

Weak Signals in Innovation Journalism – Cases Google, Facebook and Twitter

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1 INTRODUCTION.....	3
2 WHEN GOOGLE, FACEBOOK AND TWITTER ENTERED THE NEWS	7
2.1 Google – since 1998	7
2.2 Facebook – since 2004.....	12
2.3 Twitter – Since 2006	16
3 THE NEWS EVOLUTION MODEL	19
4 DISCUSSION AND IMPLICATIONS	22
6 ACKNOWLEDGEMENTS.....	23

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This article illuminates the news flows of three Silicon Valley companies – Google, Facebook and Twitter - particularly during the start-up ‘early’ phase. The article presents The News Evolution Model for better understanding the evolution of innovation news.

1 Introduction

“A couple days ago, we pointed to Mooglets widgets, the creation of Rome-based Mad4milk.net. Today, we are shocked to learn that Mad4milk has been acquired by Freewebs. The Web host says it will repackage Mad4milk's JavaScript effects library, offering developer community site Freewebs Farms, and soon a widget library.”

What in the name of Moses is going on? Not even educated tech veterans can keep track anymore. Mooglets? Widget libraries? Mad4milk? Is this a scene from Harry Potter and the Stoned Venture Capitalists?

There is so much coming so fast from so many corners that nobody can possibly keep track, much less ever, ever try using it all.

You can tell that some insiders sense a bubble-ishness in the air.

(Kevin Maney in the USA Today, August 2006)¹

According to functional-structural social theory, news content is information that seeks to meet social needs. News selection occurs on several levels and journalists have professional guidelines and standards that mediate their subjectivity. Traditionally research has emphasized journalists' and editors' roles as “gatekeepers” of news selection. It can be argued that the key critical questions regarding news are whether there is a consensus on how news is defined and who creates and controls news production and news content.²

Silicon Valley, on the San Francisco Peninsula, is famous for its innovative companies, and its ability to create new industries.³ In similar fashion news is the

¹ Maney, Kevin. 30.8.2006. Tech industry spews Web companies, doohickeys so fast we can't keep up. USA Today.

² Nossek, Hillel. 2008. "News." *The International Encyclopedia of Communication*. Donsbach, Wolfgang (ed). Blackwell Publishing,. Blackwell Reference Online. 20 October 2008.

³ Lee et al. 2000. *The Silicon Valley Edge. A Habitat for Innovation and Entrepreneurship*. Stanford University Press, Stanford; Lécuyer, Christophe- 2006. *Making Silicon Valley. Innovation and the Growth of High Tech, 1930–1970*. The MIT Press, Cambridge –London. Lacy, Sarah. 2008. *Once*

backbone of journalism.⁴ For the news media, Silicon Valley offers a good and continuous source of interesting stories. However, the problem could be how to find the biggest “scoops” among the many thousands of inventive start-ups very often dealing with same kind of products. This paper will focus on this dilemma.

However, we first need to define the key concepts. Basically innovation journalism is journalism about innovations and innovation ecosystems.⁵ It has also been argued that innovation journalism is future-oriented in its very nature and can benefit from the concept of weak signals.⁶

Igor Ansoff (1975, 1980a, 1980b, 1990) was first to argue that information has two extreme levels: strong signals and weak signals.⁷ In his opinion, strong signals were “sufficiently visible” and “concrete”, and weak signals are “imprecise early indications about impending impactful events”⁸. Ansoff believed that weak signals may mature over time and become strong signals. His five different stages of signals were:

- 1) the sense of a threat/opportunity is felt;
- 2) the source of the threat/opportunity is known;
- 3) the shape of the threat/opportunity becomes concrete;
- 4) the response strategies are understood;
- 5) the outcome of the response is predictable.⁹

you’re lucky, twice you’re good. The rebirth of Silicon Valley and the rise of WEB 2.0. Gotham Books, London.

⁴ Gans, Herbert J. (1980) *Deciding What’s News. A Study of CBS Evening News, NBC Nightly News, Newsweek and Time*. Constable, London; Read, Donald. (1992) *The Power of News. The History of Reuters 1849–1989*. Oxford University Press: Oxford; Shoemaker, Pamela & Reese, Stephen. (1991) *Mediating the Message: Theories of Influences on Mass Media Content*. Longman: New York; Volkmer, Ingrid. (1999) *News in the Global Sphere: A Study of CNN and its Impact on Global Communication*. Luton University: Luton.

⁵ Nordfors, David. 2004. “The Role of Journalism in Innovation Systems”, *Innovation Journalism*, Vol 1. No. 7, December 2004; Nordfors, David et al. 2006. *Innovation Journalism: Towards Research on the Interplay of Journalism in Innovation Ecosystems*. Vol. 3, No. 2. May 2006.

⁶ Uskali, Turo. 2005. *Paying Attention to Weak Signals – The Key Concept for Innovation Journalism*. *Innovation Journalism* Vol. 2, No. 11, pp 1-19.

⁷ Ansoff, Igor. 1975. *Managing Strategic Surprise by Response to Weak Signals*. *California Management Review*. 18, No. 2, 21-33; Ansoff, H.I. 1980a. “Strategic Issue Management”. *Strategic Management Journal* 1: 2, 131–148; Ansoff, I.H. 1980b. “Managing strategic surprise by response to weak signals”. *California Management Review* 18: 2, 21–33; Ansoff, I.H., and McDonnell, E. 1990 [1984], *Implanting Strategic Management* (2nd ed.) Englewood Cliffs, N.J. and London: Prentice/Hall International

⁸ Ansoff, I.H., and McDonnell, E. 1990 [1984], *Implanting Strategic Management* (2nd ed.) Englewood Cliffs, N.J. and London: Prentice/Hall International, 20–21.

⁹ Ibid.

“Weak signals” are considered to be early indicators of, “symptoms” of, or “a soft form of information” about coming events. They are often minor events that may have major consequences. Weak signals are problematic because they are difficult to distinguish from the masses of information. That is why they are easily missed.¹⁰

Interestingly, Ansoff did not conduct any empirical research on weak signals, and surprisingly only now, decades after Ansoff’s writings, empirical research is beginning to take off. For example, Uskali (2005) pioneered the link between weak signals concepts in classical strategy and efforts to use this idea to understand critical aspects of journalism. Based on small empirical work Uskali argued that Ansoff’s original work pointed to five different levels of signals, which could be reduced to four in the context of journalistic products: 1) feeling, or hunch signals, 2) uncertain signals, 3) almost certain signals, and 4) exact signals.¹¹

A study by Ojala and Uskali (2007) traced possible weak signals in the articles of *The New York Times* before the stock market crashes of 1929, 1987 and 2000.¹² The authors concluded, for example, that “there were only a few weak signals in *The New York Times* before the 1929 stock crash”, and “the most valuable signals were usually hidden inside the reports and were not published on the front pages.” In addition, “however, in October 1929 many stock columns in *The New York Times* contained numerous different signs of a coming change, and these signs were also already prominent in the lead sentences of the stories”. Finally, the authors argued that “So, when the crash finally occurred, it should not have come as a big surprise to careful readers of *The New York Times*”.

Interestingly, research on financial ‘bubbles’ is now considered of prime importance among economists. *The Wall Street Journal* (16.5.2008) reported in a front page article that economists traditionally have not offered much insight to financial ‘bubbles’ until the dot-com boom. The article concluded “Now, the study of financial bubbles is hot, and its hub is Princeton”.

Furthermore, Uskali and Ventresca (2008) tested the use of weak signals as a heuristic tool to study the case of the ‘subprime’ lending ‘bubble’ from the point of journalism. In conclusion, mainstream news media took quite a long time to recognize the risks behind the subprime financial innovation. The first wave of warnings had occurred already in 1996, when the leading subprime car loan

¹⁰ Hiltunen, Elina. 2001. Heikkojen signaalien käyttö yrityksissä. *Futura* 2001:1, 45–50; Nikander, Ilmari O. 2002: Early Warnings. A phenomenon in Project Management. Doctoral dissertation. Helsinki University of Technology. Yliopistopaino. Helsinki.

¹¹ Uskali, Turo. 2005. Paying Attention to Weak Signals – The Key Concept for Innovation Journalism. *Innovation Journalism* Vol. 2, No. 11, pp 1-19.

¹² Ojala, Jari and Uskali, Turo. 2007. Any Weak Signals? *The New York Times* and the Stock Market Crashes of 1929, 1987 and 2000. In Müller, Leos and Ojala, Jari (eds) *Information Flows. New Approaches in the Historical Study of Business Information*. SKS/Finnish Literature Society, Helsinki, pp103-136.

lenders disclosed financial problems. However, the very first outlets to mention, and warn, about the risks hidden inside this new financial innovation, were not traditional news outlets, but the special trade journals like *Credit World*, and *American Banker*.¹³ This finding confirms previous research results made by Mäkinen et al. (2007) about technological innovations. According to Mäkinen et al., “trade publications can be used to obtain early signals on the future of technological innovations.”¹⁴

In order to study the news flows, and the weak signals in journalism, we need reliable news storage. In this case we rely on Factiva, a digitalized news archive. Factiva, owned by Dow Jones, is a collection of more than 25,000 news and other sources from an exclusive combination, including *The Wall Street Journal*, *the Financial Times*, *Dow Jones*, *Reuters Associated Press*.¹⁵ We used the *New York Times*’ digital news archive to cross-check our data.

Digital news archives offer the opportunity to quantify a large corpus of news material quickly and systematically. ‘The use of key words in ‘search’ mode is the core activity in this research. In general key word searching is best suited for identifying people, places, and events, but also all anything with a clear name like a company. The most widely used text-based digital news archive in social scientific research is Lexis-Nexis. However, recent comparative research has identified some problems in its use, for example missing news material, but also duplicated items.¹⁶ It is worth remembering that digital news archives can also be imperfect or fragmentary.

This paper will focus on three case studies (Google, Facebook, and Twitter) in order to create a better understanding of the relationship between innovations, journalism and weak signals in local (Silicon valley) and global innovation ecosystems. In other words, the focus will be on the evolution of innovation news, especially about innovative start-ups.

¹³ Uskali, Turo & Ventresca, Marc. 2008. Weak Signals in Innovation Journalism -The Lessons of "Subprime" Lending Innovation. Unpublished work paper for The Fifth Conference on Innovation Journalism. Stanford University. May 21-23 2008.

¹⁴ Mäkinen, Saku, Järvenpää, Heini, Ojala, Jari, and Uskali, Turo. 2007. Spotting weak signals considering new technological innovations: An empirical search for appropriate sources. Unpublished work paper for The Fourth Conference on Innovation Journalism. Stanford University. May 21.-23.2007.

¹⁵ <http://factiva.com/about/index.asp?node=menuElem1098>, ref. 27.4.2009.

¹⁶ Deacon, David. 2007. Yesterday’s Papers and Today’s Technology: Digital Newspaper Archives and ‘Push Button’ Content Analysis. *European Journal of Communication* 22;5, 5-25.

2 When Google, Facebook and Twitter Entered the News

For starters, there is already growing literature about Google¹⁷, Facebook¹⁸ and Twitter¹⁹. Commonly, the initial books are mainly how-to-do-it guide books either for marketers, or ‘common consumers’. However, I argue that if Google has already interested serious writers like well-established journalists, the time for more scientific academic research has arrived. Furthermore, we know surprisingly little of the early journalism about Google, Facebook, and Twitter, especially the opening phases of these companies. The aim of this paper is to fill this gap.

2.1 Google – since 1998

Google was first incorporated as a privately held company on September 4th, 1998. It was co-founded by Larry Page and Sergey Brin while they were still students at Stanford. At that time, towards the end of millennium, web surfers were often frustrated when searching relevant information the web.²⁰

The first article mentioning ‘Google’ was published by *Business Week*, September 28th 1998 (Factiva). In a short news article (273 words) Google was referred to only in the last paragraph:

*“There’s another ranking system that may be even better for managers. **Google** (<http://google.stanford.edu/>) rates Web sites by the number of other sites linked to them. The rankings, in other words, are determined not by surfers, but by Webmasters who presumably took time to evaluate a site before setting up a link to it. It’s an adaptation of the time-honored practice of assessing scientific papers by the number of citations they’ve gotten in other papers.”²¹*

A new company entering the news could be a weak signal, but obviously, hundreds or even thousands of companies, services, and products do this every day. To pick up the one with the most future potential, is like searching for a needle in a

¹⁷ Battelle, John. 2005. *The Search: How Google and Its Rivals Rewrote the Rules of Business and Transformed Our Culture*. Penguin, New York; Vise, David A. & Malseed, Mark. 2005. *The Google Story: Inside the Hottest Business, Media, and Technology Success of Our Time*. Delacorte Press, New York; Jarvis, Jeff. 2009. *What Would Google Do?* Collins, New York.

¹⁸ Shih, Clara. 2009. *The Facebook Era: Tapping Online Social Networks to Build Better Products, Reach New Audiences, and Sell More Stuff*. Penguin, Boston.

¹⁹ Comm, Joel. 2009. *Twitter Power: How to Dominate Your Market One Tweet at a Time*. John Wiley & Sons, New Jersey.

²⁰ Find it on the Web. 1.12.1998. *PC Magazine*.

²¹ *A search engine gets a search engine*. 28.9.1998. *Business Week*. Vol. 81, number 3597.

haystack. Of course more information is often produced than just the name. In this case some extra sentences are provided for the reader to better understand what kind of service Google is. Nonetheless, I argue that although this initial piece of news about Google was not understood as a weak signal of a coming change, in reality it was a weak signal.

Red Herring was the next to write about Google. The weekly magazine was focused on the business of funding, and start-ups. According to Wikipedia, *Red Herring became a journal of record for the dot com boom.*²² *Red Herring* noticed and reported about Google for the first time on October 16th 1998; the name of the start-up was also mentioned in the headline: *Google Graduates*.

*“Stanford University should start a department of search engine technology. The last couple of times Stanford grad students experimented with technology to search and categorize the Web, Yahoo (YHOO) and Excite (XCIT) were born. They're now both companies with multibillion-dollar market capitalizations. The university has just spawned a third search engine company, Google.”*²³

Newswire (VNU) followed the lead of *Red Herring* on October 20th with the article *Google eyes Yahoo's search engine market.*²⁴ *Information World Review* mentioned Google briefly among dozens of other new Internet search companies in an article called *Search insider* November 1st 1998²⁵, and in similar vein, *Computer Weekly* produced a long article about search companies November 5th, *Looking for clues to searching questions.*²⁶

Another special techno magazine *PC Magazine* awarded Northern Light as the Editor's Choice at the end of 1998. It was the second consecutive year *PC Magazine* recognized Northern Light as the best research tool.²⁷ However, the magazine also ran a minor article about “a promising new site” called Google.stanford.edu. Strangely, Google was typed in the text with an exclamation mark in the style of Yahoo!²⁸

Google!, an ongoing research project at Stanford University, helps you access the most relevant finds more quickly, and rivals Yahoo! for finding that handful of key sites you may be looking for.

²² [http://en.wikipedia.org/wiki/Red_Herring_\(magazine\)](http://en.wikipedia.org/wiki/Red_Herring_(magazine)), 14.5.2009.

²³ Rail-Allen, Georgie. 16.10.1998. Google Graduates. Red Herring.

²⁴ Geraldts, John. 20.10.1998. Google eyes Yahoo's search engine market. Newswire (VNU).

²⁵ Information World Review. 1.11.1998. Search Insider.

²⁶ Computer Weekly. 5.11.1998. Looking for clues to searching questions.

²⁷ Northern Light Wins PC Magazine Editors' Choice Award. 24.11.1998. PRNewswire.

²⁸ Google! 1.12.1998. PC Magazine; Basch, Reva. 1.3.1999. Honoring Our Ancestors. Online.

Red Herring followed up its initial Google article, on December 17th, when Google (then a three-month old startup) was about to move out of the Stanford lab into Silicon Valley offices. The magazine also noted that Google and its MIT competitor Direct Hit were both focusing on solving the same problem – computers lack of ability to judge the relevance of search results. These two companies were defined as “second-generation search engine startups”. Also in the article, CEO Larry Page mentioned that Google was seeking a first round of venture capital in the first half of 1999.²⁹

Rocky Mountain News was the first newspaper, outside of Silicon Valley, to mention Google.³⁰ Others followed *The Christchurch Press*³¹, and the *Denver Post*³².

To gain a more fully informed understanding of the news about Google during the first months, [Table 1](#) provides appearances of the company in the trade press and popular press during the first two months of 1999.

From this perspective we can argue that newspapers, in the U.S. and abroad, were mentioning Google widely in the opening months of 1999. *The Guardian* from the United Kingdom was the first foreign newspaper to publish news about Google, followed by the *Bangkok Post*, and India’s *The Economic Times*. Google was introduced to the international audience just couple of months later than in the U.S.

Interestingly, *the Washington Post* was the first to answer the most important question about Google’s future on January 22nd 1999, in the very last sentence of an article: “Bonus: **Google**, still in testing, has no ads”.³³ With hindsight, this article can be interpreted as a weak signal of a coming change. As has been shown, advertisements have been the most lucrative source of revenue for Google. Furthermore, the *Washington Post* was the first major newspaper to mention Google, on January 11th 1998.³⁴

In comparison, *The New York Times* mentioned Google for the first time no sooner than July 22nd 1998³⁵, and only briefly in a feature article: “To find just the right link, Ms. Halpert uses a search engine -- usually **Google**, her favorite.” This article, also with hindsight, could be interpreted as a weak signal of the growing importance of the search company. My argument, here, is that if a web geek

²⁹ Raik-Allen, Georgie. 17.12.1998. Search Engines Graduate to funding. Red Herring.

³⁰ My Cyberlife: Randy Cassingham. 14.12.1998. Rocky Mountain News.

³¹ Marshall, Robin. 15.12.1998. Don’t take it out on your PC. The Christchurch Press.

³² Plugged In. 21.12.1998. Denver Post.

³³ Googly Eyes. 22.1.1999. Washington Post.

³⁴ 40 Webmasters Master a Research Challenge. 11.1.1999 Washington Post.

³⁵ Hafner, Katie. 22.7.1999. I Link, Therefore I Am. A Web Intellectuals Diary. New York Times.

Table 1. Google in the press in January and February 1999 (Source: Factiva) 1.1.1999 *Online:* Internet Search Engine Update,

- 1.1.1999 *Computer Shopper:* Hot off the Wire: Search tools and portals seek more accurate results
 11.1.1999 *Washington Post:* 40 Webmasters Master a Research Challenge
 12.1.1999 *USA Today:* Changing shape of the Web in '99
 21.1.1999 *Law Office Technology Review:* Web of the Week
 21.1.1999 *The Guardian:* NetWatch – World Web News in Brief
 22.1.1999 Stanford University: Stanford U. grads launch search engine Google.com
 22.1.1999 *Washington Post:* Googly Eyes
 24.1.1999 *Washington Post:* Business at Cyberspeed; Brainstorms Becomes Quick Internet Hit
 25.1.1999 PR Newswire: Northern Light is Now the Largest Search Engine Database on the Web
 26.1.1999 *Roanoke Times & World News:* County Library has Magazine-browsing computer service
 27.1.1999 *CMP TechWeb:* Google.com: Next Brainchild To Go Big?
 1.2.1999 *Information World Review:* Feeling lucky?
 1.2.1999 *InfoWorld:* The Web Hotlist Web sites worth checking out
 1.2.1999 *Insight Magazine:* Overcoming InfoGlut.com
 3.2.1999 *Bangkok Post:* Internet Site of the Week
 7.2.1999 *The Economic Times:* Search engines with smarts
 8.2.1999: *Business Week:* Search engines with smarts. A number of new Web sites make it easier to find those elusive facts
 9.2.1999 *PC Magazine:* The Top 100 Websites: Search Engines
 18.2.1999 *The Toronto Star:* MP3 news moving fast and furious
 18.2.1999 *The Guardian:* How to be a happy hunter
 22.2.1999 *Newcastle Herald:* Express Delivery
 22.2.1999 *Newsweek:* Free PCs ... for a Price : A clever scheme raises the question of whether people or advertising come first on the Web.
 22.2.1999 *Washington Post:* Search, and Now You Find the Right Stuff
 23.2.1999 *The Grand Rapids Press:* Next-generation search engines help job seekers

(intellectual) adopts a new web service soon after start-up, and ranks it as one of the best, there's a good chance other surfers will follow suit.

On the basis of the digital news archives of Factiva and *The New York Times*, one could argue that newspapers of record did not understand the potential of Google until 2002. For example, in one January 2000 article, Google was even seen as a “cyborg”. Using unnamed sources, “most information scientists”, the reporter concluded that Google’s web page ranking technology was not a good one, but only the “tyranny of the majority”.³⁶

In the context of the post “dot-com bubble” burst, 2000-2001, mainstream media journalists were exceptionally careful in writing about the future potential of new internet companies. A secondary factor, pertinent to Google, is that as Google was

³⁶ Guernsey, Lisa. 29.1.2000. *The Search Engine as Cyborg*. The New York Times.

a private company until 2004, it did not have to publicly disclose its financial data that precisely. Indeed, Google's strategy has inherently been one of secrecy. According to *The New York Times* in 2006:

*Google's inclination to secrecy began in its days as a private company in an effort to keep its rivals from determining the profits it was making from Web search advertising. But its culture of secrecy has grown to pervade virtually all of its dealings with the news media and even its business partners.*³⁷

The same *New York Times* journalist, who wrote the critical article, in 2000, about search engines as cyborgs, had a slight change of tone by April 2002, writing that "Google looks like the king of search engines these days."³⁸ In another, more detailed article, a couple of days later, Saul Hansel wrote that Google was "Silicon Valley's hottest private company". He argued in the headline that *Google's Toughest Search Is for a Business Model*.

*But the bigger question is whether Google has the scale to capture a viable share of the search advertising market. In other words, can Google create a business model even remotely as good as its technology?*³⁹

In essence, these were the most important questions for Google at that time and the keys to beat the competitors in search business. Hansel was also able to make a fairly good prediction, of the near future of the company, based on weak signals he was able to detect while gathering information for his article.

And the whisper is that when Google finally does go public, probably in the next year or so, it will make its debut with a multibillion dollar valuation.

One can argue that the *New York Times* serves as a proxy for U.S. news in general, but not in the case of Google, because it was not until 2002 that paper published its first Google oriented article. Surprisingly, the *Washington Post* was in the forefront with its Google stories.

On a side note, I would argue that Hansel's article about Google for the *New York Times*, in 2002, and the article co-authored with John Markoff are excellent examples of innovation journalism.

In the last quarter of 1998, 13 stories were published mentioning Google. A year later the number of the news was 534, and in 2000 the number of articles

³⁷ Markoff, John and Hansel, Saul. 14.6.2006. *Hiding in Plain Sight, Google Seeks More Power*. The New York Times.

Krazit, Tom. 8.5.2009. Google Chrome ads coming to TV. CNET.com.

³⁸ Guernsey, Lisa. 4.4.2002. *Upstart Search Engines Try to Topple Google*. The New York Times.

³⁹ Hansel, Saul. 8.4.2002. *Google's Toughest Search Is for a Business Model*. The New York Times.

mentioning Google by name totalled 2142. No wonder, the company did not need any paid advertising to create its brand.

Google offers a valuable starting point for analysing Facebook and Twitter.

2.2 Facebook – since 2004

According to the Wikipedia the advent of Facebook came about as a spin-off of a Harvard University version of ‘Hot or Not’ called Facemash. Mark Zuckerberg founded "The Facebook", originally located at thefacebook.com, on February 4, 2004.⁴⁰

The first article mentioning Facebook was dated March 5th 2004: “Stanford U.: *Web site allows students to make friends from faces in the crowd*” (Factiva). The article was circulated by U-Wire (University Wire), which supplies articles from more than 250 college newspapers in 47 states in the U.S.

In the U-Wire article Zuckerberg said that:

‘There has been a bunch of hype at Harvard for the last few months about the administration putting together an online facebook for everyone in the school,’ Zuckerberg said. ‘I got tired of waiting for them to finally put it up, so I just threw this site together myself.’

According to the article Zuckerberg launched the site on February 6th at Harvard University, February 25th at Columbia University, February 26th at Stanford University and February 29th at Yale University. He predicted also the future of the service: “In the future we may sell ads to get the money back, but since providing the service is so cheap, we may choose to not do that for a while.” Interestingly, the first Facebook article was published at Stanford, not Harvard. Furthermore, the business model of selling advertising space was mentioned from the beginning.

The first mainstream news article mentioning Facebook was published by Associated Press Newswire in April 2004. The article was about a New York University student transferred to campus housing after several months of living in the library. In the article the student used the phrase “adding me to facebook”.⁴¹ From the weak signal’s point of view, there was not enough information yet to draw any conclusions about the coming social changes via Facebook.

The *State Journal-Register*, the oldest newspaper in Illinois, was the first to introduce Facebook to its audience in June 2004. The Facebook network had

⁴⁰ <http://en.wikipedia.org/wiki/Facebook>, 11.5.2009.

⁴¹ Matthews, Karen. 27.4.2004. *NYU student transferred to campus housing after several months of living in library*. Associated Press Newswire.

spread to 36 schools with more than 170,000 members, and its plan was to include more than 100 schools and 500,000 members by the Fall.⁴²

The next newspaper to publish an article about Facebook was the *Boston Globe* in September 2004. The article was about the rivalry and resulting lawsuit between college-networking websites Facebook and ConnectU.⁴³ The article started with this evaluation:

*Few trends have swept college campuses with the speed and force of Thefacebook.com, a website that allows students to create a personal page and then network with classmates.*⁴⁴

According to the article, by September 2004 Facebook had 284,000 users at 99 colleges. One user, Margarita Linets, a Boston University sophomore, explained her experiences in the article like this:

I thought it was stupid in the beginning, and then I got addicted. Now I check it first thing every morning.

With hindsight, I argue these remarks proved to be a weak signal about the social change, first among the American students, and later almost globally.

Table 2. Facebook in the press in November and December 2004 (Source: Factiva)

28.11.2004: <i>Pittsburgh Post-Gazette</i> : Student network provides means to win new 'friends' with click of mouse
28.11.2004: <i>Pittsburgh Post-Gazette</i> : Winning New 'friends' with a click web site
1.11.2004: <i>The New York Times</i> : On Campus, Hanging Out By Logging On
4.12.2004: <i>The Patriot Ledger</i> : A parent's worry: The downside of instant messaging
13.12.2004: <i>The San Francisco Chronicle</i> : Log on, link up; Social networking sites try to find new ways to keep users interested
20.12.2004 <i>The Oregonian</i> : Facebook creates college fad for 'biggest' face on campus; an online service lets students pile up some recognition
21.12.2004 <i>Journal Gazette</i> : College students meet face to Web Interactive directory links universities
24.12.2004 <i>Charleston Gazette</i> : Networking goes cyber for college students
26.12.2004: <i>The Richmond Times-Dispatch</i> : On campuses everywhere, students grow accustomed to their Facebook
27.12.2004: <i>The Columbus Dispatch</i> : Online community: College students swarm to www.thefacebook.com
28.12.2004: <i>The Washington Post</i> : Click Clique: Facebook's Online College Community

⁴² Jarosz, Francesca. 29.6.2004. *Connecting on campus ; Facebook.com is the latest way to make friends - and waste time*. The State Journal-Register.

⁴³ Later also USA Today followed the lawsuit story: *ConnectU, Thefacebook face off*. 24.11.2004. USA Today.

Newsweek published the first magazine article briefly mentioning Facebook in August 2004⁴⁵, Table 2 shows how other newspapers followed.

TV news networks first aired an article about Facebook in May 2005. CBS News: Evening News with John Roberts focused on the romantic side of using Facebook.⁴⁶ CNN followed in July 2005⁴⁷, and NBC News August 2005.⁴⁸ I would argue that inclusion on national TV News is a strong signal.

Interestingly, during Facebook's first two years, almost 50 percent of the stories about the web-site were published via universities' own print media and circulated by UWire, a service founded in 1994. Indeed, Facebook was initially only available to college and university students in the U.S.⁴⁹.

Facebook opened a High School version in September 2005, and later expanded membership eligibility to employees of several companies, including Apple and Microsoft. Later, in September 2006, Facebook was opened for anyone. The change of name from thefacebook to facebook.com occurred in 2005.⁵⁰

The first international article mentioning Facebook was published by the *The New York Times* owned *International Herald Tribune*, in September 2005. The article was actually about the popularity of MySpace, but briefly mentioned Facebook.⁵¹

*According to Nielsen/NetRatings, users spend an average of 1 hour 43 minutes on the site each month, compared with 34 minutes for **facebook.com** and 25 minutes for Friendster.*

*Internet commerce was then still recovering from the bursting of the bubble in 2000, although social networking sites like Friendster and **Facebook** had fad status with users, who joined to track down old friends or troll for dates.*

⁴⁴ Bombardieri, Marcella. 17.9.2004. *Online Adversaries: Rivalry between college-networking websites spawns lawsuit*. The Boston Globe.

⁴⁵ Ma, Olivia. 2.8.2004. Education: Need Help? Check Down The Hall. *Newsweek*.

⁴⁶ Roberts, John and Hughes, Sandra. 15.5.2005. *Coeds Hooking Up Online*. CBS News: Evening News with John Roberts.

⁴⁷ CNN Live. 20.7.2005. *Internet Social Club Popular Among College Students*.

⁴⁸ NBC News. 15.8.2005. Interview: Seppy Basili of Kaplan Test Prep and Admissions discusses how technology has changed campus life.

⁴⁹ Warger, Tom. 1.2.2005. *Internet 2005: the gorilla gets bigger: even as it grows more useful, the internet is still an unwieldy beast*. University Business. Volume 8; Issue 2

⁵⁰ Lacy, Sarah. 12.9.2006. *Facebook: Opening the Doors Wider*. Business Week; <http://en.wikipedia.org/wiki/Facebook>, 13.5.2009.

⁵¹ Williams, Alex. 1.9.2005. *MySpace: A site with 26 million 'friends'*. International Herald Tribune.

Overall, these kinds of listings and comparisons were typical for the early stories mentioning new services and companies. Also, the more users the services attracted the more attention and space they achieved in journalism. Briefly, numbers matter and make news.

In Britain, *The Guardian* published the first article about Facebook, in November 2005. Most importantly, *The Guardian* article was the first to mention that Facebook was going international; the first signal that Facebook was aiming to be a global company. In 2005, Facebook expanded its service to Ireland, Switzerland, France, Canada and Mexico, but initially only at English-speaking universities.⁵²

However, already in February 2005, Facebook was available in Britain at Cambridge and Oxford Universities. The British press was half a year late with news about Facebook entering Britain. I would argue that this is an example of the gap between universities and the news flow of main stream media.

Interestingly, other than Stanford University's own news outlets, the local Silicon Valley press did not initially follow the Facebook article that well. The *San Francisco Chronicle* did, however, publish an article mentioning Facebook in December 2004 (Factiva), but did not mention the company has just moved operations to Palo Alto in June 2004. The article still linked Facebook to Harvard. Furthermore, the local press was cautious about writing too much about "social networking", because there were already some start-ups cases that had not worked so well. There was not, at the time, a real social networking success story; there were however, some weak signals, for example, from MySpace, Los Angeles.

*Social networking isn't a new idea. SixDegrees.com, a company founded in 1996, originated the idea, but it failed to catch on ... The number of unique monthly U.S. visitors to Friendster has hit a plateau at 945,000, down by half from a year ago, according to ComScore Networks. In contrast, MySpace.com's monthly audience has grown steadily, to 3.4 million ... New niche players have also emerged, including Thefacebook and CampusNetwork, both of which are focused on colleges. During the past year, they have created services individually tailored for hundreds of schools, including UC Berkeley and Stanford.*⁵³

The *San Francisco Chronicle* did not mention Facebook again for almost a year. The tone of the voice about social networks had changed from cautious to more positive, even enthusiastic: "Social networking has become one of the most popular applications on the Internet in the wake of the dot-com bust."⁵⁴

⁵² *Facebook.com: Social networking site helps college students around the world make a connection.* 24.11.2005. *The Guardian*.

⁵³ Kopytoff, Verne. 13.12.2004. Log on, link up; Social networking sites try to find new ways to keep users interested *The San Francisco Chronicle*.

⁵⁴ Harmanci, Reyhan. 23.10.2005. *Online networking clicks among friends. And investors sense profits from Web sites linking people.* *The San Francisco Chronicle*.

During the 2005, the numbers of the social network users rose dramatically; MySpace had 33 million and Facebook 8.3 million. Also the media giant, News Corporation invested in social networking by acquiring the leader in the field, MySpace, in September 2005 for \$580 million.

The *San Francisco Chronicle* predicted, in the 2005 article, that Facebook would be the next success story from the Valley.

By serving the needs of a specific population, creating a platform for users to generate content and enabling advertisers to reach a niche audience, Facebook has the makings of an Internet 2.0 giant.

In the first year of operation, 2004, 77 news stories mentioned Facebook; in 2005, the figures had increased to 724, and in 2006 to 5813.

The subject of this paper's third case study, Twitter, started in 2006.

2.3 Twitter – Since 2006

According to many sources the microblogging service Twitter was initially only a side project for podcasting company Odeo. *Business 2.0* disclosed that Twitter was created in two weeks during March 2006 in San Francisco. The service is based on users' updates known as tweets. Tweets are text-based posts of up to 140 characters, which is why Twitter is called the "SMS of the Internet".⁵⁵

In contrast to the Facebook case, the local media, especially the *San Francisco Chronicle* played an important role in Twitter by publishing the very first news article *Cool Web 2.0 Sites* about its service in August 2006.⁵⁶ Arguably, the *San Francisco Chronicle* had, after ignoring Facebook and other so called 'Web 2.0' companies in its news agenda, changed its focus. The paper began to report about companies that had not made yet the cover of magazines, indeed the article emphasized the main criteria for the journalists who chose companies for the article was that "the companies were something one probably haven't heard of before". Twitter was one of those. The others were: stumbleupon.com, imeem.com, slide.com, meebo.com, popurls.com, dabble.com, pandora.com, eyespot.com, songbirdnest.com, and revver.com.

Being more precise, the *San Francisco Chronicle* wrote that Twitter is:

A text messaging service that lets people send notes to groups. "You can send something to one number and it's distributed to other people," said Ryan Freitas, an interaction designer at Adaptive Path in San Francisco. "It tells people where you are. It's kind of like microblogging. It's really a lot of fun.

⁵⁵ Lev-Ram, Michal; Copeland, Michael V; Alsever, Jennifer; Myser, Michael; Haiken, Melanie; Hamner, Susanna; Irwin, Mary Jane; Brandon, John. 1.1.2007. *What's Next: The Top 10 Products, Ideas, and Trends*. Business 2.0: <http://en.wikipedia.org/wiki/Twitter>, 13.5.2009;

⁵⁶ Fost, Dan and Lee, Ellen. 28.8.2006. *Cool Web 2.0 Sites*. The San Francisco Chronicle.

Part of Web 2.0 is that it's fun and it's a utility combined with one another, so people enjoy what they're doing while they're getting something out of it."

Surprisingly, the next article about Twitter was in a British special news service called Content Wire in October 2006, which mentioned that an audioblogger service run by Odeo was closing down. At the end of the article is an interesting "add" from Odeo:

*'Odeo would like to extend a huge thank you to everyone who has tried Audioblogger. If you are interested in keeping up with our other blog-friendly projects, please have a look at **Twitter.com** and our customizable audio players'.*

The Washington Post and *The Guardian* both published the same article briefly mentioning Twitter in November 2006. Michael Kinsley's article was about "the online ego monsters", and he wrote at the end of the article "for the ultimate in solipsism, check out twitter.com, a site where you can answer the question, 'What are you doing?'"⁵⁷

Another surprise is that a local British newspaper the *Derby Evening Telegraph* was the fourth in the world to publish an article mentioning Twitter with a nice prediction:

*Twitter (www.twitter.com) is the latest web craze, combining text message technology with the immediacy of weblogs and the fun of keeping in touch with friends. Odeo hasn't been that successful, but the shiny newness of Twitter has a much brighter promise for the future.*⁵⁸

Other British publications were headlining Twitter in December 2006: the *Birmingham Post*, Make a complete Twit of yourself ... and reap the benefits (5.12.) and *The Times*, twitter.com;The click (12.12.).

The Silicon Valley magazine, *Business 2.0* predicted the next top 10 products, ideas, and trends in January 2007.⁵⁹ One of those was Twitter:

*It's too early to tell which brand of user-generated content will be the Web 2.0 phenomenon of 2007, but placing an early bet on **Twitter** might be a good*

⁵⁷ Kinsley, Michael. 28.11.2006. *Like I Care*. The Washington Post; Kinsley, Michael. 28.11.2006. *The online ego monster: Despite the alleged pull of anonymity, the web swarms with people who want to share everything*. The Guardian.

⁵⁸ *Get your mates a-twitter with latest web craze*. 2.12.2006. Derby Evening Telegraph

⁵⁹ Lev-Ram, Michal; Copeland, Michael V; Alsever, Jennifer; Myser, Michael; Haiken, Melanie; Hamner, Susanna; Irwin, Mary Jane; Brandon, John. 1.1.2007. *What's Next: The Top 10 Products, Ideas, and Trends*. Business 2.0.

move. The free service, which combines the instant voyeurism of personal blogs with the brevity of text messages, appears to be catching fire, doubling its user base every month. It had 10,000 users by December and expects to hit 100,000 by April.

In the *Business 2.0* article, Twitter creators Jack Dorsey and Evan Williams, who created Blogger and sold it to Google in 2003, were introduced to the readers. According to the article, Dorsey was writing software for couriers to enable them to send short status updates. Later he figured the same idea could work for people's

Table 3. Twitter in the press in January 2007 (Source: Factiva)

1.1.2007 <i>The Guardian</i> : Technology and Media
3.1.2007 <i>National Post</i> : Click Here
8.1.2007 <i>The Palm Beach Post</i> : Internet is usurping tv, film, or the world as we know it
8.1.2007 <i>The Palm Beach Post</i> : Top 10 Tech Predictions for 2007
15.1.2007 <i>St. Petersburg Times</i> : Tech top 10
27.1.2007 <i>Star-Tribune</i> : Do you Twitter? You will
14.2.2007 <i>The San Francisco Chronicle</i> : Tech's younger generation leans on Web 2.0 for love
16.2.2007 <i>The Wall Street Journal Asia</i> : Loose Wire: Sign up for nothing --- The new, social Web sparks an account-registering frenzy
25.2.2007 <i>The Oregonian</i> : Josh Bancroft on the Web

personal lives.

The list of news in Table 3 is a good example of the pace the news was still maintaining in Spring 2007.

Interestingly, *The Guardian* in Britain first noticed the link between Twitter and politics in March 2007 reporting US Democratic presidential candidate John Edwards was an early adopter of Twitter.com.⁶⁰

Twitter in the context of news coverage was neither so newsworthy nor at the same level in the public sphere as either Google or Facebook. In the nine months of Twitter's first year, 2006, only ten stories were published; in 2007 the number rose to 213 and the breakthrough then came in 2008 with 1413 articles.

At this point, I will continue to develop the theory of weak signals in innovation journalism by analyzing quantitatively the total news flows mentioning Google, Facebook, and Twitter.

⁶⁰ What is twitter, and is there any reason I should care? 15.3.2007. The Guardian.

3 The News Evolution Model

Next, I will add three charts in order to illustrate the quantity of the news flows for Google (Figure 1), Facebook (Figure 2) and Twitter (Figure 3) in the years since their start-up.

Figure 1: Google News-flow 1998-2008

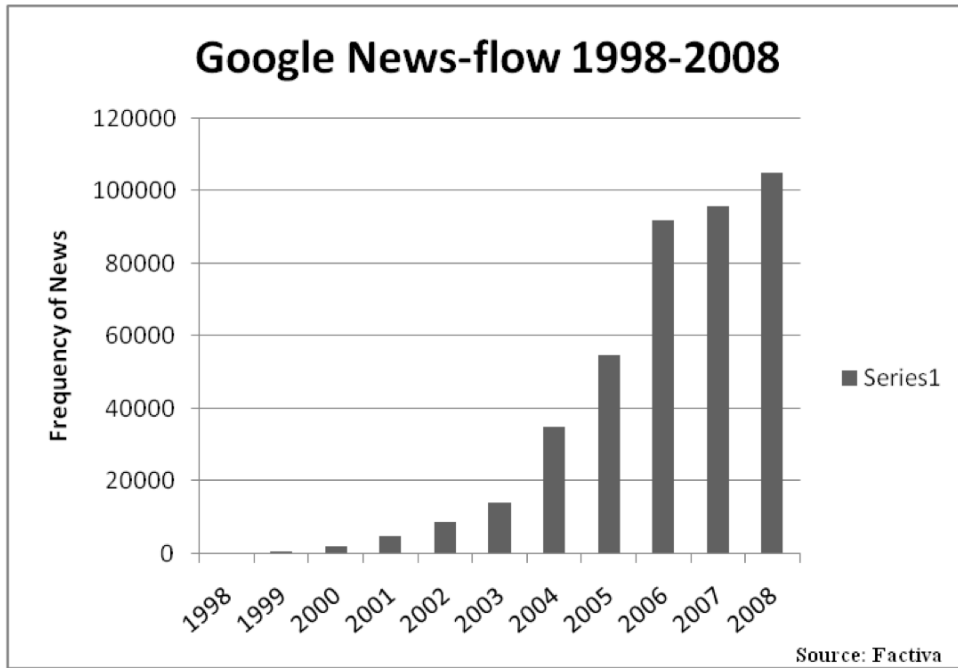


Figure 2. Facebook News-flow 2004-2008

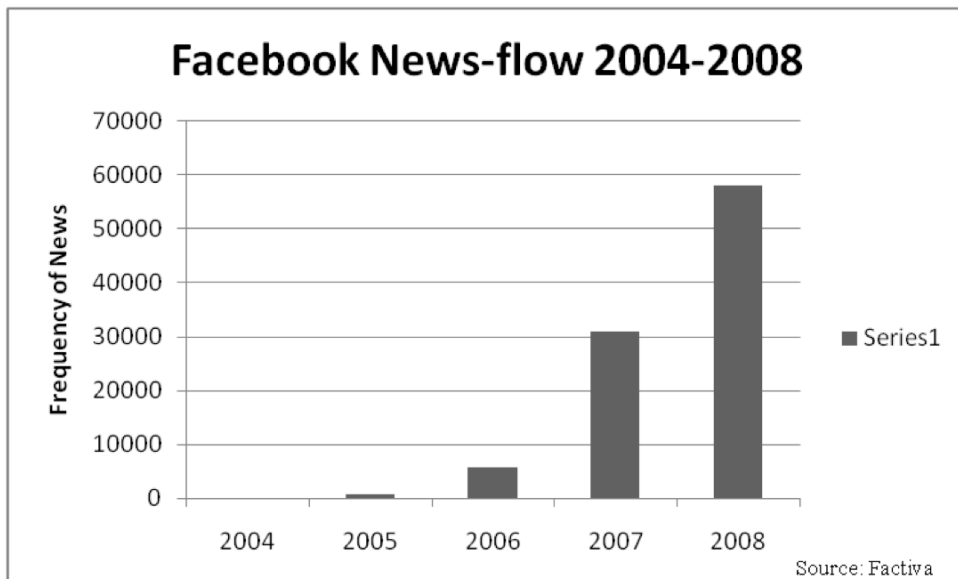
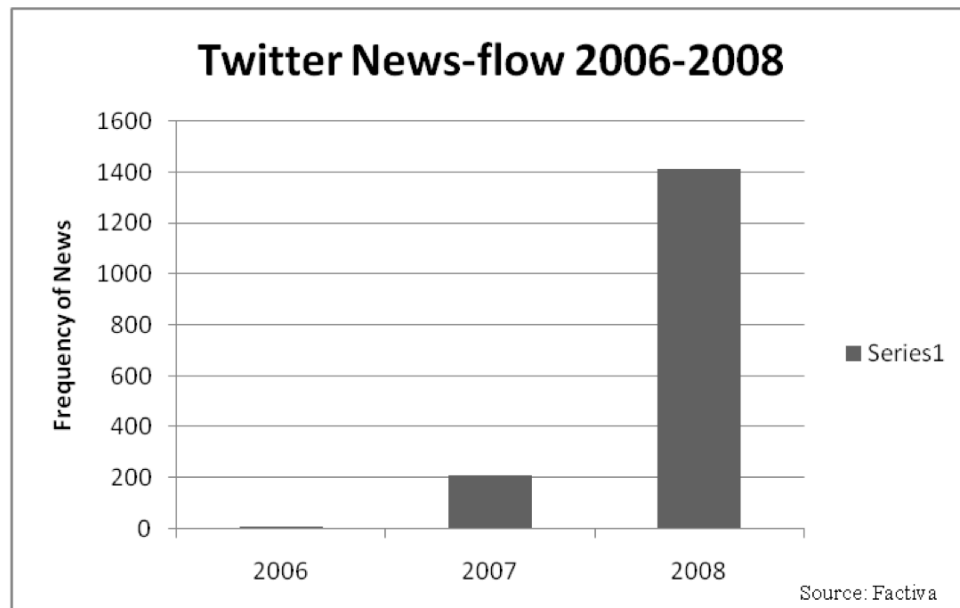


Figure 3. Twitter News-flow 2006-2008

I contend variations in the frequency of news articles are indicative of weak signals of coming changes. Moreover, a year on year increase in the frequency of articles referring to a company indicates the company has either achieved a level of success or at the least gained public attention. The inverse argument is such an increase is an indication of journalistic ‘hype’ that was so prevalent during the ‘dot.com bubble’ towards the end of 1990’s. This is a valid concern, but by combining news flows with qualitative text analyses and by being sufficiently critical, researchers can find weak signals of coming change, and even prevent ‘bubbles’ by conducting good innovation journalism.

Based on the empirical findings of this paper I have created inductively a model (Table 4), which illustrates different levels of signals, and the evolution of journalism in start-up company cases. The *News Evolution Model* shows six different signal levels of which the two first levels are defined as ‘weak’.

Table 4. The News Evolution Model

News items per year	Signal strength	Print Media	TV media	Company development	Financial	Competitive
0-9	Primary Weak	Brief mentions Local outlets Trade publications [low probability of national print media]	Zero	Start-up 'early' phase	Shoestring or Informal funds Developers' private funds	Untried and untested Alpha version
10-99	Secondary Weak	Headlines National 'local' print media ¹ [1 st appearance in international print media]	Zero	Start-up Funding phase	Formal funds Venture capital	Web intellectual and 'geek' awareness Beta version Roll-out version
100-999	Strengthening	Headlines National 'local' media National 'leaders' in print media Regular appearance in international print media	1 st appearance on national news	CRITICAL SURVIVAL PHASE Development phase of service Development of Brand Membership acquirement Sales of advertising space	Development of business model Advertising revenue Profit potential	Core national awareness National market testing Fringe international awareness
1,000-9,999	Strong Case: Twitter	Almost daily appearance in national Almost daily appearance in international outlets	Almost daily appearance on national news Regular, geographically haphazard, global news	High degree of success-potential Brand name success (name enters language)	Development of sustainable advertising revenue Development of profitable business model	International (international language development) market testing Sustained national membership Increasing international membership
10,000-99,999	Very strong Case: Facebook	Daily appearance in national Daily appearance in international outlets Journalists appointed to 'follow' company	Daily appearance in national and international outlets Journalists appointed to 'follow' company	Commercial success National market leader	Independent sustainable, close to stock market entry	Sustained innovation Sustained global awareness
100,000 +	Hyper-strong Case: GOOGLE	Sustainable media awareness	Sustainable media awareness	World market leader	Stock market entry	Monopolistic and subject to anti-trust actions

1 – National 'local' print media refers to high volume papers with a predominantly local audience

The *News evolution model* can also be used to measure awareness of companies. For example, over 10 000 stories a year infers that a company has a strong worldwide awareness.

On the basis of the *News Evolution Model*, the three companies discussed in this paper may be categorized, in 2008, as Google – hyper-strong signal, Facebook – very strong signal, and Twitter – strong signal.

4 Discussion and Implications

This article has been a modest attempt to explore three of Silicon Valley's innovative companies Google, Facebook, and Twitter in news. Specifically, this article had two purposes. The first was to illuminate the news flows of three Silicon Valley companies, particularly during the start-up 'early' phase. The second was to offer a model for better understanding the evolution of innovation news.

The three companies had divergent media experiences during the early phase of start-up. Google was first mentioned by *Business Week* magazine, while Twitter was first recognized by local Silicon Valley news media the *San Francisco Chronicle*. Facebook, by contrast, received barely any traditional news media attention and was initially dependent on Stanford University's own news outlets.

Both Google and Twitter entered international news media markets quite early in their development. Britain is the gateway to the Europe; India and Thailand the gateways to Asia. Surprisingly in Google's case, *the Washington Post* was a better source for weak signals than *The New York Times*.

Google entered the news only couple of weeks after it was incorporated. It can be argued that Stanford University's recent history (at the time) of facilitating search engine companies helped Google to enter to the public sphere so early. However, after this 'jump-start', Google tried to keep a lower profile in its media relations. Journalists were not granted access to the company's Mountain View headquarters, Googleplex, before the first Press Day in 2005, and by avoiding TV advertising until May 2009.⁶¹ This is an ironic policy change since the company's main source of revenue has been advertisements.

Facebook is a good example of a company that did not receive a good level of press coverage in the start-up phase. There are three possible explanations: 1) the service started in university campuses, and maintained the only-for-students status for a long period, 2) social networking was not yet a success story yet, indeed, failures of the first social networking companies were still fresh in the memory, and 3) the burst of the 'dot com bubble' cautioned journalists, for some time, against creating similar bubbles. Only after News Corporation entered the social networking business in the Fall of 2005, did press coverage about the social

⁶¹ Krazit, Tom. 8.5.2009. Google Chrome ads coming to TV. CNET.com.

networking start to increase. The lesson for the innovation journalist is to look more carefully at the campuses and students life. Maybe Europe needs its own UWire.

The case of Twitter illustrates at least a change in the way the *San Francisco Chronicle* wrote about start-ups. The paper introduced Twitter to the world by publishing the first article. The local press in Britain was also quick to learn about Twitter. It is possible that some reporters' personal interests influenced this surprisingly early reporting.

The data reported here was collected from two digital news archives: Factiva and The New York Times. The empirical findings of this paper are the basis a theoretical *News Evolution Model*, which was created to illustrate the evolution of news in the case of start-up companies. The model consists of six different levels: *first weak signals, weak signals, strengthening signals, strong signals, very strong signals, and hyper strong signals*.

The model infers that media news of a company (at start-up) could be interpreted as a weak signal when 99 or less news stories are published in a year. After this, if successful, the company often gains national and even international awareness.

Finally, a point worth stressing is that Google, Facebook and Twitter were all quite similar cases in the context of success. A limitation of this study is that no failures were chosen. Therefore, the question of unsuccessful cases might merit further investigating to test the *News evolution model*. Another weakness of this study is that weblogs and other non-traditional online media were not researched due to the lack of solid digital archives. In order, to arrive at a more fully informed understanding of weak signals in innovation journalism, researchers should add online news outlets and aggregators like TechCrunch, TechMeme, Walleywag, and Google News to the list of sources.

My last argument, therefore, is that current contemporary news is as equally valid for detecting weak signals as digital news archives like Factiva.

6 Acknowledgements

First of all, I want to thank Marcus Denton of OÜ Derettens for proof-reading the text and all the valuable corrections, and recommendations, especially considering the News evolution model. I also wish to thank Marc Ventresca and other commenters of the paper at the Sixth Conference on Innovation Journalism at Stanford. Finally, many thanks to the Finnish Funding Agency for Technology and Innovations, and Helsingin Sanomat Foundation for funding the research.

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