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Why social networks have grown so fast—and how Facebook has become so dominant

Illustration by Ian Whadcock



FACEBOOK has not only helped people to make zillions of new connections, it has also inspired a screenplay. A film called "The Social Network", due to be released later this year, will trace the site's meteoric rise from its foundation in 2004 to become king of the social-networking world. How have social networks managed to shoot to such prominence that they are already being given the Hollywood treatment?

The most important reason for their phenomenal growth is something called the "network effect". Originally coined to describe the rapid spread of telephones, this states that the value of a communications network to its users rises exponentially with the number of people connected to it. This implies that the audience of a social network will grow slowly at first, then explode once it passes a certain point. Jeff Weiner, the chief executive of LinkedIn, which now has some 58m members, says it took the company 16 months to reach its first million users, whereas the most recent additional million came on board in only 11 days. Facebook has had a similar experience. It took almost five years to drum up its first 150m users, but just eight months to double that number (see chart 3).



The network effect has been amplified by the internet's global reach. Gina Bianchini, the boss of Ning, says that within two months of the firm's launch in 2005 people from 80 countries had signed up to networks that it had created on behalf of others. The Ning-hosted network of 50 Cent, a rapper, has 490,000 members the world over, from Australia to Zambia. Some firms have specially tailored their service to broaden its international appeal. Facebook, which is available in 70 different languages, offers Facebook Lite, a stripped-down version of its main site that is popular in countries without fast broadband connections.

All this has allowed social sites to grow quickly without having to spend a fortune on marketing. But it has also created a huge technical challenge. Most web businesses can add servers and databases in a fairly linear fashion as they acquire more users, but social networks find it almost impossible to gauge exactly how much computing power they will need because of the network effect. Some sites set up in the 1990s suffered a series of outages as they struggled to keep up with demand.

The latest crop of networks, most of which were launched five or six years ago, have benefited from a dramatic fall in the cost of hardware needed to store and process data. They have also been able to use free, open-source software to build systems that scale quickly and easily. And they have come up with some tailor-made solutions to cope with rapid growth.

Thanks for the memory

At Facebook, for example, the firm's software engineers built a system called MultiFeed that searches databases near-instantly for relevant news from a person's friends. This has allowed the network to add many millions of new users without damaging its ability to provide a constant stream of up-to-date news to people's pages. In another feat of technical wizardry, its engineers have quintupled the performance of an open-source memory system called memcached, which allows frequently used data to be retrieved faster than if stored in a database.

Such creativity has enabled the networks to cope with a tsunami of data, many of which are being produced by another set of technologies that have also helped to drive the growth of social networking. Personal digital cameras and video recorders have greatly reduced the cost of producing high-quality images and made it easy to publish them online. Over 2.5 billion photos a month are uploaded to Facebook, making it one of the largest photo-sharing sites on the web. In Asia video content is hugely popular on services such as Cyworld.

One reason that people are willing to share so much private information on social networks is that many of the sites have developed detailed sets of privacy controls that let users decide what others can and cannot see. This process has had its hiccups. Facebook, for instance, got into hot water when in late 2007 it launched a service called Beacon that tracked users' purchases on some other websites and automatically alerted their friends to them. After a furious reaction from users, Beacon was first modified and then buried for good. Last

year Facebook was named one of America's 20 most trusted companies on privacy issues by TRUSTe, an organisation that rates companies' online privacy policies—though there was another outcry in late 2009 when it modified its privacy policy yet again.

Another reason that the networks have become so popular is that there is so much to do on them, mostly because companies such as Facebook and MySpace have allowed independent developers to create programs, known as "apps", which run on their networks and tap into their treasure trove of customer data. These apps range from the inane to the inspiring. SuperPoke!, for example, lets people "spank", "grope" and "kiss" their Facebook friends online, whereas Causes enables them to create virtual groups to pursue charitable endeavours.

This division of labour pays dividends all round. Developers get access to the networks' huge audience, network users enjoy free access to thousands of clever apps and the networks acquire more users because the apps make their sites more addictive. Facebook now has over 1m developers creating software for it and its online directory contains over 500,000 apps. Twitter has spawned over 50,000 apps, including offerings from firms such as Twitpic, which lets people post photos to their Twitter feeds, and Twitscoop, which highlights popular topics being talked about on the service at any moment.

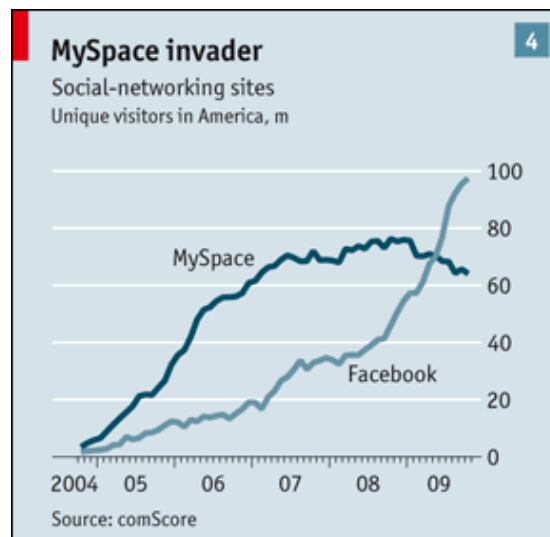
That leaves the networks free to concentrate on innovations that encourage even more sharing. The most striking of these is Facebook Connect, which the company launched just over a year ago. Mark Zuckerberg, the company's founder, describes this as "inverting the model" of social networking. Instead of being obliged to come to Facebook's website, users can take their Facebook identity and network of friends to other websites and to devices such as game consoles. This means they no longer have to create a new online group of friends each time they visit a different destination on the web.

The way it works is that Facebook's partner firms install Connect buttons on their websites and devices which give Facebook users automatic access to information about their friends' activities. At HuffPo Social News, a site run by the Huffington Post, a well-known American blog, Facebook users can see what their friends have been reading and exchange stories and comments with them. At Netflix, which hires out DVDs and Blu-ray discs by post, they can see which films their friends have watched and what other people have written about them. Facebook says there are now some 80,000 Connect-enabled websites and devices, such as Microsoft's Xbox console.

Connect is just the latest in a long line of innovations that have helped to turn Facebook into the dominant global social network. It also reflects the scale of Mr Zuckerberg's ambition. "For the social web, I think the killer app is Facebook," he says. His goal is to connect as much of the world's population as possible via the network and then to get its users to use it as their main doorway to the internet. He is so keen to realise his vision that he is said to have turned down offers to buy the company which would have made him an instant billionaire.

Mr Zuckerberg also wants Facebook to map out as much as possible of what people in the social-networking industry refer to as the "social graph", a fancy name for a model of nodes and links in which nodes are people and the links between them represent friendships. He thinks that the relationships between people and objects such as their office buildings, schools and other things can be represented in the same way. The more people that join Facebook, the greater the insights the business will have into the nature of these relationships. And the more it knows about what matters to people, the better it should be at profiting from that knowledge.

Some people think that Facebook's network effect is now so great that it will be impossible to knock it off its pedestal as the world's largest online meeting place. "It's basically Facebook's to lose", says Mark Pincus, the chief executive of Zynga, a social-gaming firm that develops apps to run on the service.



Not so long ago, exactly the same thing might have been said of MySpace. The site was riding high when News Corp bought it for \$580m in 2005. But a few years later it was going downhill (see chart 4). Some see this as a sign that large social networks are destined to disintegrate when they become too big. But there was nothing inevitable about MySpace's decline: the site simply made a series of strategic mistakes. Faced with demanding revenue targets from News Corp, it neglected its technology and added new features such as job listings and horoscopes that drove web traffic but had nothing to do with its core users' interest in music, film and other entertainment. As the site became more cluttered than a teenager's bedroom, some of those users logged off for good. MySpace's share of the American social-networking market fell from 67% in September 2008 to 30% in the same month of last year, according to Hitwise, a research firm.

Network defects

Owen Van Natta, the network's new boss, has already got rid of many of the products that were added and brought in a new management team. MySpace is also cleaning up its pages and developing tools that will let its 100m users search its huge range of content more efficiently. And it has stopped pursuing Facebook to concentrate on a strategy that Mr Van Natta describes as "offering people the ability to engage in content and socialise at the same time".

The idea is that people with, say, similar tastes in music will connect with one another on MySpace and then swap other material too. Last year the firm bought iLike, which allows users to share playlists, and Imeem, a music-streaming service. Its new focus, Mr Van Natta insists, will allow MySpace to rise Phoenix-like from the mess in which he found it. But the—admittedly brief—history of social networking suggests that once a network effect has gone into reverse it rarely returns to form.

Facebook, for its part, is unlikely to make the same strategic mistakes as MySpace because it pays much more attention to the plumbing that connects people with each other than to the content that flows through it. "The people at Facebook are essentially utilitarians," explains Matt Cohler, a former employee who is now a partner at Benchmark Capital, a venture-capital firm. "They want to give people the very best technology for sharing and then get out of their way." That technology is so good that people are willing to stick around on the site as it grows, rather than abandoning it for something edgier.

Another reason for optimism is the firm's hacker-type culture which has produced the innovations that have made the service so addictive. Mike Schroepfer, Facebook's head of engineering, says that one of its mottos is "move fast and break stuff". What matters is getting fresh products out to users quickly, even if they do not always work as intended.

To help generate new ideas, the firm holds all-night "hackathons" at which engineers work on their pet projects, fuelled by Chinese takeaways and energy drinks. It also gives its people plenty of freedom to try out

their ideas on Facebook's site. Mr Schroepfer is particularly proud of the fact that the company has only one engineer for every 1.2m users.

It is always possible that a better plumber could turn up, which explains why Facebook's bosses are so wary of potential competitors. The network has been watching Twitter closely and even tried to buy it, but was rebuffed. Despite their differences, both firms are powerful communication tools that compete for people's attention (see [article](#)). They also have something else in common: an enormous price tag. Last year Twitter raised a round of venture capital that valued the company at \$1 billion, even though it had yet to turn a profit. And an investment in the preference shares of Facebook by a Russian company valued it at \$10 billion. Such astronomical sums are a sign that investors think the best social networks will become big money-spinners.

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