter (<http://blog.twitter.com/2008/07/twitter-as-news-wire.html>).

As phone lines around Los Angeles clogged and became useless, Twitter proved an important way for people to broadcast their status (SMS systems often continue to work even when mobile phone networks are jammed). "I've got a buzz, from the other side of the



(Source: Twitter)

world, watching earthquakes happen," says New Zealand technologist and O'Reilly blogger Nathan Torkington. "It's like I can't see the floor move, but I can hear people squeal!"

Although the Los Angeles earthquake caused no serious injuries or damage, the Red Cross now routinely provides information via Twitter to people in an emergency zone (<http://twitter.com/redcross>). And users are coming up with their own ways to address crises with Twitter. When gasoline became scarce in the Atlanta area in fall 2008, Twitter users added the term "#atlgas" to their tweets to share information about stations that had fuel when they'd spotted it, providing real-time fuel availability information. (See the box on page 9 for more on the "#" symbol in micro-messages.)

Twitter Story: Crowdsourcing Help

Silicon Valley entrepreneur and investor Guy Kawasaki had a problem. He was at San Diego's Coronado Island Marriott for a night, and he'd forgotten his power cord.

He turned to Twitter for help, at 10:06 p.m. asking his more than 20,000 followers: "Anyone on Coronado Island w/ a Macbook power supply I can borrow? Am at the Marriott. Going to a Navy carrier tomorrow and forgot mine." And then: "Leaving hotel at 7:45 a.m. if I can borrow it for 36 hours. guy@alltop.com thanks!" And then: "This will be a great test of Twitter! :-)"

Nine minutes later, Jerry Jones (jetskier79) replied: "@guykawasaki I have spare, Coronado is on my way to work, not a problem if you want to borrow it."

Six other people responded before the morning, too.

Kawasaki has a large number of followers, and he's a prominent figure in tech circles, both of which undoubtedly helped him get so many replies so quickly. But people with lower profiles and far fewer followers tell similar stories all the time. In the box on page 8, we describe critical help received from the network of a U.C. Berkeley student with just 48 followers.

Twitter for Political Activists

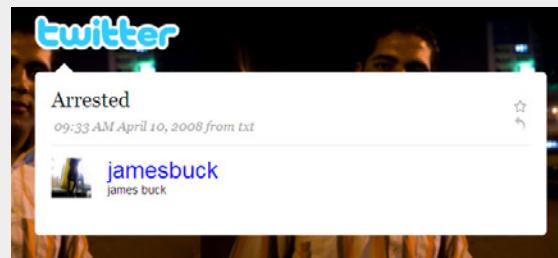
Political activists have been among the early adopters of Twitter, using the service to organize people and help keep safe those in volatile locations. Because the service is available via both mobile phones (using SMS) and the Web, it's difficult for hostile authorities to block all access. That, combined with efficiency of posting one message that can reach dozens or thousands simultaneously, and the option for anonymous posts, makes Twitter an important tool for many on the political edge.

Egyptian activist Alaa Abd El Fattah, for example, uses Twitter as a channel for personal security. The Vancouver Social Enterprise Forum explains:

[He] has been detained many times and...uses Twitter to constantly let people know where he is, as a form of personal protection through publicity—if he stops twittering, his friends know that something is wrong. (<http://vancouver-social-enterprise-forum.blogspot.com/2007/10/twitter-me-to-safety.html>)

Others have used Twitter to broadcast problems. In April 2008, James Karl Buck, a U.C. Berkeley student, was arrested without charges in Egypt for photographing a demonstration. Buck used his mobile phone to Twitter, "Arrested." His network of 48 followers at the time, who were mostly family and friends, alerted the university, the U.S. embassy and the press. Buck was released the next day (it was several months until his translator was also freed).

In August 2008, Chinese citizen reporter Zhou "Zuola" Shuguang traveled to Beijing to cover the Olympics. He was detained by Chinese authorities, and Twitted the process, including his release later that day in Meitanba,



his home town. (Journalist Rebecca MacKinnon and Global Voices posted translations as Zuola's messages came in: <http://globalvoicesonline.org/2008/08/14/china-citizen-reporter-zuola-carted-off/>.)

Several days later at the 2008 Beijing Olympics, activist James Powderly was arrested for staging a laser show protesting human rights violations in Tibet. He Twitted that he had been detained by Chinese authorities at 3 a.m. and wasn't heard from again until he and five other protestors were released a week later.

Twitter is also emerging as a tool for organizers. At the 2008 Republican National Convention, protesters used Twitter to coordinate with each other. And for the 2008 US elections, citizens are creating a Twitter-based system to help people get out the word about polling place problems (<http://twittervotereport.com/>). NPR has details: <http://www.npr.org/templates/story/story.php?storyId=96349881>.

Obviously, Twitter can't promise safety, freedom, or fair democracy. But it's a promising medium that will likely spread among activists.

User-Generated Features

User-generated content—material submitted by website visitors—is a major theme of Web 2.0 sites. Twitter has helped the trend evolve to include user-generated features. Presented with very short messages and an unadorned service for delivering them, Twitter's users have developed conventions that stand in for features.

The first such feature to appear was the “@” symbol followed by a username, which users organically created to let people reply or refer to another user on Twitter. Here’s how it works: imagine Biz Stone, a co-founder of Twitter, were to send a message asking, “Can anyone recommend a vegan restaurant on the Upper East Side?” People who see his message can address him in reply, making clear that the message is for him: “@Biz: try Candle Café on 3rd & 75th.”

Twitter does have a built-in feature, “direct messages” (or DMs), for sending one-to-one notes. But DMs keep communication private, and both parties must be following each other for it to work. If you want to have a public conversation or one with multiple participants, or if you want to send a message to somebody who isn’t following you, the @[username] convention is the way to go.

Jack Dorsey, a company co-founder, says that when he conceived of Twitter, he didn’t expect people to use it much for conversation. Instead, he thought it would spark face-to-face discussions (which it does). “At first, I thought people were using it wrong,” he says, and he resisted incorporating @replies into the service.

But the @[username] trick has become beyond commonplace on Twitter. Indeed, we found that among the top Twitter users (based on Twitterholic’s ranking),

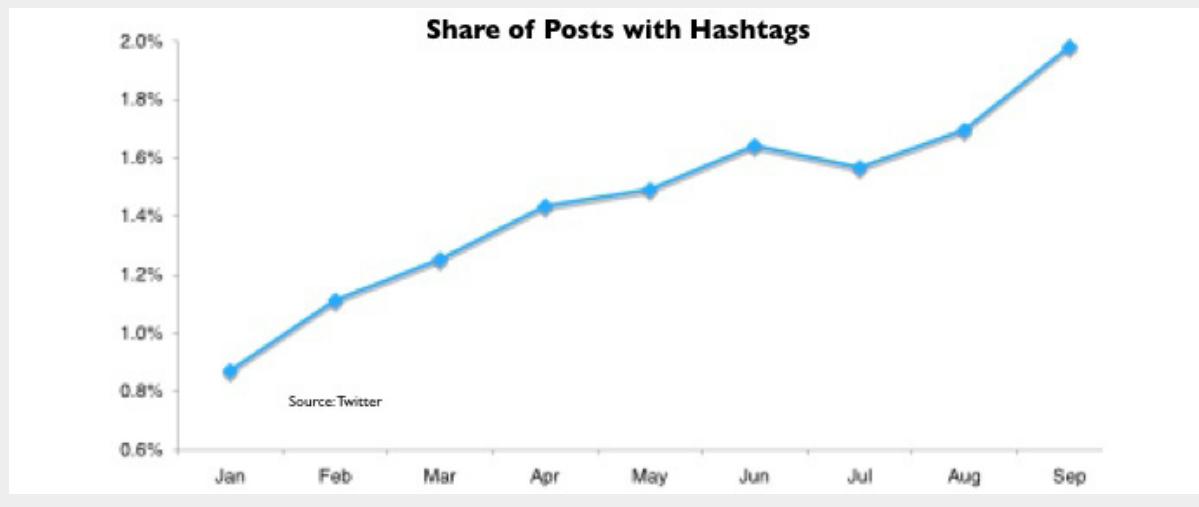
roughly one in three posts were an @ message. Although top users probably use the convention more than other Twitterers, some people post @replies far more than any other kind of message.

Twitter now supports @replies, letting you review all such messages sent to your username. Search engine expert Danny Sullivan likens the public nature of these Twitter conversations to “being on a party line with the phone.”

Users have also created an on-the-fly categorization feature that extends the utility of Twitter. Because updates have no title or any other organizational element, users have jumped in with something called a *hashtag* to help group similar content. A hashtag is a hash symbol (#) followed by a tag (or label) associated with an event or topic—for example, #wwdc for those Twittering about or interested in Apple’s World Wide Developer conference or #vpdebate for those following the vice presidential debate—that is then added to a post.

Tags are not organized into any hierarchy, nor are they drawn from a known lexicon. They’re simply created by people’s labeling their content. This loose organization allows users to search for other people’s posts that have used the same hashtag or to monitor events with a common hashtag. (You can search for hashtags at the main Twitter search site, <http://search.twitter.com>, which also lets you create an RSS feed for the ongoing results of a query. Other than that, at press time, hashtags were not officially supported by Twitter.)

As shown in this graph, over the last nine months, hashtags have grown from nothing to appearing in almost two percent of all posts.



A third type of massively shared experience has emerged this year: predictable events that people share virtually. For each of the four televised debates associated with the U.S. presidential elections, Twitter has seen a big spike in messages. To help connect people around the debates and the election generally, the company has introduced Election 2008 (<http://election.twitter.com/>), a site that streams election-related Twitter posts. "Hot election topics"—terms that are included in a large percentage of posts—change at the top of the page every few minutes.

In a September 26, 2008 blog post, *New York Times* technology reporter Saul Hansell explained how the Election 2008 site had turned out to be surprisingly useful and engaging:

I think Twitter might well be the birth of a media form that combines talk radio, Digg, and late-night comedians.

Like talk radio, you get an unvarnished and largely real-time window into what a wide swath of people are actually talking about.

Like Digg, you see people point to the articles and videos that they want to share.

And like late-night TV (or a politician's sound bite for the evening news), there is a premium on pithy one-liners that try to get to the heart of the matter.

—"In Praise of Political Tweets," September 26, 2008 (<http://bits.blogs.nytimes.com/2008/09/26/in-praise-of-political-tweets/>)

Dave Winer, a pioneer in developing RSS, calls this kind of stream a "river of news." Writing in 2005 about a style of news aggregator that he also compared to "conveyor-belt sushi," Winer said:

Instead of having to hunt for new stories by clicking on the titles of feeds, you just view the page of new stuff and scroll through it. It's like sitting on the bank of a river, watching the boats go by. If you miss one, no big deal. You can even make the river flow backward by moving the scrollbar up.

—"What is a 'River of News' style aggregator?" (<http://www.reallysimplesyndication.com/riverOfNews>)

It's a seemingly happy accident that an individual message on Twitter is approximately the length of a typical newspaper headline and sub-head. But it may well be that a story told in 100 to 200 characters is the perfect length for a human brain to easily understand—particularly as it floats by on the screen.

Because the Election 2008 site shows both the flow of information and the flashpoints, it gives a hint of how valuable Twitter might become for capturing and filtering instant information. We talk later about how Twitter can provide super-fast news about your company or industry. But perhaps more important, it can provide super-fast news about the world.

A Quick Tour of Twitter's Election 2008 Site

This screenshot of the Election 2008 site was taken on October 25, 2008:

The hot topics change multiple times per hour.

This box lets you add your own messages to the stream. Interestingly, instead of, "What are you doing?" it asks, "What do you think?"

Updates from users scroll down the screen constantly, providing a real-time window into what people are saying and thinking about election topics.

The latest posts from the candidates (usually pretty mundane).

The election is tomorrow.

What do you think? 140

Note: updates posted here will also appear in your timeline. update

Updates about the election from Twitter users

suckmycaucus Joe the Plumber. Not mentioning him for any reason. We figure this is our last chance to boost traffic using his name. Also. Sarah Palin. less than a minute ago

NicolePaluszek @Tinu just curious: how will you hold obama accountable once you've given him all the power? when was a president last truly held acctble? less than a minute ago

maggiehope I wish obama's face was easier to draw on a cookie. less than a minute ago

EndTheRoboCalls Robo calls Don't work (McCain / Obama) GOTV robo calls don't work -> http://tinyurl.com/5vjntz#robos less than a minute ago

All Candidates

Barack Obama

John McCain

Joe Biden

Sarah Palin

Featured Profiles

Current

Ana Marie Cox

Brian Stelter

Dan Rather

Days after Twitter unveiled Election 2008, journalist Jeff Jarvis wrote a blog post on the rising primacy of the topic as the essential unit of news (taking precedence over the article). Although he didn't refer to Election 2008 and may not yet have been aware of it, Jarvis very nearly described it in imagining his ideal of a site that would evolve around a topic:

I want a page, a site, a thing that is created, curated, edited, and discussed. It's a blog that treats a topic as an ongoing and cumulative process of learning, digging, correcting, asking, answering. It's also a wiki that keeps a snapshot of the latest knowledge and background. It's an

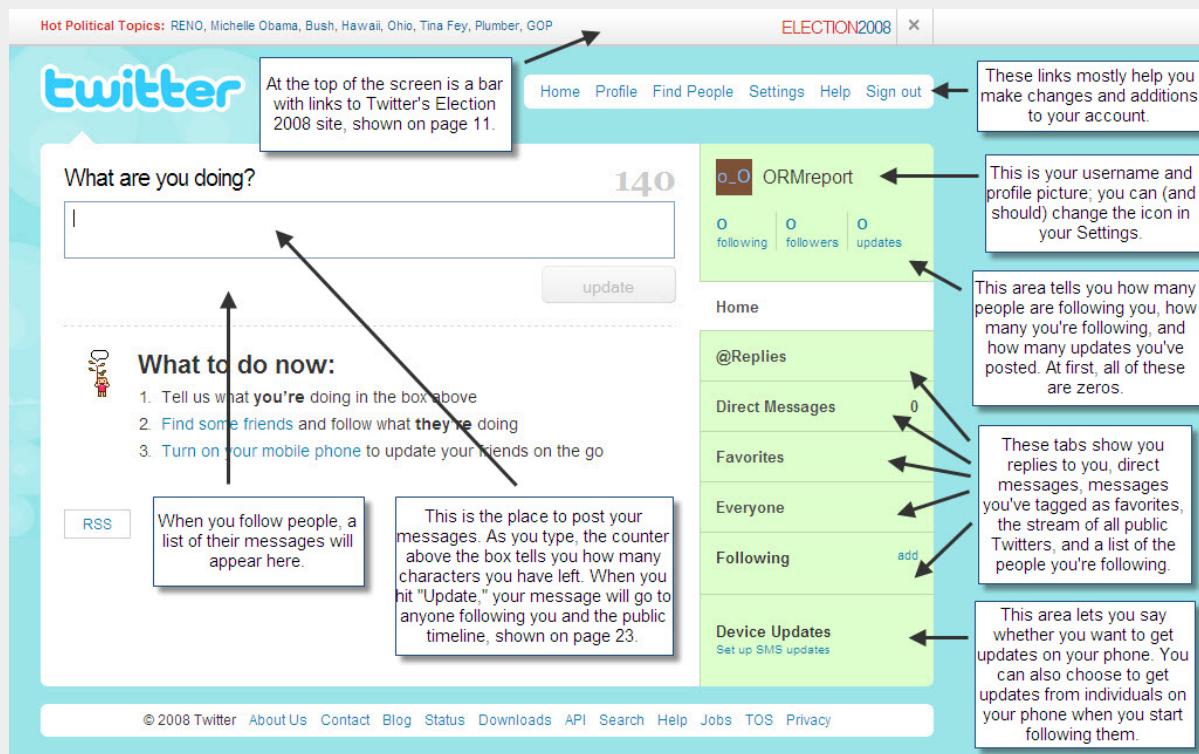
aggregator that provides annotated links to experts, coverage, opinion, perspective, source material. It's a discussion that doesn't just blather but that tries to accomplish something (an extension of an article like this one that asks what options there are to bailout a bailout). It's collaborative and distributed and open but organized.

—“The building block of journalism is no longer the article,” September 30, 2008
(<http://www.buzzmachine.com/2008/09/30/the-building-block-of-journalism-is-no-longer-the-article>)

A Twitter Primer

Though Twitter is simple to use, it can be tough to navigate at first. Here's a roadmap.

1. Set up your account and start following a few people. The first time you try Twitter, you'll see two simple sign-up screens and then a page that looks something like this:



On Twitter, the social model is called “following.” Unlike other systems that require you to give and get permission in order to communicate with other people (usually called “friending”), Twitter simply lets you choose who you want to receive messages from—in other words, who you want to follow—without requiring that they grant permission. Conversely, people can choose to receive your messages—or follow you—without your having to OK them.

It works something like blog RSS feeds. Just as bloggers make their writing available to anyone, the implicit agreement users make with Twitter is that their messages are public communications. (If you want to

keep your messages private and allow people to read them only if you've given permission, there's a setting to protect your updates.)

If you haven't already used the feature that helps you find people on Twitter who are in your other address books, give that a try. At the top of your screen, go to Find People > “Invite from other networks,” and then give Twitter the information for your other accounts. It will search for your contacts who are already on Twitter and then give you a list of people you might want to follow (bear in mind, they might not all be active Twitterers).

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Choose the ones you want to follow, and then click Continue. Twitter will now give you a list of people from your other account who aren't on Twitter; if you want to invite them to Twitter, select their names and continue; if you don't want to invite anyone, at the top of the page, click the Skip link to have Twitter take you back to your home page. (Also under the Find People link, there's a search box that lets you look for people on Twitter. This service is spotty, but it's worth a try.)

You can also find people to follow just by clicking around (each account page shows the people that person is following; click a thumbnail picture to jump to the followee's page). When you discover a new person you want to follow, just click the Follow button under his or her picture. Once you've done so, the button changes to say "Following." You can unfollow

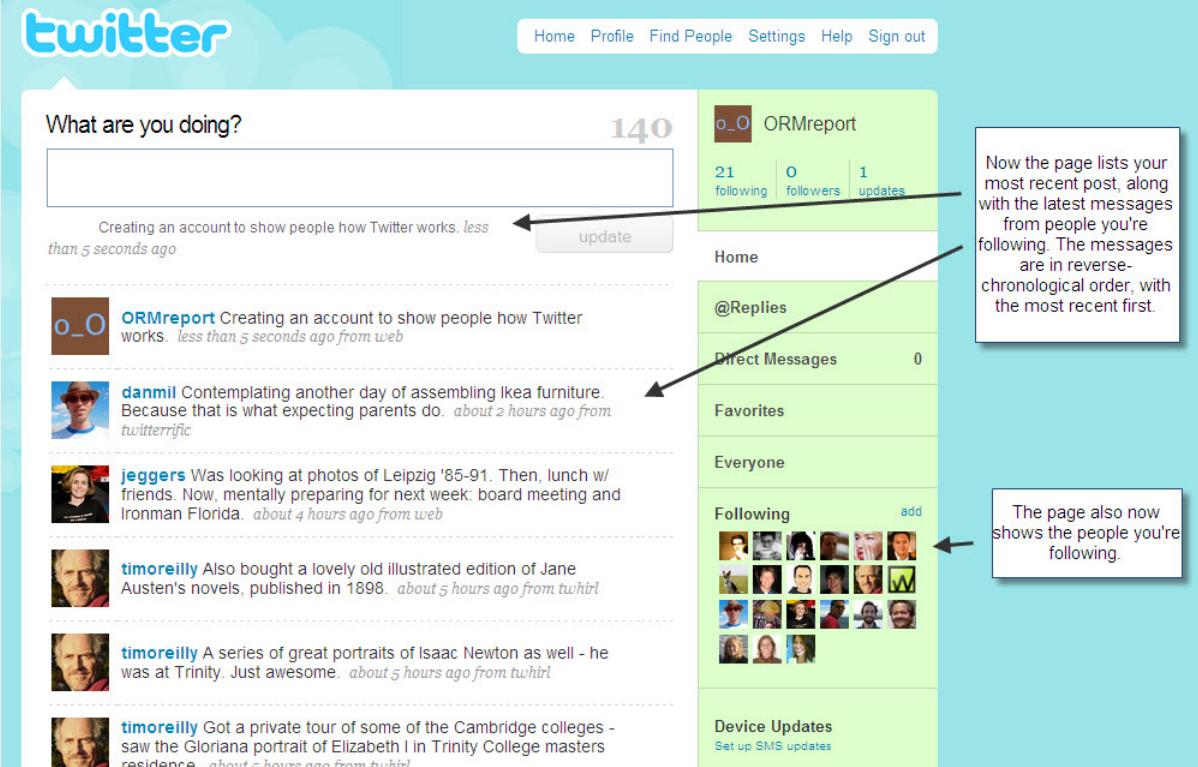


Pistachio

All 3 of the people in this house are s

somebody by going to their page, clicking Following, and then clicking Remove.

After you've started to follow a few people, your page will look more like this:



What are you doing?

140

Creating an account to show people how Twitter works. *less than 5 seconds ago* [update](#)

o_O ORMreport Creating an account to show people how Twitter works. *less than 5 seconds ago from web*

danmil Contemplating another day of assembling Ikea furniture. Because that is what expecting parents do. *about 2 hours ago from twitterrific*

jeggers Was looking at photos of Leipzig '85-91. Then, lunch w/ friends. Now, mentally preparing for next week: board meeting and Ironman Florida. *about 4 hours ago from web*

timoreilly Also bought a lovely old illustrated edition of Jane Austen's novels, published in 1898. *about 5 hours ago from twihrl*

timoreilly A series of great portraits of Isaac Newton as well - he was at Trinity. Just awesome. *about 5 hours ago from twihrl*

timoreilly Got a private tour of some of the Cambridge colleges - saw the Gloriana portrait of Elizabeth I in Trinity College masters residence. *about 5 hours ago from twihrl*

Home

@Replies

Direct Messages 0

Favorites

Everyone

Following [add](#)

Now the page lists your most recent post, along with the latest messages from people you're following. The messages are in reverse-chronological order, with the most recent first.

The page also now shows the people you're following.

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To get a feel for the thing, take a look at how people in your network use Twitter.

2. Refine the information about you. To make your account more useful and transparent to other people, add some details about yourself. At the top of the page, click Settings to go to a page that looks like this:

The screenshot shows the Twitter Settings page for the user 'ORMreport'. The page includes fields for Name, Username, Email, Time Zone, More Info URL, One Line Bio, Location, Language, and a checkbox for Protect my updates. A 'Picture' tab is highlighted with a callout: 'The "Picture" tab is the place to change your icon. Add a photo of yourself or perhaps your company logo.' Arrows point from the 'Picture' tab to the Name field ('Enter your real name, so people know can recognize you.') and the More Info URL field ('Have a homepage or a blog? Put the address here. (You can also add Twitter to your site here)'). On the right, a sidebar titled 'Account' provides tips: changing the name from your Twitter account name to your real or company's real name; filling in profile info; changing the user name; protecting the profile; and including a bio. Callouts highlight the 'Name' field and the 'More Info URL' field.

3. Post your first messages. There are three basic kinds of messages you can send on Twitter:

i) Plain old updates. Just type in a note about what you're doing; in the upper right corner of the update box, check the counter to make sure you're inside 140 characters; and then hit the "update" button. Voila! You've Twitted.

ii) Public replies or references to other users on Twitter. To respond publicly to something somebody else has said, or to shout out to them, preface your message with `@[their_username]`. Whether they're following you or not, they can get your post—and other people can see it, too. Because @replies are public, and because they automatically link to the recipient's

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account, they form a powerful ad hoc linking system in Twitter, creating serendipity and helping users expand their social networks.

For example, if you want to send Tim O'Reilly a reply to something he's just posted, you'd write, "@timoreilly I couldn't disagree more about the Web. It's totally over." You can also use @replies to just say something friendly about somebody on the system, like this: "Just had a great flight, @Jetblue. Thanks for the extra cookies!"

To see @replies sent to you, check the right-side @Replies tab, which shows you a list of all @messages sent to you.

iii) Private messages. On Twitter, private messages between two people are called "direct messages," or "DMs." You have to be following each other for DMs to work, making them something like IM (and much more

like traditional "friend" communications that require mutual permissions).

You can send a DM two ways. First, on the right side of your account page, click the Direct Messages tab to get a form that lets you choose from mutual followers. Alternatively, start your message "d [username]", like this: "d timoreilly I love making jam, too! Hope to see you in SF next week." The second method is particularly handy from phones, but remember that you and the other person have to be mutual followers for it to work.

4. Keep coming back. A lot of people find that they don't quite get Twitter until they've been following a few people for a week or three. If you spend just ten minutes a day at first, you'll get a sense of the rhythms pretty quickly.

We've got more tips sprinkled throughout the report, and the Twitter Help link can be good for guidance, too.

The Attention Economy

In mid-July 2008, Twitter acquired Summize, a company that had created a search engine for Twitter content. While Summize (now found at <http://search.twitter.com>)

and shown below) has excellent search capabilities, it's even more interesting for its trending topics. The site lists the ten most popular terms being discussed on Twitter, refreshing them multiple times per hour. (In addition,

The screenshot shows the Twitter search interface for the query "tampa bay". At the top, there is a search bar with the query "tampa bay" and a "Search" button. To the right of the search bar are links for "Feed for this query" and "Twitter these results". Below the search bar, the results are displayed under the heading "Realtime results for tampa bay" with a timestamp of "0.02 seconds". The results are presented as a list of tweets from various users:

- alexanderwang**: Tampa bay rays Fauxhawk cut and car stuff
32 minutes ago · [Reply](#) · [View Tweet](#)
- callnw**: <http://twitpic.com/i5zw> - Go Tampa Bay Rays!!
37 minutes ago · [Reply](#) · [View Tweet](#)
- indiaphere**: Tampa Bay Devil Rays vs Philadelphia Phillies |MLB live streaming: Watch Philadelphia Phillies vs Tam.. <http://tinyurl.com/5ou7hg> (expand)
about 1 hour ago · [Reply](#) · [View Tweet](#)
- willpridemore**: had a game winning HR in kickball today. Hopefully the Dories follow suit and get #6 today while Tampa Bay takes a 2-1 lead.
about 1 hour ago · [Reply](#) · [View Tweet](#)
- sbnbaseball**: World Series Open Thread and Ichthyomancy (Game Three): Next Game Tampa Bay Rays @ Ph.. <http://tinyurl.com/5vahth> (expand)
about 1 hour ago · [Reply](#) · [View Tweet](#)
- sbnation**: World Series Open Thread and Ichthyomancy (Game Three): Next Game Tampa Bay Rays @ Philade.. <http://tinyurl.com/6hpf86> (expand)
about 1 hour ago · [Reply](#) · [View Tweet](#)
- GMKNY**: I'm feeling a tampa bay victory tonight..anyone else????
about 1 hour ago · [Reply](#) · [View Tweet](#)
- mlmblonde**: @LorrinLee Hey Lorrin, are you coming by the Tampa Bay area? Can't imagine leaving Hawaii for Florida, you're already in paradise
about 2 hours ago · [Reply](#) · [View Tweet](#)

On the right side of the search results, there are two boxes: "Trending topics" and "Nifty queries".

Trending topics:

- [Halloween](#)
- [#sciwr08](#)
- [#ss08](#)
- [Prop 8](#)
- [#poptech08](#)
- [HSM3](#)
- [#barcampLA](#)
- [#pch08](#)
- [iPhone](#)
- [Sarah Palin](#)

Nifty queries:

- [cool filter:links](#)
- ["is down"](#)
- [movie :\)](#)
- ["happy hour" near SF](#)
- [#haiku](#)
- ["listening to"](#)
- [obama OR mccain](#)
- [flight :\(](#)

The Twitter search (<http://search.twitter.com>) looks at all the public posts (not just those made by people you follow). This query for Tampa Bay returned results about the 2008 World Series. On the right side of the page are "trending topics"—popular topics that hour—along with options for refining your search.

when you run a Summize search, the results refresh every few seconds, adding in the most recent posts with your query terms.)

Because the trending topics reflect updates from people who are themselves viewing many different sources of information, it's a highly efficient way to both aggregate and broadcast the things people are paying attention to. (See the box on page 18 for more on trending topics.)

As we discuss later in the report, blogging has undergone a similar shift, from primarily personal posts to primarily professional posts. (Already, if you follow a lot of people who post links to other sites, Twitter can begin to feel like an RSS aggregator of its own. The box on page 19 discusses the challenges of including URLs in 140-character messages.)

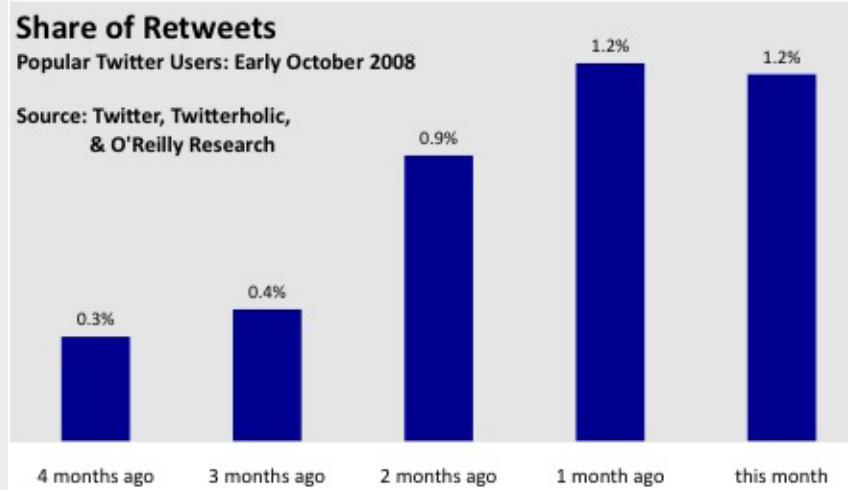
Of course, more and more people are paying attention to Twitter itself. This has given rise to the practice of "retweeting," or reposting a message somebody else Twittered earlier. People simply say "retweeting @username" or "RT @username" and then paste in the body of the other user's post. This practice also mimics a common blogging convention (i.e., linking to other bloggers), and it helps make Twitter a good place to find out what people are interested in. (The box below looks at the rise of retweeting.)

While ambient awareness is a central element in Twitter's success, the attention aspect is a large part of what makes the medium useful for the workplace and professional relationships. We'll look at both issues in depth a few sections later.

Retweeting on the Rise

As micro-messaging grows, getting heard is becoming a challenge. Some people turn to influential Twitter users to retweet (i.e., repost) their messages, helping the original messages get exposure—and making the high-profile Twitterers nodes for redistribution.

We've lately seen an increase in retweeting among users with the most followers: indeed, as shown in this graph, the share of re-tweeting has tripled in recent months.



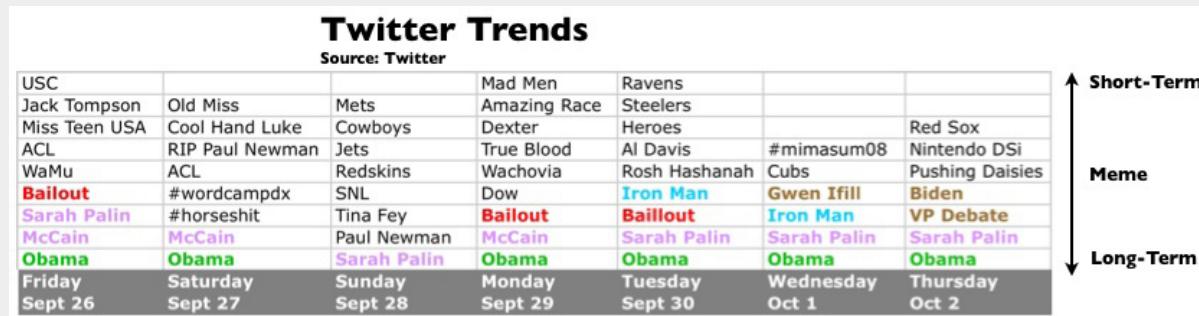
Tracking Trends with Twitter

by Abdur Chowdhury, Chief Scientist, Twitter

Over the course of a week, many topic trends emerge on Twitter. In general, we see two types of memes emerge: short-term and long-term topics.

For instance, long-term topics from the week of September 26 to October 2, 2008 revolve around the presidential candidates and the Wall Street bailout. Short-term topics, on the other hand, include the death of Paul Newman.

In the graph below, we've selected a subset of the trends from that week (based on tweets that appeared in the public timeline). Each column from left to right shows the days of the week. Topics on the top of each stack represent shorter lived memes, while topics lower in the stack represent longer lived interest.



A similar graphic was the subject of a May 9, 2008 post by Josh Cantone on ReadWriteWeb:

What we found is that there are three main types of conversations going on. First, there are status updates of every day occurrences such as, "getting coffee," "check out this post on X," "going to sleep," or other mundane life things.

Second, there are short-term memes where many people talk about some event before, during, or after it....

The final type of discussion we see on Twitter, are long-term memes. These are topics of interest that people talk about for days, weeks, or even months. Politics or new video games are great examples of these longer term discussions happening on the platform.

—“What People Say When They Tweet” (http://www.readwriteweb.com/archives/summize_twitter_trends.php)



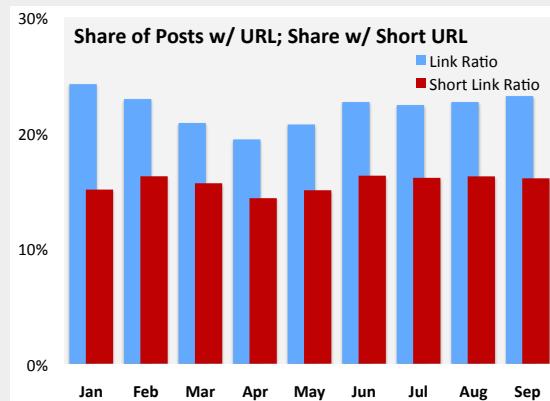
URLs and the 140-Character Limit

by Abdur Chowdhury, Chief Scientist, Twitter

Referencing web pages is a key challenge in 140-character messages. Many URLs exceed the 140-character limit of most micro-messages, and thus, either no additional content can be sent in the message or the URL cannot be posted at all.

URL-shortening services have thus cropped up to solve the problem. These services take a URL and produce a redirect URL that posters can use to reference the original site. The new redirected URL is usually the domain of the service plus a hash of the URL, where the entire new URL is only 20 characters or so in length.

Roughly 25% of all updates contain a URL and approximately 70% of those URLs use one of the top seven shortening services.⁴ While each service has features that distinguish it from the others, TinyURL is the mostly commonly used because it's the default service used by Twitter (when users post a long URL, Twitter automatically swaps in a TinyURL redirect).



4. Among the top users of Twitter, the most popular URL-shortring services are: tinyurl.com, twurl.nl, is.gd, snurl.com, bit.ly, zz.gd, and xrl.us.

A New Kind of Communication

One measure of Twitter's success is in the numbers: today, the company has north of three million users, and it's growing rapidly: the number of public users rose 516% from October 23, 2007 to October 23, 2008.⁵ And some estimates put its traffic at about a million messages a day, routing to people all over the world.⁶ But perhaps more significant is the fact that Twitter, which has no revenue yet (nor even an announced business model), has inspired a number of similar services (see the box on page 26).

Some clones confine your updates to the Web, others allow for updates of more than 140 characters, and a few have features like file-attachments. But they all share a few characteristics: 1) They encourage or require you to write short messages, which is somewhat like texting (also known as SMS); 2) they send your messages instantly, which is somewhat like texting, emailing, IMing, or even blogging; 3) they require people to sign up for each other's updates, which is somewhat like signing up for RSS feeds or friending people on a social network; and 4) most micro-messages require no response (somewhat like blogging).

In short, these services combine many of the best features of other familiar communication systems to create an exciting and useful new thing (more later on how this neophyte medium can help combat, rather than simply add to, some of your existing message overload).

So it's big, and it's getting bigger, but what *is* this new creature? As of today, there's a thorough-going lack of agreement among service-providers and users

5. Source: Twitdir, <http://twitdir.com>.

6. Tweetrush is one such estimator: <http://tweetrush.com/>.

about what to call this kind of communication. Entrants include: “micro-blogging,” “micro-sharing,” “micro-updating,” and, well, “Twittering” (as shown in the box on page 26, Twitter is still, by far, the most popular service in this sector).

While the range of names reflects the fact that people are using these systems in many different ways, with varied intentions and results, “micro-blogging” is perhaps the most common term. There is some merit to it. After all, like regular-sized blogging, a short-messaging system can be used to share personal or professional information or to link to other sites. And either can be treated as a publishing tool or a communications platform. But given that “blogging” can refer to many kinds of activities, and that those activities don’t even cover the range of possibilities on these new short-message platforms, “micro-blogging” seems both too vague and too specific a term.

Because this report looks at the many ways people are coming to Twitter or micro-whatever—at home,

at work, at school, at church, anywhere—we’ll mostly use the catch-all term “micro-messaging.”

That said, while micro-messaging is useful for many things, this report places a special emphasis on business cases. Because although Twitter started out with a group of friends letting each other know when they were doing the dishes or watching *Battlestar Galactica*, the form has quickly evolved into a workplace communication tool. From two-person startups to Microsoft, companies are finding these systems tremendously useful for both internal and external conversations.

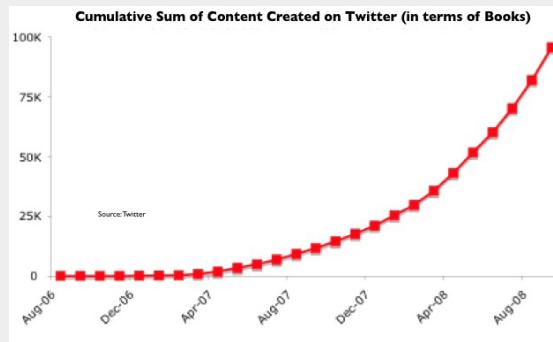
Through its flexibility and ease-of-use, the medium will likely become a means of communication—like email and IM—that is commonplace at work. So along with helping you understand the bigger story unfolding around Twitter, we’ll provide guidance on how to get the most out of these systems and how to approach the challenges of this instant, very public medium.

Growth of Twitter

by Abdur Chowdhury, Chief Scientist, Twitter

Twitter and other micro-blogging services limit posts to 140 characters each. Even with that restrictive factor, Twitter users created approximately 100,000 books worth of content from August 2006 to August 2008.

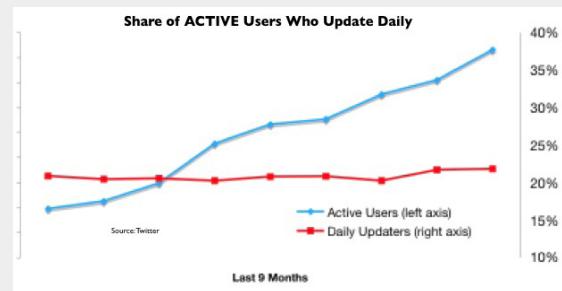
With the growing number of users, major events now create the equivalent of books themselves as people post their micro-statuses, thoughts, and experiences. During the L.A. earthquake, for example, an entire book's worth of content was written in a matter of minutes by people sharing their experiences of the event (140 characters at a time).



The population of Twitter users has doubled several times in the last nine months, but there's an interesting phenomenon among active users, defined as those who have posted at least once over the last month. Crude estimates using data from Twitdir indicate that the

proportion of active users has remained stable over the last nine months. And while most active users post only a few times a month, approximately 20% of active users are very active, updating daily. About eight percent of active users are prolific, posting over 100 messages per month (this statistic filters out known bots and feeds).

Notably, these ratios have not changed in the last nine months, even as the population of active users has grown significantly. This is a very promising sign for Twitter, as most social applications see a tail-off in relative usage as the user base grows. (We've discussed this phenomenon with respect to Facebook on the O'Reilly Radar, <http://radar.oreilly.com>, and in The Facebook Application Platform report, <http://radar.oreilly.com/research/facebook-report.html>.) The consistent usage pattern may show that the process and details of Twittering reflect fundamental patterns in social communications and may remain consistent as Twitter's population grows.



The State of Micro-Messaging

It's been around for just two and a half years, but micro-messaging is growing quickly and changing fast. In this section, we'll look at its roots, significant developments and recent trends.

A Micro-History of the Medium

To understand the roots of micro-messaging, you need to know that instant message systems like AOL Instant Messenger and Yahoo! Messenger generally have a customizable "away message." The away message lets users type in a short, public note that explains why they're unavailable for chatting. Early in this century, it was common for people—students in particular—to use that message space as its own means of communication, changing it constantly and keeping up with other people's changes, too.

In 2003, *The New York Times* wrote a feature story on the trend, noting, "They post a little of everything: news, quotes, schedules, song lyrics, birthday greetings, party invitations, jokes, veiled insults, confessions, exclamations, complaints. The messages may be meaningful to everybody, somebody or nobody" (<http://www.nytimes.com/2003/03/20/technology/circuits/20away.html>). If that sounds a lot like the way people use Twitter, it's no accident: Jack Dorsey, the Odeo engineer who created Twitter,⁷ was inspired in part by away messages.

Right around the time Twitter launched, Facebook added Status Updates, "a lightweight way for people to give little updates to their friends" (<http://blog.facebook.com/blog.php?post=2334332130>). Unlike Twitter, which

7. Twitter became a separate company in April 2007.

asked "What are you doing?" Facebook had the prompt "[username] is" and a little window to type in your message (i.e., "Sarah is eating ice cream for dinner").⁸

Though Twitter and Facebook emerged around the same time, Facebook has remained the province of largely personal posts while Twitter has come to encompass many kinds of messages.

"Twitter has sparked this whole movement of status updates' being actually useful," Joi Ito says. Indeed, social networks of all kinds—from LinkedIn to GoodReads—have lately added status update features, making micro-messaging more and more common.

At the outset, however, Twitter was different from the other sites in three key respects. First, it was much, much simpler. Its *only* feature was the messaging. Second, when Twitter launched publicly in August 2006, it had an API (application programming interface)—that is, a way for programmers to build their own applications using or adding to the Twitter datastream nearly in real time. Third, it made everyone's messages public by default, letting people follow and read each other without giving mutual permission. The first distinction is fairly clear, but the second two bear some explanation.

In September 2007, Biz Stone, one of the Twitter founders, said, "The API has been arguably the most important, or maybe even inarguably, the most important thing we've done with Twitter" (<http://readwritetalk.com/2007/09/05/biz-stone-co-founder-twitter/>). The API was significant because it allowed software developers everywhere to build programs that made Twitter more useful and accessible for many people, creating value far beyond what the small Twitter team itself could generate. Put another way, it made Twitter more of a communications platform than a messaging service.

8. In fact, as Twitter has grown in popularity, Facebook has come to look more and more like it. Last year, Facebook created a page that let you see all your friends' updates on one page, and they added a feature that let you send or receive updates by SMS. In addition, Facebook banished the "[username] is" prompt, and today when you log into Facebook, the first thing you see is your own most recent Status Update and the Twitter-like question, "What are you doing right now?"

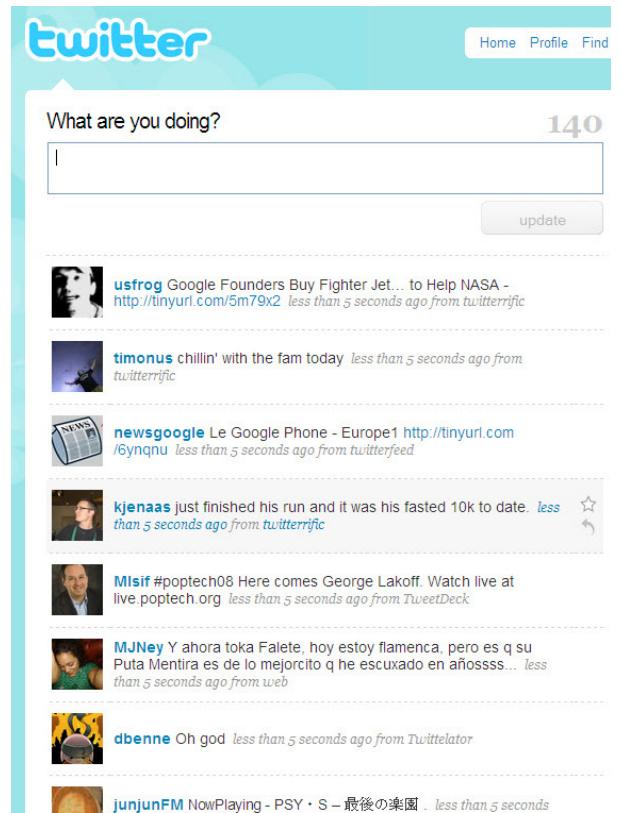
Among the popular applications built on the API are Twhirl, an elegant client that lets you send and receive updates with multiple Twitter accounts (shown below); Twitterific, a Mac- and iPhone-specific client; and TwitterVision, a map mash-up that shows where people are Twittering around the world; see the box on page 25 for a list of API-enable tools. We've also included some technical details about the API in the

box on page 25, but even if you're not a programmer, bear in mind that Twitter's relative openness has given it a huge boost.

Indeed, another aspect of openness forms the third way in which Twitter was distinct when it launched. From the outset, everyone's messages were, by default, made part of a public stream of updates (shown below). And while similar services required permissions to exchange



The Twhirl client in action.



The Twitter public timeline shows messages from everyone who hasn't blocked their updates, providing both a means of discovering other users and a voyeuristic window into their lives.

messages, on Twitter, reading somebody's update didn't involve already knowing them or getting joint approval for the connection. You could just find people you wanted to listen to and start following them (and you could @reply them, as described on page 9, to send them a note); that openness let users create a looser, perhaps more natural form of social network than permission-based systems allow.⁹

Twitter was unusual in the degree of public information it afforded from the start, but it wasn't without precedent. In fact, it represents a step in the evolution of personal disclosures on the Web. Like blogs before them, Friendster and MySpace, social networks that went live in 2002 and 2003 respectively, gave people a platform for sharing personal information in a relatively public manner—and helped create a new norm for doing so. Then in 2004, the photo-sharing site Flickr launched with a setting that made everyone's pictures public by default. And in September 2006, shortly after Twitter's public beta phase started, Facebook added News Feed, a feature that aggregated your friends' activity on the site into a stream of constantly updated notes (the information had been available before, but in a much less easy-to-find arrangement).

While all of these sites—and many others social sites like them, including Twitter—have privacy controls that let users determine the level of information others can see, they're increasingly defaulting toward public sharing. At the same time, people are becoming more comfortable exposing their own data. Put another way: ten years ago, maybe even five, it's unlikely Twitter would have launched with a public feed of posts and an arrangement that let anyone follow anyone else on the service.

While Twitter is relatively open in terms of data, it isn't open source—that is, its own code isn't publicly available for people to build on or improve. But these days, it's common for popular propriety applications to inspire parallel open source versions, and in July 2008, Identi.ca emerged as a viable open source alternative to Twitter. Identi.ca is built on the open source micro-messaging engine Laconi.ca, and while it's too early to tell what role Identi.ca and Laconi.ca will play in the evolution of the medium, they've drawn a good deal of interest from programmers. Over time, they could become significant players, perhaps in the way that WordPress has grown into a serious open source contender among blogging platforms.

Identi.ca isn't the only platform surfing in the wake of Twitter's success. Over the past two years, a slew of messaging-meets-networking systems have come online (see the box on page 26), and as we were working on this report, several services for business users cropped up. In September 2008, Yammer and Socialcast came to market, offering companies internal micro-messaging. Present.ly followed a few weeks later with a similar product, and SocialText and Harvest have announced a service for corporate users, too. Even Microsoft, though probably several years away from introducing a product like Twitter, is experimenting with the form.

What started with teenagers' sharing ephemera became a way for family and friends to stay connected with each other and has now morphed into a medium with dedicated business users. With such broad adoption, micro-messaging is poised to become a mainstream method of communication.

9. If you become interested in your own social graph on Twitter, networks expert Valdis Krebs has a nice post on how he analyzed his: <http://www.thenetworkthinker.com/2008/07/twitter-maps.html>.

A Few Technical Details of the Twitter API

External developers can access Twitter features and functionality through a set of Application Programming Interfaces (API). With the search API, programmers can construct search operators designed to return specific Tweets (via HTTP). The search API results are returned in standard formats, including ATOM and JSON. The REST API is comprised of many methods or function calls that expose key aspects of Twitter including:

- Status: public/friends/user timelines; show/update current status
- User: followers, friends
- Friendship: create, destroy
- Account: update location

The examples listed above are a fraction of the possible "methods or functions calls" available through the REST API. Except for the public timeline, Twitter API calls require user authentication, which for now, is limited to only HTTP Basic Authentication. In addition to ATOM and JSON, the REST API also supports the XML and RSS data formats. For more detail on the API, see <http://dev.twitter.com/2008/10/we-got-data.html>.

Twitter's dominant market share has led other micro-blogging services, notably Identi.ca, to clone their popular API. For developers, this means that tools they develop to take advantage of Twitter's API will work when pointed to Identi.ca's micro-blogging service.

Popular and Interesting Tools Built on the Twitter API

With hundreds of API-enabled applications and mash-ups, the Twitter ecosystem is deep. These are just a few of the compelling tools available:

- **Twhirl** is a well-designed micro-messaging client that can pull in updates from several services. It includes a constantly updated stream of incoming messages, and straightforward options for common actions like retweeting and sending @replies. (<http://www.twhirl.org>)
- **Twitterific** is a Mac- and iPhone-specific client popular for its ease of use. (<http://iconfactory.com/software/twitterific>)
- **Twinkle** is a location-aware Twitter client for the iPhone and iPod Touch. (<http://tapulous.com/twinkle/>)
- **Twidroid** is a client for phones that run on Android, Google's mobile operating system. (<http://twidroid.com/>)
- **Tweetdeck** is a client that lets you sort incoming messages into categories and groups. ([http://www\(tweetdeck.com\)](http://www(tweetdeck.com)))
- **Twitpic** is a popular application for sharing photos via Twitter. (<http://twitpic.com/>)
- **Twellow** organizes Twitter users by job sector and offers a useful search of its directory. (<http://www.twellow.com/>)

- **FutureTweets** lets you schedule messages ahead of time. (<http://futuretweets.com>)
- **Tweetake** lets you back up your Twitter data. (<http://tweetake.com/>)
- **TwitterKarma** displays lists of your friends and followers, let you sort them in various ways and quickly sift through them. (<http://dossy.org/twitter/karma/>)
- **Twittercal** lets you add events to your Google Calendar via Twitter. (<http://twittercal.com/>)
- **Twitterholic** lists the users with the most followers, friends and updates. (<http://www.twitterholic.com/>)
- **GasCalc** helps you track mileage. (<http://gascalc.appspot.com/track/>)
- **Timer** will send you a message via Twitter after an appointed amount of time. (<http://twitter.com/timer>)
- **Twanslate** translates text into the language you specify. (<http://twanslate.com/>)
- **CelebrityDeathBeeper** alerts you when celebs die. (<http://twitter.com/celebdeathbeep>)

Dozens more applications, mash-ups and bots are listed at the Twitter Fan Wiki: <http://twitter.pbwiki.com>. Brian Solis also has an excellent list at his PR 2.0 blog: <http://www.briansolis.com/2008/10/twitter-tools-for-community-and.html>. And this Delicious listing of bookmarks and articles is handy, too: <http://delicious.com/lldoolj2/twitter%20tools>.

Many Micro-Messaging Platforms

Twitter may be the big dog in micro-messaging platforms, but it's leading a growing pack. Others include:

- Facebook first added status updates in April 2007; since then, their feature has evolved to look more and more like Twitter. Facebook is the primary micro-messaging tool among students. (<http://www.facebook.com/>)
- Identica, released in July 2008, is an open source alternative to Twitter and has a vocal group of geek fans. (<http://identi.ca/>)
- FriendFeed, launched in summer 2007, lets you aggregate and share updates from dozens of social software sites (including Twitter) and also lets you post new messages on FriendFeed itself. Its Rooms feature is popular with workplace groups. (<http://friendfeed.com/>)
- Jaiku started in February 2007 as a location-aware mobile-phone status-update application that automatically let you know where your friends were. It's now a web-based Twitter-like micro-messaging service and has been owned by Google since October 2007. (<http://www.jaiku.com/>)
- Pownce, launched in summer 2007, lets you share links and media with your network. But its short-form messaging feature has prompted comparisons to Twitter. (<http://pownce.com/>)
- Plurk debuted in May 2008 and has been compared to Twitter—with a better user interface. (<http://www.plurk.com/>)
- Seesmic, first made available in October 2007 as private alpha release, is a video micro-blogging tool. (<http://www.seesmic.com/>)
- Tumblr, launched in March 2007, is a simplified blogging service that encourages short posts and uses a follower model much like Twitter's. Tumblr also lets you include multimedia and the content you create on other sites, like Twitter and Digg. (<http://www.tumblr.com/>)
- Yammer, began in September 2008, is a business-focused micro-messaging service that lets anyone with corporate email share updates with others who are on that same domain. (<http://www.yammer.com/>)
- Present.ly, launched a couple of weeks after Yammer, also caters to business users. (It doesn't require a corporate email address.) (<http://presentlyapp.com/>)
- Socialcast launched a micro-blogging tool in late September 2008 aimed at enterprise customers. (<http://www.socialcast.com>)
- Signals, announced by SocialText in late September 2008 (and still in private beta at press

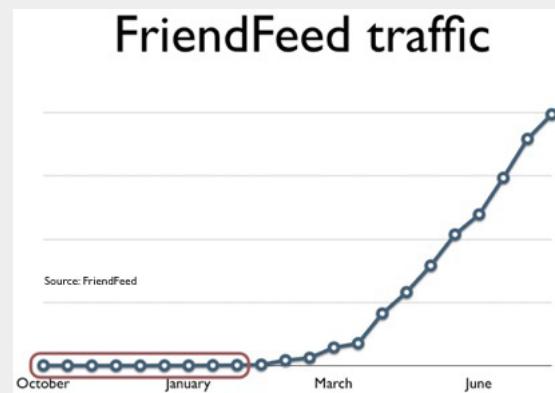
time), is an enterprise micro-blogging tool that the company will integrate into its wiki platform. (<http://www.socialtext.com/>)

- Harvest, which offers business-collaboration tools, added a micro-messaging feature called Co-op in October 2008. (<http://www.coopapp.com/>)

As you can see in the charts below, through September 2008, Twitter still had significantly more users than any of the other related services.



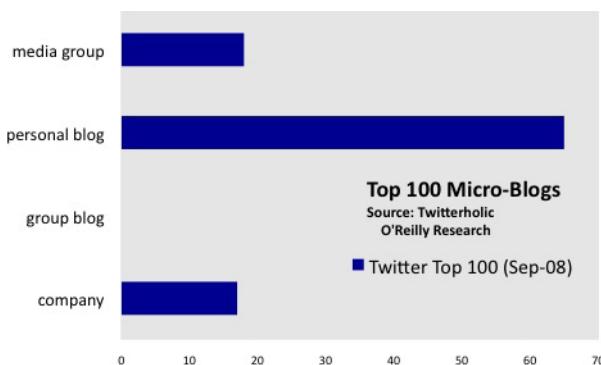
FriendFeed has a much smaller user base, but it's growing fast:



Micro-Messaging Today

As the biggest and oldest service in micro-messaging, Twitter can help us understand where the medium is going. Here we'll look at Twitter as a bellwether for larger developments.

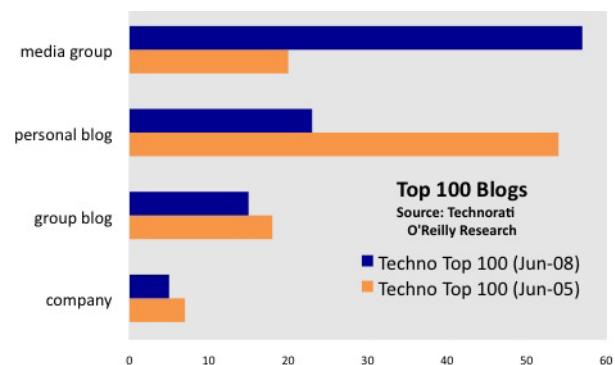
Twitter and other micro-blogs were originally used primarily by individuals to publish personal status updates. While companies and media organizations are starting to embrace Twitter, individual Twitterers—rather than corporate accounts—continue to attract the most followers. As you can see in the graph below, when we rank Twitterers by their number of followers, individuals account for over 60 of the top 100 Twitterers. News



In this graph, "personal blogs" refer to identifiable individuals, like Kevin Rose or Kathy Sierra, regardless of whether their updates are mostly personal or mostly professional. That said, many of the most popular individuals post more frequently about what they're thinking or reading than about what they're doing. "Media groups" are entities like *The New York Times* or TechCrunch. "Company" accounts include Zappos and Twitter.

organizations and companies (for-profit and non-profit) round out recent top 100 rankings.

Now consider the recent evolution of the blogosphere: three years ago, 54% of the top blogs were maintained by individuals ("personal blogs") and 20% were run by media organizations (both mainstream media and smaller online publishing companies). As you can see in the chart below, this year, that's flipped: media organizations have come to dominate the rankings, accounting for 57% of the top blogs, while personal blogs account for just 23%. As more companies and media organizations embrace micro-blogging, we expect them to dominate the ranks of the most influential micro-blogs, too.



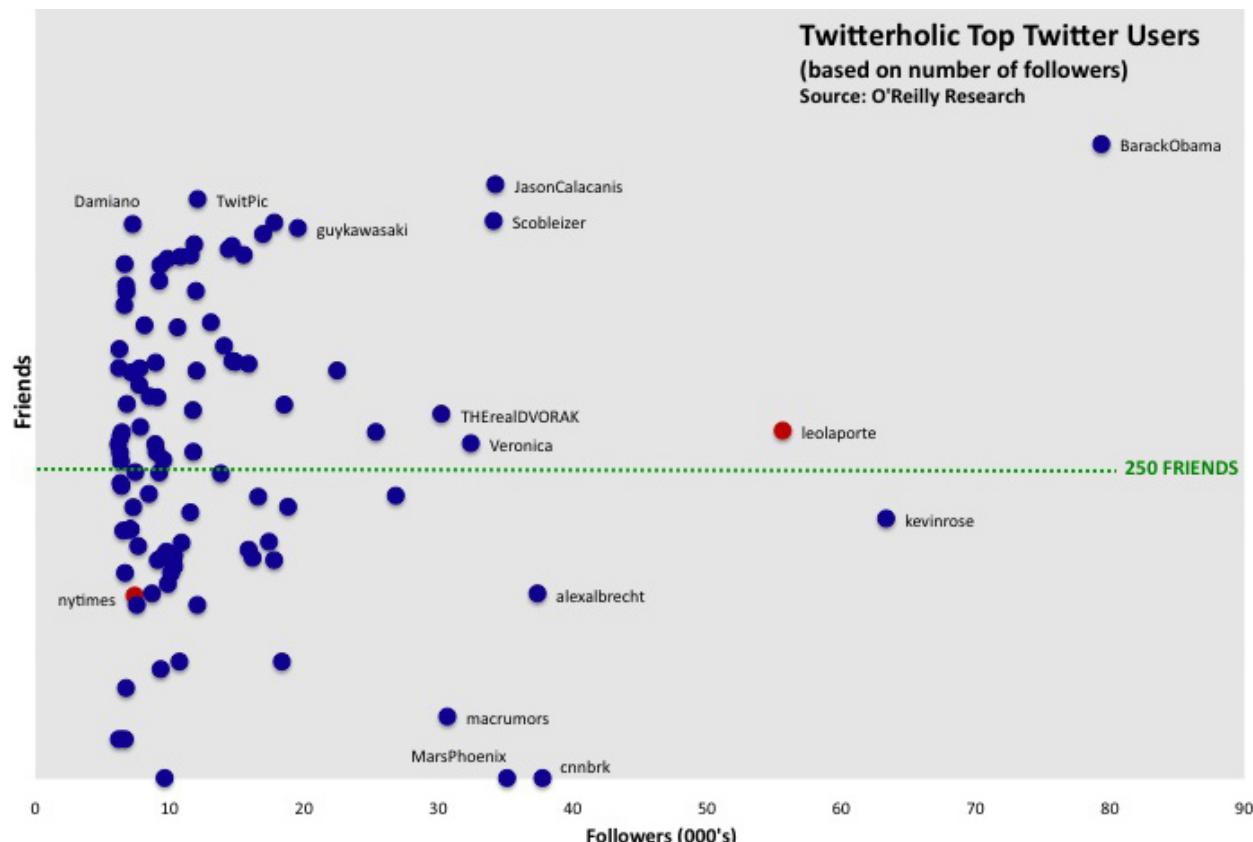
As you can see in this chart, personal blogs like Dooce.com dominated the medium in 2005 (the orange bars). By 2008 (the blue bars), organized media blogs like the Huffington Post had become preeminent.

As of late September 2008, ranking sites such as Twitterholic.com reported that among the top 100 Twitter users, the highest-ranked user had over 79,000 followers, and the hundredth-ranked user had over 6,100. As you can see in the graph below, just 56% of the top Twitterers follow more than 250 people on Twitter.

Of course, a Twitterer's relative number of followers is an unsophisticated ranking measurement. Some of the top Twitterers generate followers by following (or often auto-following) a lot of other users: if a certain percentage of the users they follow start following them, that translates into a lot of followers, and they climb up the rankings.

A more serious problem with relying solely on the number of followers is that it fails to account for the influence of individual users: using this naive approach, your followers all count equally. A more sophisticated ranking would weigh followers based on their "importance." Technorati measures a blog's authority by tracking the number of unique sites that have recently linked to it. While authority is a crude attempt to measure the influence of a blog, simply counting the number of followers may overstate the importance of a Twitter user.

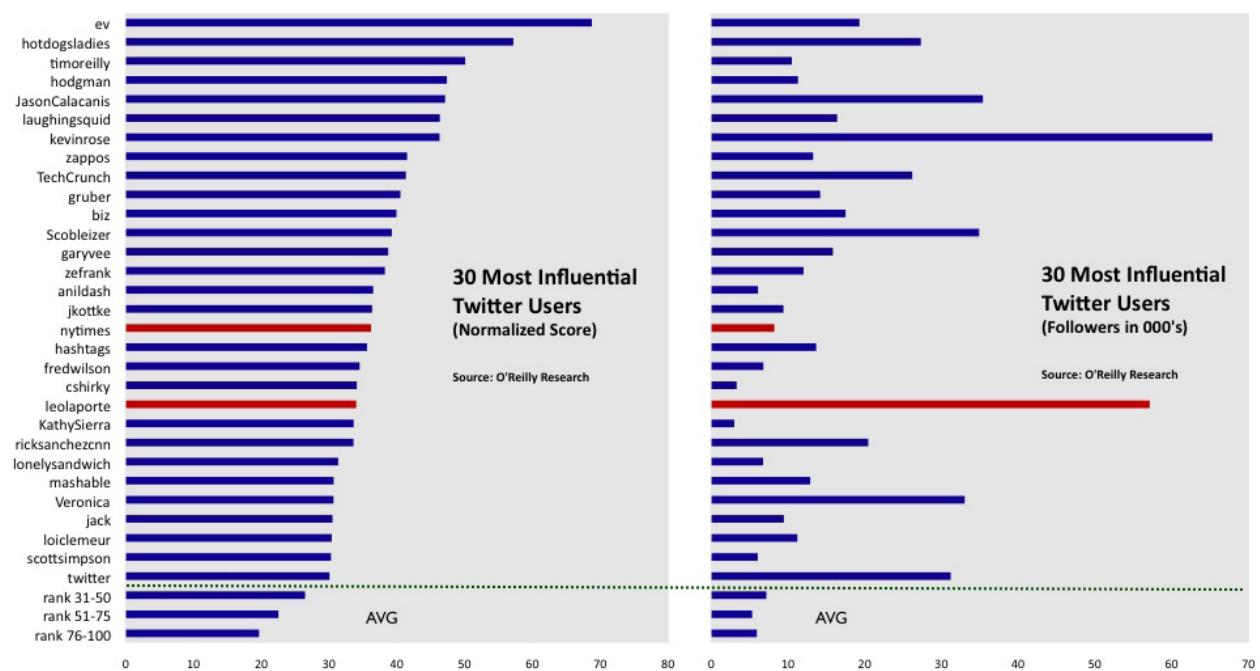
There isn't yet conventional wisdom on the best way to identify the authority or relative influence of a Twitterer, but people are trying different methods



In this chart, "Friends" (the y-axis) refers to the number of users a Twitter member is following. The chart shows that the ratio of the number of followers and number of friends followed for the top users varies substantially. For example, at the time of this snapshot, Leo Laporte, following more than 250 users, had 55,000 followers; The New York Times, following fewer than 150 users, had 7,000 followers.

to sort out rankings and highlight the most important voices in a very large chorus of users. The chart below highlights two users whose rankings are substantially different when you look at one method of calculating influence rather than just their number of followers, and

the box on page 30 takes a detailed look at influence on Twitter. If a predominant ranking system emerges, it will likely have an impact on how new users find their way around Twitter and how advertising-based business models may be implanted and gamed.¹⁰



The graph on the left shows the thirty most influential Twitter users, based on ranking algorithm. The graph on the right shows the number of followers for those users. For an illustration of the differences, take a look at the highlighted users, Leo Laporte (leolaporte) and The New York Times (nytimes).

When we calculated these rankings, leolaporte had more than 57,000 followers, while nytimes had slightly over 8,200. If we looked solely at their number of followers, nytimes would place far below leolaporte. But our normalized rankings take into the importance or influence of their respective followers, leading to a different result: nytimes comes out slightly ahead, with a normalized score of 36.2 versus leolaporte's score of 34. As you can see, accumulating followers does not necessarily translate into influence.

Other notables include Clay Shirky (cshirky) and Kathy Sierra (KathySierra): both have relatively few followers compared with the other users listed. In fact, both had even fewer followers than average for users ranked between 51 and 100 (see bottom of the chart).

Based on the short descriptions available, other ranking methods such as Twinfluence and Twitter Grader don't use Twitter's social network graph to assess the importance of users; instead they use extensions to the method of simply counting followers. We improve on these ranking methods by stressing that the importance of a user depends on the importance of his or her followers. Just like Google PageRank gauges the importance of Web pages by examining link structures, our ranking examines a subset of the social network graph (who is following whom) and weighs a user's followers accordingly. Note that the Twitter API restricts how deeply the social graph can be investigated, and all third-party ranking methods are affected by relying on subsets of data.

10. Identifying influential users is particularly important to advertisers and marketers. Accordingly, Google is planning to extend the concept of the PageRank to social web applications and in the process, identify influencers ("Making Social Networks Profitable," Businessweek, September 25, 2008: http://www.businessweek.com/magazine/content/08_40/b4102050681705.htm).

Twittonomics: When Twitter Meets PageRank

by Gregor Hochmuth, Google / dotgrex.com

How do you predict the trends that are coming next? At O'Reilly, one way of answering that question has always been to watch exceptional people, "alpha geeks," and track the directions they explore. So what place could be better today for watching and following the alpha geeks than...Twitter?

When I started following Twitter frequently a few months ago, I was interested in the links that my selection of alpha geeks were posting. I was manually choosing whom to follow, but I thought that there ought to be an automated, algorithmic way of filtering and prioritizing the tweets that stream through Twitter. How could that work? What signals could such a system use to understand who has interesting things to say and who is safer to ignore?

I started by crawling my extended Twitter network to get a better picture, and as I was looking at the graph that was taking shape, one word struck my mind: PageRank. What if the Twitter graph of followers behaved just like the graph of links among web pages? According to PageRank, web pages with more incoming links are more important than others—and why shouldn't that apply in Twitter, too? A person with many followers is probably more interesting than a person with few.

But PageRank doesn't stop there—it has one crucial extension: important web pages redistribute their importance to the pages that they link to. And on Twitter? The same indeed: it's not how many you know or how many listen to you—instead, it's who listens to you and who listens to them. You might call that Twittonomics.

The ranking included here is based on an extended crawl of the Twitter follow graph, which grew to include 441,158 accounts. By applying the classic

PageRank algorithm, the importance of each Twitter user is distributed among all of the users he or she follows. In the beginning, each user has the same importance and the algorithm is run in several cycles, distributing and updating the importance of all users and their followers every time. After a few iterations, the numbers stabilize from one cycle to the next, just like in PageRank, and the result is the ranking of users based on each others' importance.*

The ranking isn't based primarily on the number of followers that a Twitter user has—it's more subtle and analogous to the offline world: when 100 people listen to 1 person (say Tim O'Reilly), then Tim becomes a little more interesting. And when Tim chooses to listen to Nat and Kathy, they both gain a little from Tim's interestingness. The asymmetry of following someone turns out to be an important aspect in this case. 100 people can follow Tim, but Tim doesn't have to follow them. Networks like Flickr, FriendFeed, and del.icio.us work the same way, while others, such as Facebook, make no such distinction directly.

So far, there has been a lot of emphasis on the interestingness of individual pieces of content: for instance, Flickr's interestingness for photos; the popularity of a link on Digg; or PageRank itself, for that matter. Going forward, I expect that we'll see a rising emphasis on the interestingness of people as demonstrated here. This will go hand in hand with online systems like Twitter that can represent these degrees of who's interested in whom more freely (and expose them to the outside world). The potential for using this data to create better filters and search tools in the future is immense and exciting.

*For a more technical description, we encourage you to contact the author; he's publishing an extended paper on this topic: Gregor Hochmuth, grex@cs.stanford.edu.

When Plants Tweet

Some of our favorite uses of Twitter take advantage of the communications infrastructure provided by the platform to create sensor-like tools:

- A group of students at Olin College hooked up their dormitory washer and dryer so followers can check if the appliances are in use: <http://twitter.com/laundryroom>
- Botanicalls has set up houseplants to Twitter when they're thirsty: <http://twitter.com/pothos>
- Some bars and cafes use Twitter to broadcast the music they're currently playing

- Some network administrators use Twitter to get status updates from their network hardware

Others have set up clever Twitter bots, like <http://twitter.com/timer>, which explains itself thusly: "Need to remember something? Send me a direct message, and I'll tweet you back. For example, 'd timer 45 call mom' reminds you in 45 minutes." Similarly, Remember the Milk (<http://twitter.com/rtm>) is a bot lets you use Twitter as reminder service.

Micro-Messaging at Work

Twitter started out in 2006 primarily as a way for friends and families to stay connected. But within a year, people were beginning to use micro-messaging to communicate with co-workers, customers, and other business contacts. By summer 2008, Twitter and its cousins were becoming commonplace at work.

Three general business-related use cases have emerged: 1) communicating externally, including brand-related activities such as customer service, marketing, and PR; 2) gathering market information; and 3) communicating internally with coworkers. The first two generally occur on Twitter; the last one happens not just on Twitter, but on other services, too. In this section, we'll look at the important trends in business adoption of micro-messaging, along with some challenges.

Who's On Twitter?

An ever-growing list of public people and entities:

- **Companies and non-profits:** <http://www.socialbrandindex.com/twitter>
- **Members of Congress:** http://www.sourcewatch.org/index.php?title=Members_of_Congress_who_Twitter
- **The UK prime minister:** <http://twitter.com/downingstreet>
- **Newspapers:** <http://graphicdesignr.net/blog/2008/10/09/september-newspapers-that-use-twitter/>
- **Celebrities:** <http://mashable.com/2008/10/20/25-celebrity-twitter-users/>
- **Nasa's Phoenix Mars Lander:** <http://twitter.com/marsphoenix> (mission now completed)

Micro-Messaging for External Communications

On Sunday, April 6, 2008, Frank Eliason, a customer service executive at Comcast, was home installing ceiling fans. It was a boring project, and he took a break to check his RSS feeds, which he'd set to receive updates when any post on Twitter included the word "Comcast." Although he'd been blogging for a while on behalf of Comcast, he had learned about Twitter only recently, and he was monitoring the service but had yet to post to it.

As it happened, Eliason looked in on his RSS feeds just in time to catch the tail end of 20 minutes worth of Comcast-enraged Twittering from a man in California. The Comcast customer had lost Internet service 36 hours earlier. He had been told by Comcast first that the problem would be resolved in 30 minutes and then later that it was a California-wide problem, which the customer's friends confirmed was not the case. Intensely frustrated, the man began ranting via Twitter.

Eliason didn't know the customer, so he did a search and found a phone number matching the man's name and state. He called the guy, sent a crew to fix his connection, and then went back to work on his ceiling fans. Later that day, checking his blog alerts, Eliason learned that the customer he'd helped was the founder of TechCrunch and a high-profile Silicon Valley blogger, Michael Arrington. After the Comcast crew came out to his house, Arrington had blogged about the episode, praising Comcast for monitoring Twitter (<http://www.techcrunch.com/2008/04/06/comcast-twitter-and-the-chicken-trust-me-i-have-a-point/>).

"I didn't reach out to him because he was Arrington—I didn't even put together at first who he was," Eliason says. But the events prompted Eliason to become active on Twitter as ComcastCares (<http://twitter.com/comcastcares>), posting personal messages, listening to complaints, and responding with offers of help.

To put it mildly, such human behavior was unusual from a corporate entity that regularly ranks among the lowest in customer service surveys and whose customers have created a hate site, ComcastMustDie.com. But Eliason and his team have created some fans and are now recognized as corporate Twitter pioneers. Within a few months, a number of bloggers had written about their surprising, positive experiences with Comcast-via-Twitter, and ComcastCares was the subject of a *New York Times* story: <http://www.nytimes.com/2008/07/25/technology/25comcast.html>.

Comcast uses Twitter primarily for customer service, monitoring the Twitter search site (<http://search.twitter.com>) and responding to comments about the cable company's service, whether directed at ComcastCares or not.¹¹ "Our sole goal is to fix your problem," Eliason says. While

Twitter Story: Customers Help Comcast—and Each Other

Frank Eliason, the man behind Comcast's primary Twitter presence, has thousands of followers, some of whom count themselves as true fans. It goes both ways.

Although Eliason keeps a constant eye on incoming Twitters, he decided to take a day off in the middle of the summer for family reasons. Followers who were paying attention knew he was off and that he was facing an emotional day. As messages for Eliason came in from people new to the service, regular followers of ComcastCares—that is, *customers of the company*—jumped in, saying that Eliason was unavailable and offering to help for the people with Comcast problems.

"That's when I came to realize that Twitter is truly a community," Eliason says. "When you fit in, they'll band together with you. A corporation just throwing feeds in there or generic statements—they'll hate you."

they're far from the only company providing customer support via Twitter, they're one of the few that doesn't use the channel for marketing or other outreach as well.

JetBlue, for instance, considers its Twitter account an "information booth" that has marketing, public relations, and customer service functions. The company uses <http://twitter.com/JetBlue> to announce deals and delays and to post friendly messages to customers who Twitter about JetBlue. They also run the occasional contest and solicit feedback on ideas. If people ask questions, the person on duty for the JetBlue account tries to answer or suggests the proper customer service channel to get the issue resolved.

Unlike the Comcast account, which is monitored by a customer service team, the JetBlue account is monitored by corporate communication staffers (most often Morgan Johnston, Manager Corporate Communications)—and though the difference shows in their Twitterstreams, both approaches work well and serve different corporate needs and brand profiles. Other companies using the corporate communications model include The Home Depot (<http://twitter.com/TheHomeDepot>), H&R Block (<http://twitter.com/HRBlock>), and Samsung Mobile (<http://twitter.com/SamsungMobileUS>).

While customer service and customer-friendly announcements are two relatively traditional ways to use Twitter, a few companies are using the medium to share general information that might be of interest to their followers. Whole Foods (<http://twitter.com/wholefoods>) does a particularly good job of this, announcing not only its own news but also posting links to others' stories and resources about food, sustainability, and the like. A recent update, for instance, said, "Did you know there's a provision to encourage bike commuting in the rescue bill passed by Congress last week?" and

11. As *The New York Times* story notes, customers who Twitter angrily about Comcast are often surprised to then receive a solicitous reply—or any reply at all—from Comcast and while many are delighted, some don't like it.

then linked to a story at WorldChanging.org. (See the box on page 34 for a discussion of thought leadership and micro-messaging.)

It's very important to understand that all of the companies mentioned above use Twitter as a two-way communications tool. They not only post announcements and information, they answer questions, recognize customers in various ways, and solicit feedback. Although they didn't all start out that way, they've come to realize that Twitter is a *conversational* medium. That means customers and followers expect connections, not just headlines.

JetBlue's Johnston learned that directly when he posted a message to Twitter, asking followers what they wanted from the account. "People said that my asking the question was what they wanted," he says. "They needed to see the conversation." JetBlue has since evolved to use Twitter less for broadcasts and more for dialog.

Of course, when you think about a conversation, you picture a couple of people talking—there isn't just a giant corporate entity on one side. So while the companies we've discussed so far have used their corporations' names for their Twitter accounts, many have come to identify the people behind the accounts.

ComcastCares goes farthest, listing not only Eliason's name and email address, but including his picture, too. The Home Depot lists "Sarah, Corp Comms," and when she's away, the substitute Twitterer announced himself or herself. JetBlue and others tell you who's "on duty" at that moment for the account. Other companies have employees who Twitter as corporate representatives.

For instance, a number of Dell staffers Twitter for the company using obvious aliases like RichardAtDell (<http://twitter.com/richardatdell>). Alicia-at-Honda (http://twitter.com/Alicia_at_Honda) is similarly semi-transparent.

Customer relations staffers aren't the only corporate employees who've discovered micro-messaging: several companies have executives who Twitter regularly, too. Most notable is Zappos CEO Tony Hsieh (<http://twitter.com/zappos>), who has a large following and tends to Twitter about what he's up to—like playing in a poker tournament, hosting Oprah's film crew at Zappos, or having drinks with coworkers and business partners. "For us with customers, it's really a way of making the brand seem much more personal," Hsieh says. "We're not scripted."

Because Zappos' brand promises friendly service and open communication, and because the company touts itself as a fun place to work (<http://www.zappos.com/core-values.shtml>), Hsieh is the rare CEO who can use Twitter to talk about what he's doing and have it readily reflect and reinforce his brand. By contrast, GE CEO Jeffrey Immelt would likely shake investor confidence by Twittering about his cat's puking in the backyard.

Other C-level Twitterers include Barry Judge, Best Buy's CMO (<http://twitter.com/BestBuyCMO>), who tends to exchange comments with customers and lets people know when he has a new blog post up. Cisco's CTO, Padmasree Warrior (<http://twitter.com/Padmasree>), Twitters about her work day, among other ephemera. For a top executive at a large multinational corporation, her Twitterstream may make her more accessible to employees and other professional contacts.

Along the same lines, Michael Hyatt, CEO of the large Christian publishing house Thomas Nelson (<http://twitter.com/michaelhyatt>), recently told *BusinessWeek*: "Twitter enables me to humanize Thomas Nelson and thus better connect me with my employees, customers, and authors" (http://images.businessweek.com/ss/08/09/0908_microblogceo/11.htm). And at O'Reilly

Twitter Story: Nevermind the Resume, DM Me Instead

In the spring of 2008, Aaron Strout, vice president for social media at software company Mzinga, needed to hire people who'd be comfortable on the Web. In the past, he'd found that the traditional hiring process was intensely time consuming and that it gave him no real guarantee that new employees would be good at their jobs. This time, he took a different approach.

Rather than run ads with a job description and a request for resumes, he blogged about the positions he was looking to fill—all of which required social media literacy—and he asked people to contact him via Twitter.

About a dozen people reached out, suggesting that he look at their LinkedIn profiles, their own blogs, their Facebook pages and their Twitterstreams. "I could see what kinds of connections and conversations they had," Strout says. "With email I could never tell who they'd been talking to or what they'd been talking about."

He was looking for people with a propensity to share information rather than use social media as a megaphone. And although he said that he'd be lenient in assessing their personal posts, he was also looking to avoid people who were combative or inappropriate.

In the end, he hired an assistant and a PR specialist. At press time, both were still with Mzinga.

Media, the best way to monitor what's on founder and CEO Tim O'Reilly's mind is to follow his updates (<http://twitter.com/timoreilly>).

We believe that as more and more companies come to understand the conversational nature of micro-messaging, they'll make clear who the person or people behind the accounts are.

Thought Leadership in 140 Characters

It might seem counterintuitive, but micro-messaging can be a surprisingly effective medium for thought leadership. It rewards clear thinking; it's good for sharing and re-sharing ideas and links; and it can provoke thoughtful reflection.

As in most other formats, thought leadership tends to come from individuals rather than from companies. Still, a person who uses micro-messaging to hold professional and civic discussions can draw a lot of followers who are more interested in that poster's ideas than daily activities. (Of course, if the person is associated with an organization, the organization may benefit, too.)

Here a handful of Twitterers whose posts often fall in the thought leadership category:

- Brain-friendly learning guru Kathy Sierra (<http://twitter.com/KathySierra>);
- The head of Google's Webspam team, Matt Cutts (<http://twitter.com/mattcutts>);
- Forrester senior analyst Jeremiah Owyang (<http://twitter.com/jowyang>);
- NYU journalism professor Jay Rosen (http://twitter.com/jayrosen_nyu); and
- Our own Tim O'Reilly (<http://twitter.com/timoreilly>).

As more people outside the tech sector adopt Twitter and other micro-blogging tools, we expect to see lists like this expand to include more non-geeks.

Gathering Market Information

On September 5, 2008 at 11:49 a.m. Pacific Time, Lee Chisholm posted a message to Twitter: "Oooh, found a duplicate transaction on Wesabe. Not cool. :O(."

Wesabe¹² is a personal finance site that uses Twitter to communicate with customers in a number of ways, and CEO Marc Hedlund keeps a close eye on Twitters about his company (using <http://search.twitter.com> and @ replies to the Wesabe account, <http://twitter.com/wesabe>).

On that September morning, when he saw Lee Chisholm's message, Hedlund asked his engineers whether they already knew about the problem. They didn't. So he asked them to look into it, and he posted a message on the Wesabe Twitter page about the problem.

"Most of the time people are so happy to get a response, they're surprised," Hedlund says. "Like Comcast, people don't think anybody's listening. So the moment I say, 'I'm listening,' they're like, 'Wow, this is great.'" Hedlund notes that often, the first post from a customer will be "incredibly nasty," but when he responds in a polite way, the customer will reply with an embarrassed and friendly note of their own.

Lee Chisholm wasn't nasty, but he was complaining when he posted about Wesabe's duplicate transactions. His response that afternoon after realizing he'd been heard? "Thank you @Grooveshark and @Wesabe for monitoring Twitter. It's nice to know people are listening!"

Wesabe uses Twitter as an early warning system to find out about problems with its service. Because the company is small and nimble, it can often intervene before glitches grow into disasters. Comcast's Eliason, who also uses Twitter to learn about network outages and other problems that effect a lot of customers at once, isn't always in a position to address the issue himself. "Twitter is instant feedback," Eliason says. "You know [about problems] before your call centers know." But he can provide information to the company, and he can stay in touch with customers in the meantime.

With millions of people posting short messages, Twitter is a good place not only to find out about company problems, but to learn about happy customers, too. Businesses making the most of the medium then connect with those customers via Twitter. Like JetBlue, Southwest Airlines (<http://twitter.com/SouthwestAir>) sends a lot of friendly messages to customers who post that they're boarding a flight or that they've had a great experience with the airline. After a customer Twittered that he loved Southwest's new Detroit terminal and that his flight had had "perfect" service, Southwest replied: "@salescooke We think it rocks too :) Glad you had a great flight!"

Of course, companies also use Twitter to find out what people are saying about competitors and their industry generally. A little later in the report, we'll give you tips on non-intrusive eavesdropping.

Five Good Articles About Twittering for Business

Five particularly good resources, in no particular order:

- **50 Ways to Use Twitter for Business**, by Chris Brogan. August 21, 2008. <http://www.socialcomputingmagazine.com/viewcolumn.cfm?colid=592>
- **The Evolution of Brands on Twitter**, by Jeremiah Owyoung. August 18th, 2008. <http://www.web-strategist.com/blog/2008/08/18/web-strategy-the-evolution-of-brands-on-twitter>
- **Seven Rules for Establishing a Corporate Presence on Twitter**, by Joel Postman. August 20th, 2008. <http://www.socializedpr.com/twitter-seven-rules/>
- **Twitter for Business Reading List**, by Laura Fitton. August 26, 2008. <http://pistachioconsulting.com/twitter-for-business-reading-list/>
- **Using Twitter to Advance Your Brand: A Comparison Between WordPress and Movable Type**, by Cecily Walker. August 25, 2008. <http://cecily.info/2008/08/25/using-twitter-to-advance-your-brand-a-comparison-between-wordpress-and-six-apart/>

12. Disclosure: O'Reilly AlphaTech Ventures is an investor in Wesabe.

Micro-Messaging for Internal Communications

Micro-messaging started out primarily as a way for people to share tiny status updates about themselves, which isn't a class of information traditionally traded at work. But as people found ambient awareness very powerful in their personal lives, they started to look for similar connections in their professional lives.

Zappos CEO Tony Hsieh had been using Twitter for about a year with a group of friends when he decided to introduce it to his company in the spring of 2008. Today, about 460 Zappos employees use Twitter (approximately a quarter of its workforce). The company lists them on a public website: <http://twitter.zappos.com/employees>; and it aggregates their posts to Twitter: http://twitter.zappos.com/employee_tweets. It even offers classes to help employees get started with the service.

Hsieh has been a prominent proponent of Twitter, widely covered by the media, and interviewers usually assume Zappos was drawn to Twitter primarily for marketing purposes. But Hsieh says that's not a motivating factor, and his marketing department wasn't in on his plan to encourage employees to Twitter. Instead, he was interested in the internal connections it could support. "It helps us build our culture, and it makes working together better," he says. "Trust is higher. Communication is better." Employees are more aware of each other inside and outside work, he adds.

For Zappos, helping employees connect and simultaneously becoming more transparent is part of a bigger strategy. "Branding used to be, 'This is what my brand is going to be,'" Hsieh says. "But now that everyone is connected, and customers expect things to be two-way, a lot of companies are struggling because their internal culture doesn't support that. We're not just saying we care [about connection]. We actually do."

With its relatively large employee base, Zappos appears to be in a good position to promote use of

Twitter internally. But much smaller companies have found it helpful, too. ICO, an Australian web hosting firm with 17 employees recently began using Twitter to help employees connect with each other. Rachel Holden, the company's marketing manager, set up accounts for her co-workers and has encouraged them to use it 10 minutes a day.

She cites the resulting ambient awareness as the first benefit. "Twitter has been great for improving communication," Holden says. "Even if the comments posted are not directly about work, it's good to know what other people are doing. It's definitely added a buzz to the team." She adds that Twitter has also been excellent for getting quick feedback on ideas and for prompting brainstorming sessions.

Of course, Twitter is a largely public medium, but a lot of companies interested in micro-messaging internally need a private system. In September 2008, several software companies released micro-messaging systems for enterprise customers—Yammer, Present.ly, and Socialcast—two more, SocialText and Harvest announced they were adding micro-messaging to their business-collaboration platforms.

Present.ly sprung up at Intridea, a 19-person distributed company that makes several kinds of social software. The team had been using Campfire, a group chat system, and found it good for discussions where all the participants were present and engaged. And they were big fans of Twitter, too. But they needed an asynchronous group communication tool that would let them compartmentalize their work discussions. In spring 2008, they built Present.ly for their own use and immediately began using it to keep each other apprised of their projects and ideas.

They've been surprised to find that it's replaced the need for a lot of meetings and group emails. "We normally have status meetings, and it's done away with a lot of those because now we're constantly updated.

Everyone has a sense of what every else is working on," says Intridea co-founder David Naffis. "The only possible trade-off is that now we share less water-cooler type information because we don't have as many calls with time to kill at the beginning. So we may have to replace status meetings with water-cooler meetings."

Micro-messaging in the enterprise is still new, with just a few hundred companies paying for such services. But already some use patterns have already emerged. Distributed teams in particular report that becoming aware of what their colleagues are working on gives their projects a sense of momentum—in contrast to employees' having a vague sense that their co-workers may be working or they may be surfing the Web. As a result, micro-messaging raises people's consciousness of others while simultaneously prompting them to focus on their own work (rather than, say, surf the Web).

In addition to the benefits of ambient awareness, Naffis, like every other business user we spoke with, explained that on these systems, information is shared very, very quickly. "It's amazing how fast questions get answered—30 seconds or a minute," he says.

At the same time, people like micro-messaging because nobody has to reply at all. And even better, the messages—unlike email—are stored in a searchable, internally public location, making it easy for employees to look up the history of shared knowledge.

Microsoft is experimenting internally with two micro-messaging services. Like other business users, Ashok Kuppusamy, group program manager for Office Labs, notes that internal micro-messaging systems are not only a better forum for discussions that tend to get siloed and lost in email, they're also a good place to share information that people would never put in email at all:

With email, you have a fixed list of recipients. But with microblogging, the receiver gets to have control not the sender, and a lot more people are

interested in what you're doing or finding interesting than you ever knew. So people tend to post different things than they do in email. You'd never email "What I plan to do today," but if you provide a forum that doesn't blast into people's inboxes, they'll share it. Simpler, lightweight problems, like "What am I blocked on?" or "What do I need help on?" work beautifully.

Kuppusamy says that shifting certain messages out of email has resulted in some unexpected advantages: "One of my employees was actively helping another team, and I had no idea. I found out because the other team had posted a thank-you. If they'd send it in email, I never would have known." He followed up with his own thanks to the employee.

Capital in the attention economy is another key aspect of micro-messaging at work. As Paul Buchheit a co-founder of FriendFeed explains, "The decision process used to be that you just watched what was on the three available TV channels, and you shared that experience because everyone was watching the same thing." As the amount of content available for consumption has mushroomed, people have found that they share fewer points of reference.

FriendFeed rooms let users post links and comments to groups that can be public or private. Because they let people share both information relevant to their connection and an experience of that content, the private rooms are very popular among work groups. Socialcast and Harvest's Coop are similar to FriendFeed in that they combine micro-messaging and media sharing.

As micro-messaging becomes more common within companies, we expect to see people use it differently for sending messages company-wide and just to their own groups. It's also likely that the leading enterprise service providers, which now offer somewhat different features, will begin to look more and more alike.

Make Micro-Messaging a Major Success

We've gathered advice from dozens of people who use micro-messaging in their professional lives. In this section, we'll share their best tips and tricks.

Best Practices for Micro-Messaging in Business

Because micro-messaging with external stakeholders is a more common and public project than internal micro-messaging, we've got quite a few recommendations in this realm. In case it doesn't go without saying, our first tip is that Twitter—with a vastly larger potential audience than any similar system—is almost certainly the place to set up shop with a public-facing account. These suggestions all assume Twitter as the platform:

- **Lurk before you leap.** Before you set up an account, spend some time learning how people use Twitter. "Twitter is not the right place for every organization," says Comcast's Frank Eliason. "Hang out for a while, maybe with a personal account. What's the language? What's your audience like?" Follow a few friends and people in your industry to get a sense of how they use it (Twellow, <http://www.twellow.com>, can help you find people by sector).
- **If you like it, emulate it.** Before you start posting, suggests Nathan Torkington, figure out what you like about other people's posts and think about how you can produce messages like that.
- **Track what the Twitterverse says about you.** To find out what people are saying about your company, run a search at <http://search.twitter.com> (don't overlook the useful Advanced Search feature) and then

save the query as an RSS feed. Don't restrict yourself to just your company name; consider looking at competitors and products in your realm. Zappos for example, keeps tabs on itself: <http://twitter.zappos.com/>; and the brands it sells: <http://twitter.zappos.com/tweet/brands>. Wesabe CEO Marc Hedlund notes that with its real-time posts, Twitter is the leading edge for information, while blogs, which take longer to update, are now the trailing edge.

- **Make your company connection clear.** When you do set up shop on behalf of your company, use an account name that connects with your company (like RichardAtDell). Use the "Name" field to identify your company (which will help people searching for your organization find it) and use the "Bio" field to let people know who the real person behind the account is. If that person rotates, set the bio to read something like, "On duty for MyCompany: Jane Smith." And then change names in the bio as needed. As JetBlue's Morgan Johnston says, "Be as transparent as possible."¹³
- **Inform, amuse, share.** Your real name is a good start, but you also have to act like a real person. People don't follow you to get bombarded with pitches, so keep the PR and marketing bids to a minimum. Instead, include occasional updates about yourself (they can be work-related), along with tips and links that will be of interest to a lot of your followers (think of it like networking, in which you give a lot). "It doesn't have to be constant, but you need to contribute enough to become known and build respect," Eliason says.
- **It's OK to pitch once in a while, but do it gently.** That said, you can sometimes update about a blog post you've written, announce a new feature or product you're proud of, or link to press about your company. But use good judgment and make sure the message itself is interesting.

13. Another good reason to be transparent? Doing so can help you avoid the sort of brand-jacking Exxon experienced on Twitter. Jeremiah Owyang tells the story well: <http://www.web-strategist.com/blog/2008/08/01/how-janet-fooled-the-twittersphere-she-s-the-voice-of-exxon-mobil/>.

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- **Don't use your 140 characters on long URLs.** When you include links in your posts, shorten them with a service like Snurl.com or Bit.ly, which let you track click-throughs. Incidentally, Twitturly.com tracks URLs mentioned on Twitter.
 - **Keep it conversational.** Find a voice that's appropriate for your brand, but keep in mind that in general, people on Twitter expect a personal and informal tone. (Don't get carried away though: messages on Twitter, even if you send them from a phone or third-party client, last on the Web in perpetuity.)
 - **Follow your followers.** People who follow you want to connect with your company—so when people follow you, follow them back and keep an eye on what they say. "If you pay attention to who's paying attention to you, you can actually talk to them!" says Hedlund. "Somebody following you is saying, 'Hey, I'm interested in chatting.' It's more than just registering with your company." (In addition, when you follow somebody who's following you, you can use Twitter's direct message feature, which allows for private messages—an important tool for a normally public medium.)
 - **Respond to comments or questions about your company—almost always.** Treat Twitter like a conversation, responding to people who send you messages or mention your company. *Everyone we spoke with emphasized this point.* Follow the lead of Internet radio service Pandora (http://twitter.com/pandora_radio): their Bio includes the message, "I'm here to converse with you." When should you think twice before responding to comments about your company? See Hedlund's comment in the "Challenges" section below.
 - **Make sure you're monitoring messages and responses sent to the account on a daily basis, at least.** It's a fast-twitch medium.
 - **Take very specific conversations private.** If a conversation with a particular respondent is specific

to them, switch over to direct messages (and if the discussion isn't well suited to 140-character bursts, include your email address and ask them to follow up with you). JetBlue's Johnston says that approximately 75% of the messages he sends via Twitter are direct messages.

- **Ask questions to make connections.** If you're trying to build your network of followers, ask questions on Twitter. Why? First, because people like them. Second, because when people @reply answer you, their followers will see part of the conversation and may be drawn in.
- **Retweet to build your network.** Retweeting a message—that is, repeating a message somebody else posted earlier and giving them credit—is a good way of showing respect for other folks on Twitter. Start your message with retweeting "@username" or "RT @username" and then paste in the body of the other user's post.
- **Use Twitter to ease into social software.** Because Twitter is relatively lightweight, you may well be able to use it as proof of concept for social media at your company. If your company is questioning these kinds of systems, a successful Twitter presence may help build the case for more complex social media projects.
- **Try a few clients to see which works best for you.** The Twitter web interface may or may not be the most effective tool for you. Twhirl, Twitterific, and TweetDeck are popular choices, and we're intrigued by PeopleBrowsr, in early beta. But once you've got a few followers, you can start asking around. (Also note that messages on Twitter say at the end which tool people used to post them, like "via Twhirl," "via web," "via txt," etc.)

Although micro-messaging inside companies is just a few months old, we've got a couple of tips to help you make the most of it. These suggestions do not assume

Twitter is the platform; in fact, for internal communications, Present.ly, Yammer, or any other system that lets you share messages with a select group, may well be a better choice:

- **It's personal, and it's casual, but it's not a frat party.** Let people know you're heading to lunch or about to meet with a client or struggling with your wireless mouse. They'll appreciate the ambient awareness even if you don't reveal that you're a little blurry from the epic keg stands last night.
- **Let people know what you're working on.** If your team can become accustomed to sharing micro-updates, you may well be able to reduce the number of regular status meetings you hold.
- **Ask for help.** Spare everyone's inbox and use micro-messaging to find out who has the contact/book/form/inspiration you need. You'll get better results in a semi-public forum, and other people will be able to search those answers later on.
- **Share relevant links and other media.** Again, keep that juicy info out of email and your co-workers' inboxes will thank you.
- **If you're in IT, consider implementing a micro-messaging system today.** If your employees are already Twittering about their jobs, or if your firm hires younger workers comfortable with Facebook status updates, better to provide an internal system for work-related posts—especially when they exist at low cost and require little maintenance.

Challenges in Micro-Messaging for Business

When you're using Twitter for external communications, you're likely to hit a few bumps, not all of which are avoidable:

- Your customers may join Twitter or find your public Twitterstream...and then have no idea how to use the service or what you're talking about. "We've had

customers join Twitter just to send a message to us, and their first message is, 'Where's my flight?' says JetBlue's Morgan. "They don't understand that we have no way to know who they are, and sometimes they don't even identify JetBlue at first." When he does connect with those people, he shoots them a message: "Send me an email [his email address]; I'd be happy to help."

- Customers may be confused about the nature of your account. Is it for PR? Customer service? Information? Deals? You may be able to provide some guidance in the "Bio" field.
- A lot of pitchy or superfluous messages will turn off your customers. Think before you post.
- If you follow a lot of people who follow you (as we recommend above), you can become a target for direct-message spam (i.e., unwanted notes from people you don't know—probably trying to sell you porn). As we discuss later in the report, Twitter is working to mitigate spam, but it will be tough to eliminate it. If you do get unwanted solicitations, you can block the sender and notify Twitter about the problem: <https://help.twitter.com/index.php?pg=request>.
- If you follow people who aren't following you, or if you respond to people who are idly complaining about your company, you may make them uncomfortable in a Big Brother way. Wesabe's Hedlund explains it this way:

When we first started using Twitter, I noticed an interesting split. Somebody would mention Wesabe, and I'd start to follow them. Either they'd say, "Thanks!" and we'd start having a conversation, or they'd say, "Wow, I was already privacy freaked out and now I'm definitely leaving Wesabe. Drop dead." I finally figured out that people who reacted negatively had small follower counts and were using Twitter to talk to their friends, so Wesabe felt intrusive. But

I never had a single complaint from people who had more than 100 followers and were using Twitter to blog. They were always thrilled.

- If you're providing customer support via Twitter, or if people think you are, customers may well expect you to be available whenever they are. "I once forgot to charge my iPhone before leaving for the house on a Saturday," Eliason says. "I got back to a message that said, 'I tweeted 7 hours ago and you haven't tweeted back. Fail.'" Eliason deals with those complaints by sending a reasonable follow-up message, and then sticking with the person for as long as it takes to get his or her problem resolved (which he does as a matter of routine). At the scale of Twitter now, he and his team of seven can manage even fairly complex complaints. But he recommends having plans in place to deal with schedule gaps and spikes in messages.
- There isn't yet a real way to make money directly from your own Twitterstream. Ads or other monetization schemes may emerge, but we're not there yet.

Issues with micro-messaging as an internal communications channel include:

- It's another thing people have to look at and keep on top of. Even though it can reduce inbox clutter and even RSS cruft, a new medium is still an additional site or application everyone has to monitor. And for people who are following a lot of others, there's a distinct information overload problem that likely will never get fully solved.
- It can be hard to get co-workers to join in. If they aren't familiar with micro-messaging, they may not see the point—especially if there isn't a leader at your company who's engaged in it.

- Younger workers may use it for fairly personal information, and older workers may be put off. If your employees are using Twitter to communicate with each other anyway, it may be better to give them a home inside the firewall to do so. But the inherent casualness of the medium does have the potential to widen generation gaps.

Experimenting with Twitter in the Classroom

David Parry, assistant professor of Emerging Media at the University of Texas at Dallas, has been experimenting with Twitter at school. Like many, he wasn't excited about the service when he learned of it in mid-2007:

I must admit that when I first heard about Twitter, I thought it represented the apex of what concerns me about internet technology: solipsism and sound-bite communication.

But as a new media professor, Parry felt it mandatory to try out with his students. Six months later, in two terrific blog posts, he described more than a dozen ways he found it useful, including class chatter inside and outside the classroom and classroom community. His posts drew dozens more suggestions for academic applications.

When I first added it to the syllabus I had no idea what to expect. It was just sort of an experiment that I had planned for the end of the semester (all of the students signed up for twitter and followed each other). After using it I have to say it was one of the better things I did with that class.

For more on his experience, see <http://academhack.outsidethetext.com/home/2008/twitter-for-academia/> and <http://academhack.outsidethetext.com/home/2008/micro-blogging-part-deux/>.

A Campus Technology interview with Parry also provides some good insights into his experiments: http://campustechnology.com/articles/59315_3/.

All the News That's Fit to Twitter

Although news organizations are in the fast-information business, most have been slow to adopt Twitter. Typical is the company that sets up an account, uses it to post nothing but headline links from its primary site and follows no one.

On her GraphicDesignr blog, journalist Erica Smith tracks newspapers that use Twitter. She's observed that those who lose a lot of followers tend to engage in the headlines-only model, which does little more than mimic an RSS feed. Those who've begun to use Twitter more interestingly and more conversationally often see a big spike in followers. "Stop using Twitterfeed," she advises, referring to the service that turns website headlines into Twitter posts, "and actually post things, and your numbers will skyrocket, too." (<http://graphicdesignr.net/blog/2008/09/03/newspapers-that-twitter-august-numbers/>)

Here are a few examples of media outlets and individuals putting Twitter to good use:

- NBC cameraman Jim Long posts about his assignments and keeps a lively conversation going with his followers (<http://twitter.com/newmediajim>).
- CNN's Rick Sanchez makes it feel like you're behind the scenes and engaged in a discussion, too (<http://twitter.com/ricksanchezcnn>). On the air, several CNN programs have solicited Twitter comments from viewers and then placed the responses directly onscreen during broadcasts: <http://mashable.com/2008/09/04/cnn-twitter/>).
- The Chicago Tribune posts not only its own news, but headlines and tidbits from other Chicago outlets. It also asks and answers questions (<http://twitter.com/coloneltribune>).

- *The Washington Post's* political blogger Chris Cilliza did a good job of live-Twittering the 2008 presidential debates (<http://twitter.com/thefix>).

An increasing number of news reporters defend and promote Twitter as a journalists' tool, one that helps them learn of developments, break news, and share insights:

- Slate political correspondent John Dickerson (<http://twitter.com/jdickerson>) writes about his use of Twitter:

As I spend nearly all of my time on the road these days reporting on the presidential campaigns, Twitter is the perfect place for all of those asides I've scribbled in the hundreds of notebooks I have in my garage from the campaigns and stories I've covered over the years. Inside each of those notebooks are little pieces of color I've picked up along the way. Sometimes these snippets are too off-topic or too inconsequential to work into a story. Sometimes they are the little notions or sideways thoughts that become the lede of a piece or the kicker. All of them now have found a home on Twitter.

As journalists we take people places they can't go. Twitter offers a little snapshot way to do this.

(<http://www.nieman.harvard.edu/reports/08-2NRsummer/p05-dickerson.html>)

- Over at PBS, Ryan Sholin shares "Five Ways to Gather and Report News with Twitter": <http://www.pbs.org/idealab/2008/08/5-ways-to-gather-and-report-n.html>.

The Future of Micro-Messaging

Already it's clear that micro-messaging is moving in several directions. While Twitter is becoming a platform for broad communication and personal updates alike, services such as Yammer and Present.ly have cropped up to meet corporate needs for internal communication. Beyond those trends, several compelling patterns and questions are beginning to emerge.

Perhaps the top issue in micro-messaging is that power in the channel is still up for grabs. Put another way, it's not yet clear who will be able to make money on the phenomenon. While Twitter has grabbed a huge percentage of early adopters, it has yet to establish any significant revenue streams. Of course, Twitter benefits from network effects—i.e., it gets more useful as more people join it—giving it a little time to figure out viable business models (see the box on page 45 about challenges for the company). But in the past, online companies such as CompuServe, Prodigy, AOL, and even MySpace have lost dominance after gaining similar substantial early-mover advantages.¹⁴

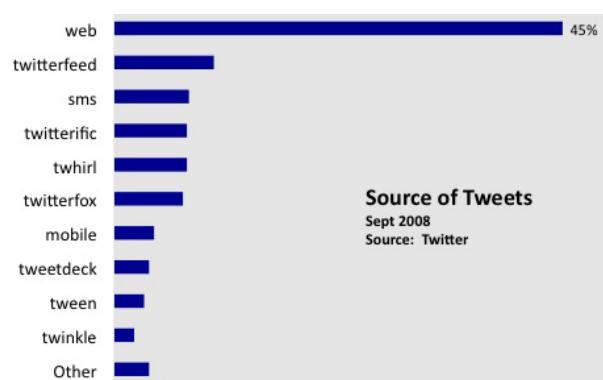
Moreover, alternate models don't all rely on widespread adoption. The enterprise providers, for instance (none of which is built on the Twitter API), report that customers with as few as five employees find micro-messaging useful for internal communication. Assuming companies are or become willing to pay for such systems, these providers could exist in parallel with Twitter, pulling in revenue that Twitter is not attempting to capture.

Similarly, micro-branded communities may arise outside Twitter. Although Twitter has said it plans to introduce groups, it does not yet have a feature that lets people associate by affinity. That is, there's no straightforward way for Yankees fans, or residents of

Portland, or vegetable gardeners to find and communicate exclusively with each other on Twitter. In theory, the open-source micro-messaging system Laconi.ca lets people and companies build such communities, either as stand-alone sites or integrated into other sites. In practice, we have yet to see this occur on any scale. It's worth noting, though, that blogging software, now common both on its own and within existing sites, took several years to become a commodity service, and micro-messaging will likely need more time to evolve, too.

Application clients are another interesting facet of the micro-messaging ecosystem. As shown in the chart below, most users reach Twitter through its own website. But the Twitter API lets people build standalone clients, and several have drawn significant numbers of users. We've debated whether micro-messaging clients will offer revenue opportunities (like some browsers, email clients, and IM programs) or whether they'll simply exist as part of the online stack, delivering content that's monetized in other ways (like RSS readers and, well, some browsers, email clients, and IM programs).

The jury is still out on the financial value of micro-messaging clients, but there's evidence that people see opportunity in them. Twhirl aggregates data from



This chart represents client use among all users. We also examined the clients favored by the top users (as defined by Twitterholic) and found that the Web accounted for slightly over 50% of messages posted by this group. Third-party clients favored by the top users include Twitterfeed, Tweetdeck, Twhirl, and Twitterific.

14. Louis Gray comments on the hope of Twitter's at least building a gate to its garden: <http://www.louisgray.com/live/2008/11/twitter-planning-to-implement.html>.

multiple micro-messaging services much in the way a client like Trillian gives users one place to hold conversations on multiple IM services. FriendFeed and PeopleBrowsr take that idea a step farther, consolidating not only micro-messages, but also people's activity from other sites, including Flickr, LinkedIn, Digg, etc. Such aggregation may make clients more valuable, and it's worth keeping an eye on the trend.

While we haven't seen it yet, we also believe that micro-messaging may well get rolled into email clients, perhaps along with IM, creating a personal communication dashboard. Such programs would solve two growing problems: first, they would provide a single place on your screen to hold conversations, rather than requiring you to check several locations; second, they would let you search across your messages regardless of type or origin, rather than forcing you to remember where you received a URL two months ago that you now need. Clients like this are probably several years away, but they're intriguing to consider.

Beyond clients, there are some additional possibilities for micro-messaging as a medium. Already several internet services have integrated their systems with Twitter, providing their own customers with additional features. The personal finance site Wesabe, for example, lets its users direct message expenses to their Wesabe accounts, helping people track spending on the fly (TweetWhatYouSpend.com is a service devoted solely to letting people use Twitter to track expenditures). The customer service communications site Get Satisfaction also integrates with Twitter, automatically pulling in Twitter posts about companies on its service. We expect to see more such integrations over time.¹⁵

We also expect to see companies, including Twitter, Present.ly, and others, start to provide services for planned events. As discussed earlier in the report, people have found that micro-messaging is a natural fit with conferences, concerts, and other live, shared experiences.

While nobody has created the perfect event system yet, experiments with such services are budding.

With the ubiquity of mobile phones internationally and the great fit between mobility and micro-messaging, we expect to see an increase not only in the percentage of messages sent via SMS, but also in the related applications for mobile platforms. Indeed, in places like Kenya, where SMS provides the backbone of the banking and health systems, mobile micro-messaging may spawn new ecosystem pieces we haven't even glimpsed yet.

No discussion of the future would be complete without mention of the potential for new features in existing micro-messaging systems. While Twitter is successful in part because of its simplicity, users have been looking for additions and changes from the outset. The desires we've heard most often (some from the Twitter team itself), include the addition of: location metadata to each message; the ability to comment on a specific message and establish a comment thread; groups; a notification that lets you know who's read your messages; tools for people administering large and/or professional accounts; an option to receive direct messages from people who aren't following you; and customizable data streams. Services other than Twitter already offer some of these features (Facebook, for instance, has comment threads), and some services include features, like attachments, that don't yet appear interesting to many Twitterers.

Yet with all of those hopeful predictions made, micro-messaging will almost certainly face the kinds of challenges, like spam and trolls, that have made software and blogs less useful. As Clay Shirky has suggested, the very definition of social software is "stuff that gets spammed" (http://many.corante.com/archives/2005/02/01/tags_run_amok.php), and although Twitter has a generally positive tone and lets you unfollow or even block anyone unpleasant, it is still a growing target for people who have less than social intentions. In addition, while it works at a relatively small scale, nobody yet knows whether people will find micro-messaging onerous as the volume of posts they're expected to read increases.

15. Disclosure: O'Reilly AlphaTech Ventures is an investor in Get Satisfaction and, as mentioned earlier, Wesabe.

Growth Challenges for Twitter

Twitter as a company faces a number of challenges as it evolves.

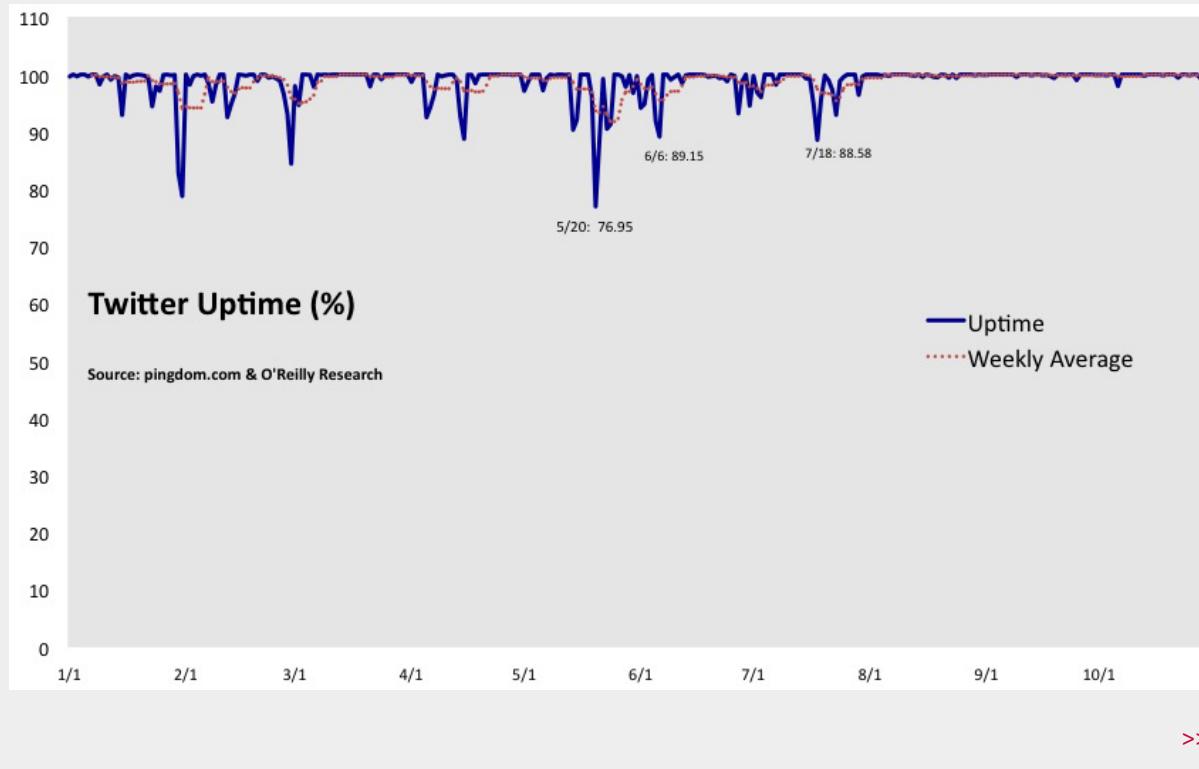
Perhaps the biggest challenge is simply growing its user base to a point of critical mass. As we discuss below, many of the company's possible business models will rely on a much larger user base—even one where, like email, individuals, marketers, media outlets, and other institutions would find it largely unthinkable not to participate.

Twitter may be a household name in the geek-o-sphere, but it's still below the radar for most people, and it has just a few million users worldwide. In addition, of those who swing by Twitter.com to kick the tires, many find they can't figure out how or why they'd use it, and many of those who do try it don't become addicted. "The rate of success is low for a lot of people," says CEO Evan Williams. To break out, Twitter will need to make

the site easier to use for prospective Twitterers and more obviously relevant for anyone.

Of course, growth can be problematic, too. Over the summer of 2008, the service crashed repeatedly as new users joined and more accounts grew to have tens of thousands of followers.¹⁶ When Twitter was down, a cute whale appeared on the site. Users named it the Fail Whale, and it was spotted frequently from May through June while the service suffered through repeated and extended outages.

Since late summer, Twitter has focused technical resources on scaling, and those problems have largely been contained. The graph below measures uptime (or service availability) for Twitter. On any given day, the company's goal is to be as close to 100% as possible; during August, September, and October, average daily uptime has hovered near 100%.



16. From a technical perspective, the biggest scaling challenge for Twitter has been sending messages to huge numbers of followers simultaneously.

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Spam has become a second serious technical challenge for Twitter. Although the follower model means that people can simply unfollow accounts that post unwanted messages, spammers have found other ways to infiltrate the system.

Users may or may not ever see problems that include spammers who try to flood the service and cripple it (similar to a denial-of-service attack); spammers who auto-follow a lot of other users (and may send direct-message spam to those who follow them back); spammers who start memes to game the system and appear in the trending topics; and spammers who link to pages that contain malware and other security exploits.

In August 2008, Twitter began to focus on fighting spam (<http://blog.twitter.com/2008/08/turning-up-heat-on-spam.html>). The company says that it has put in place some sophisticated anti-spam techniques that have been successful and that it has other such plans in the pipeline.

Finally, Twitter needs to find a viable business model. The company has been using the startup approach made popular by Google: build a cool service that a lot of people love and then figure out how to make money with it.

With approximately \$15M in venture funding (mostly from Union Square Ventures) and a big corner on the user market that gives it enviable network effects, Twitter has a little time to hit on a revenue stream or three. On the other hand, competing services are cropping up constantly and the worsening economy may scare off additional investment. As a result, Twitter is facing some pressure to cash in.¹⁷

As we discuss in the report section on the future of micro-messaging, it's not yet clear where the power will come to rest in this channel. And, of course, the answer to that will help determine the business models that might make Twitter successful. Still, in the press, ideas abound.

Banner ads are the most commonly mentioned revenue idea (Twitter already has them on its Japanese site), though with a waning ad market, those prospects may be withering. In an August 18, 2008 *BusinessWeek* article, Ben Kunz estimated that ads might bring in about \$12.26 per user per year—a decent but not rip-roaring revenue stream (http://www.businessweek.com/print/technology/content/aug2008/tc20080815_597307.htm).

Other ideas that crop up frequently include asking users to pay (or at least offering a freemium model in which the company charges for a higher level of service); selling messages to advertisers; providing a paid service for event organizers; and pursuing a fee-based enterprise service, like Yammer or Present.ly (though Williams told us he's not currently interested in such a path).

Perhaps the most interesting models involve wooing marketers—by selling them user data and analysis and/or offering them tools for administering professional accounts.

John Battelle, the founder and CEO of Federated Media, which sells ads for blogs, describes Twitter as a consumer insight machine. "Brands are extremely interested in what people think about them," he says. "Understanding sentiment about brands is a whole business, and Twitter is great for discovery of sentiment. It lets you learn not only about your brand, but about competitors and areas adjacent to the brand, too." He notes that already, some brand-monitoring services include Twitter data in their services.

Battelle also points out that Twitter is a platform where marketers can connect with consumers. "Brands are extremely interested in finding ways to create deeper relationships with core customers or potential core customers," he says. "They have to learn new skills to be in the space, which is a challenge. But they'll spend a lot of money on relationships."

17. In October 2008, Jack Dorsey, the engineer who had originally built Twitter and a company co-founder, stepped aside as CEO and became board chair. Evan Williams, the Blogger co-founder and more experienced businessperson, took over the day-to-day operations.

Conclusions

With its simplicity, utility, mobility, and sheer human appeal, micro-messaging is poised to become a major communications tool. As a new channel that amplifies the powerful forces of fast information, ambient awareness, and the attention economy, it will likely become as commonplace as instant messaging and even email within a few years.

Like many digital communication mediums before it, we expect to see divergent use cases emerge for micro-messaging over time, from personal to professional to corporate, with somewhat different norms and standards for each. Already we've seen people and entities use it as a publishing platform, a communications tool, a combination of the two and a new medium altogether. But the boundaries aren't yet clear, and as Wesabe CEO Marc Hedlund described in the section "Challenges in Micro-Messaging for Business," it's possible to have the best intentions but still run afoul of other users' expectations. As the medium evolves, those who thrive in it will keep both an open ear and an open mind.

At this point, with more than three million users and over a million messages a day, Twitter is the dominant player in micro-messaging, providing the best platform for connecting with a broad range of people and for sharing both personal updates and corporate information. In addition, its API has enabled a robust ecosystem

around it that makes Twitter far more valuable than the service alone. Indeed, it's the type of neutral platform that lends itself to expansive and innovative applications; from plants that tweet to activists who use it for safety and organizing, we've just seen the very tip of the possibilities.

Although Twitter has not yet declared a business model, its significant network effects give the company time to figure out promising revenue streams. Based on its acquisition of Summize and its development of the Election 2008 site, we believe Twitter will focus more on the possibilities of aggregating, analyzing, and selling data than on selling its platform directly.

At the same time, we see other companies emerging to meet micro-messaging needs that Twitter has not pursued. Most prominent are Yammer and Present.ly, both of which provide services for companies that want internal micro-messaging. FriendFeed, which allows not only for messages but aggregates feeds from other sites, too, is also popular with work groups. Down the road, the open-source Laconi.ca platform may gain market share as people and companies look for basic micro-messaging software they can incorporate into their own sites.

In addition, third-party clients like Twhirl and Twitterific may find ways to make money within the ecosystem. And smart marketers who learn to use Twitter as a conversational tool for building relationships with customers and potential customers will surely profit from micro-messaging.

Stepping back to look at the bigger picture, Twitter appears to have legs not only because the service has enjoyed steady growth, but also because its rate of active users has remained constant at about 20% even as the service has gained new users. Social sites like Second Life and Facebook typically see a decline in the percentage of active users as their base grows. Although people new to Twitter often find it difficult to dive into, enough new users take to it readily to provide the sense that Twitter feels natural to a lot of people.¹⁸ It should have a correspondingly robust future.

It's important to note that Twitter is different in several significant ways from earlier social systems: it's simpler; by default, it makes users' messages public and does not restrict communication to their social

graphs; and it has a widely used API. These conditions are no accident. Twitter represents an evolutionary step in social software, building on the norms and features developed by other systems.

Indeed, the success of Twitter rests in part on its meeting emerging communication styles in a way that resonates deeply with users. As email has begun to lose effectiveness under the tide of spam (and sometimes the volume of legitimate messages), and as both email and IM have proven too restricted for certain group communications, users have come to look for brevity, transparency, and openness. Twitter and other micro-messaging services are culturally coherent with trends that represent nothing short of communications revolution. ■

18. That said, we do recommend that Twitter improve its orientation and help materials.

For updates and news about Twitter,
follow us on Twitter at
<http://twitter.com/TweetReport>.

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