

Newton Lee

# Facebook Nation

Total Information Awareness

*Second Edition*

 Springer

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Newton Lee  
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ISBN 978-1-4939-1739-6                      ISBN 978-1-4939-1740-2 (eBook)  
DOI 10.1007/978-1-4939-1740-2  
Springer New York Heidelberg Dordrecht London

Library of Congress Control Number: 2014951523

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*To peace, love, and freedom*



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# About the Book

Facebook’s psychological experiments and Edward Snowden’s NSA leaks epitomize a world of increasing information awareness in the social media ecosystem. With over a billion monthly active users, Facebook as a nation is overtaking China as the largest country in the world. President Barack Obama, in his 2011 State of the Union Address, called America “the nation of Edison and the Wright brothers” and “of Google and Facebook.” U.S. Chief Information Officer Steven VanRoekel opines that America has become a “Facebook nation” that demands increased transparency and interactivity from the federal government.

Ubiquitous social networks such as Facebook, Google+, Twitter, and YouTube are creating the technologies, infrastructures, and big data necessary for Total Information Awareness – a controversial surveillance program proposed by DARPA after the 9/11 attacks. NSA’s secret PRISM program has reinvigorated WikiLeaks founder Julian Assange’s accusation that “Facebook is the most appalling spying machine that has ever been invented.”

Facebook CEO Mark Zuckerberg once said, “We exist at the intersection of technology and social issues.” This book offers discourse and practical advice on the privacy issue in the age of big data, business intelligence in social media, e-government and e-activism, as well as personal total information awareness. This expanded edition also includes insights from Wikipedian Emily Temple-Wood and Facebook ROI experts Dennis Yu and Alex Houg.



## About the Author

**Newton Lee** is CEO of Newton Lee Laboratories LLC, president of the Institute for Education, Research, and Scholarships, adjunct professor at Woodbury University's School of Media, Culture & Design, and editor-in-chief of ACM Computers in Entertainment. Previously, he was a computer scientist at AT&T Bell Laboratories, senior producer and engineer at The Walt Disney Company, and research staff member at the Institute for Defense Analyses. He was founder of Disney Online Technology Forum, creator of Bell Labs' first-ever commercial AI tool, and inventor of the world's first annotated multimedia OPAC for the U.S. National Agricultural Library.

Lee graduated Summa Cum Laude from Virginia Tech with a B.S. and M.S. degree in Computer Science, and he earned a perfect GPA from Vincennes University with an A.S. degree in Electrical Engineering and an honorary doctorate in Computer Science. He is the co-author of *Disney Stories: Getting to Digital*; author of the Total Information Awareness book series including *Facebook Nation* and *Counterterrorism and Cybersecurity*; coauthor/editor of the Digital Da Vinci book series including *Computers in Music* and *Computers in the Arts and Sciences*; and editor-in-chief of the *Encyclopedia of Computer Graphics and Games*.

**Alex Houg** is CEO of Portage Co. and former CEO of BlitzMetrics.

**Emily Temple-Wood** is a cofounder of WikiProject Women Scientists and an Individual Engagement Grantee of the Wikimedia Foundation.

**Dennis Yu** is CTO at Portage Co., former CEO of BlitzLocal.com, and former technical marketer at Yahoo!



**Part I**  
**Prologue**

# Chapter 1

## From 1984 to Total Information Awareness

*“Information is the oxygen of the modern age. It seeps through the walls topped by barbed wire, it wafts across the electrified borders, the Goliath of totalitarianism will be brought down by the David of the microchip.”*

– President Ronald Reagan (June 1989)

*“One of my heroes, Edwin Land of Polaroid, said about the importance of people who could stand at the intersection of humanities and sciences, and I decided that’s what I wanted to do.”*

– Apple and Pixar co-founder Steve Jobs (2009)

*“We exist at the intersection of technology and social issues.”*

– Facebook CEO Mark Zuckerberg (September 2011)

*“It’s important to recognize that you can’t have 100% security and also then have 100% privacy and zero inconvenience.”*

– President Barack Obama (June 2013)

*“Understanding who you serve is always a very important problem, and it only gets harder the more people that you serve.”*

– Facebook CEO Mark Zuckerberg (April 2014)

*“The NSA might still be watching us. But now we can watch them.”*

– Rep. Jim Sensenbrenner (May 2014)

### 1.1 President Ronald Reagan in 1984

In April 1984, President Ronald Reagan signed the National Security Decision Directive (NSDD) 138: Combating Terrorism, which authorized the increase of intelligence collection directed against groups or states involved in terrorism (1). I was a graduate student at Virginia Tech majoring in computer science with specialization in artificial intelligence (AI).

A year earlier in January 1983, I received a surprise letter from the White House signed by President Reagan himself. The 4-page letter opened with “Dear Mr. Lee: I am grateful to you, more than I can express in a letter, for your wonderful support of our Congressional Committee.” (See Fig. 1.1) Although I was neither a registered Republican nor Democrat at the time, I was truly delighted by the President’s letter.



RONALD REAGAN

January 5, 1983

Mr. Newton Lee  
Rm 133  
Harrison Hall Vu  
Vincennes, Indiana 47591

Dear Mr. Lee:

I am grateful to you, more than I can express in a letter, for your wonderful support of our Congressional Committee.

I know you worked extremely hard in this last election to protect the progress we have made in rebuilding our military strength and restoring economic prosperity.

*(some original text has been omitted for this excerpt)*

Your faith and support have meant so much to me in the past. I pray I can count on you again to make a generous contribution to help our Party and our nation.

Sincerely,

Ronald Reagan

RR/ces

**Fig. 1.1** Excerpt of a Letter from President Ronald Reagan

In the summer of 1984, then Virginia Tech professor Dr. Timothy Lindquist introduced me to Dr. John F. Kramer at the Institute for Defense Analyses (IDA), a nonprofit think tank serving the U.S. Department of Defense (DoD) and the Executive Office of the President (2). Partly motivated by President Reagan's letter, I accepted the internship and became a research staff member at IDA. My first summer project was to assist in the drafting of the Military Standard Common (APSE) (Ada Programming Support Environment) Interface Set (CAIS) (3). My second project in the winter semester was to design a counterterrorism software program for a multi-agency joint research effort involving the Defense Advanced Research Projects Agency (DARPA), National Security Agency (NSA), and Federal Bureau of Investigation (FBI).

As a co-pioneer of artificial intelligence applications in counterterrorism, I helped develop a natural language parser and machine learning program to digest news and articles in search of potential terrorist threats around the globe. Employing psychology and cognitive science, the prototype system thinks like a human in constructing small-scale models of reality that it uses to anticipate events (4).

The knowledge representation and data structures were based on “A Framework for Representing Knowledge” by MIT Artificial Intelligence Lab researcher Marvin Minsky (5). A similar idea was used in software by IBM and Baylor College of Medicine to digest thousands of research papers and then predict new discoveries that could help to develop new cancer drugs (6).

I joined AT&T Bell Laboratories in 1985 to further my research on artificial intelligence and expert systems. At Bell Labs, I conceived Dynamic Mental Models (DM2) as a general algorithm that combines analytical models and experiential knowledge in diagnostic problem solving, regardless of the problem domains (7). The algorithm mimics a human expert in formulating and using an internal, cognitive representation of a physical system during the process of diagnosis. In 1989, the U.S. Army Research Office studied DM2 for use in diagnostic support of complex modern weapons systems with encouraging results (8).

Inspired by Steve Jobs’ revolutionary NeXT machines, I switched my focus to multimedia applications in 1989. Jobs later told Walter Isaacson in an interview, “One of my heroes, Edwin Land of Polaroid, said about the importance of people who could stand at the intersection of humanities and sciences, and I decided that’s what I wanted to do” (9). Integrating AI, expert systems, natural language processing, and hypermedia, I developed on the NeXT Computer the world’s first annotated multimedia Online Public Access Catalog (OPAC) at Virginia Tech Library Systems (VTLS) and the U.S. National Agricultural Library (10).

Despite NeXT’s limited commercial success, its NeXTSTEP operating system and object-oriented programming had a wide-ranging impact on the computer industry. Tim Berners-Lee at the European Organization for Nuclear Research (CERN) used a NeXT Computer in 1991 to create the first web browser and web server (11). NeXT also gained popularity at U.S. federal agencies including the Naval Research Laboratory (NRL), National Security Agency (NSA), Defense Advanced Research Projects Agency (DARPA), Central Intelligence Agency (CIA), and National Reconnaissance Office (NRO) (12).

In 1996, I switched my focus again, this time to the World Wide Web, when I joined Disney Online to build games, websites, social media, and search technology for The Walt Disney Company. Disney is an early adopter of the Internet as well as online communities. In 2000, I led a team in creating Disney Online Chat Studio and multiplayer games where children could engage in safe chats and send pre-screened messages to one another (13).

It was at Disney where I met Dr. Eric Haseltine whom I invited to my Disney Online Technology Forum in 2001 to give a talk on how a human brain reacts neurologically to stories. After the 9/11 terrorist attacks, Haseltine left his position as Executive Vice President of R&D at Walt Disney Imagineering to join the National Security Agency (NSA) as Director of Research in 2002. From 2005 to 2007, Haseltine was Associate Director for Science and Technology at the newly established Office of the Director of National Intelligence (ODNI). In collaboration with Georgetown University researchers (14), Haseltine and his successor Steve Nixon at ODNI oversaw the development of Argus, a biosurveillance AI program that monitors foreign news reports and other open sources looking for anything that could provide an early warning of an epidemic, nuclear accident, or environmental catastrophe (15).

## 1.2 Total Information Awareness

In an April 2002 statement, Dr. Tony Tether, then director of Defense Advanced Research Projects Agency (DARPA), informed the U.S. Senate Committee on Armed Services about the new establishment of the Information Awareness Office (IAO) headed by controversial ex-Navy Admiral John Poindexter, former U.S. National Security Advisor to President Ronald Reagan (See Fig. 1.2). IAO's charter was to "develop the information systems needed to find, identify, track, and understand terrorist networks and vastly improve what we know about our adversaries" (16). IAO was responsible for the Evidence Extraction and Link Discovery program, Wargaming the Asymmetric Environment program, and Total Information Awareness (TIA) program.

The American public was startled on November 9, 2002 by *The New York Times* headline: "Pentagon Plans a Computer System That Would Peek at Personal Data of Americans" (17). Total Information Awareness (TIA) prompted privacy concerns that the system would provide intelligence analysts and law enforcement officials with instant access to information collected from personal emails, phone calls, credit card records, medical records, banking transactions, travel documents, and other sources without any requirement for a search warrant.

In a March 2003 statement to the U.S. House of Representatives Armed Services Committee, Tether attempted to pacify the controversy by affirming that DRAPA's Information Awareness programs, including TIA, were not developing technology to maintain dossiers on every U.S. citizen or to assemble a giant database on



**Fig. 1.2** Official Seal of the Information Awareness Office (IAO)

Americans. Instead, TIA was designed as an experimental, multi-agency prototype network that enables law enforcement to collaborate, “connect the dots,” and prevent terrorist attacks (18). In spite of DRAPA’s final attempt to justify TIA by renaming Total Information Awareness to Terrorism Information Awareness (19), the U.S. Congress eliminated the funding for TIA and terminated the Information Awareness Office (IAO) in August 2003 (20).

However, TIA did not end in 2003.

In February 2008, the Federal Bureau of Investigation (FBI) awarded a nearly \$1 billion contract to Lockheed Martin to help create a “Next Generation Identification” (NGI) system – a massive database of people’s physical characteristics including fingerprints, palm prints, scars, tattoos, iris eye patterns, facial shapes, and other biometric information (21). “It’s the beginning of the surveillance society where you can be tracked anywhere, any time and all your movements, and eventually all your activities will be tracked and noted and correlated,” said Barry Steinhardt, then director of the American Civil Liberties Union’s Technology and Liberty Project (22).

In March 2008, a *Wall Street Journal* article reported that the National Security Agency (NSA) has been building essentially the same system as TIA. Siobhan Gorman wrote, “According to current and former intelligence officials, the spy agency now monitors huge volumes of records of domestic emails and Internet searches as well as bank transfers, credit-card transactions, travel and telephone records. ... The NSA uses its own high-powered version of social-network analysis to search for possible new patterns and links to terrorism” (23). The American Civil Liberties Union (ACLU) responded by accusing the NSA of reviving TIA to be an “Orwellian” domestic spying program (24).

Earlier in January 2008, Pulitzer Prize-winner Lawrence Wright wrote in *The New Yorker* an in-depth article about the U.S. intelligence community focusing on the Office of the Director of National Intelligence (ODNI) and the necessity for interagency communications – something that TIA was meant to facilitate. Wright observed, “The fantasy worlds that Disney creates have a surprising amount in common with the ideal universe envisaged by the intelligence community, in which environments are carefully controlled and people are closely observed, and no one seems to mind” (25).

While the Disney universe is confined to its theme parks and certain visiting hours, social networks such as Facebook, Google+, Twitter, and YouTube are reaching more than 1 billion people worldwide 24/7 in their workplaces, schools, homes, and even on the go with their mobile devices. The social networks are leading the way towards Total Information Awareness.

Looking back to the 60’s, DARPA initiated and funded the research and development of Advanced Research Projects Agency Network (ARPANET) that went online in 1969 (26). The success of ARPANET gave rise to the global commercial Internet in the mid-1990s and the new generation of Fortune 500 companies today including Amazon.com, Google, eBay, and Facebook.

As if life comes full circle in the 21st century, the ubiquitous social networks such as Facebook, Google+, Twitter, and YouTube are creating the technologies, infrastructures, and big data necessary for the DARPA-proposed Total Information

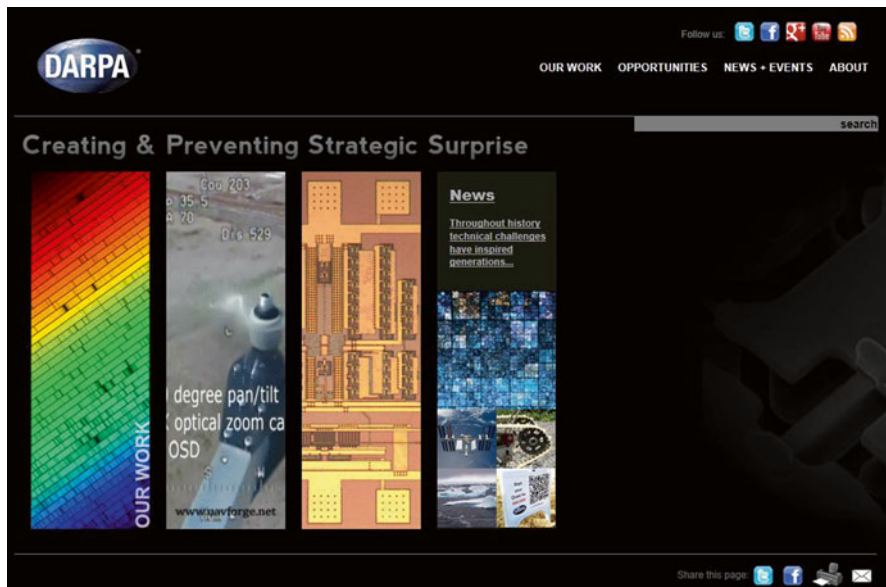


Fig. 1.3 Homepage of DARPA showing Facebook, Twitter, Google+, YouTube, et al.

Awareness program. Facial recognition, location tracking, ambient social apps on GPS-enabled devices, Google Street View, digital footprints, and data mining are some key elements in information awareness. In fact, the homepage of DARPA conspicuously displays the icons of Facebook, Twitter, Google+, YouTube, et al. (See Fig. 1.3).

On March 29, 2012, the Obama administration announced more than \$200 million in funding for “Big Data Research and Development Initiative” (27). Information Innovation Office has replaced the Information Awareness Office (28). The first wave of agency commitments includes National Science Foundation (NSF), National Institutes of Health (NIH), Department of Energy (DOE), U.S. Geological Survey, and Department of Defense (including DARPA) (29). Not to imply that DARPA intends to resurrect the Total Information Awareness program, but the DARPA-proposed Anomaly Detection at Multiple Scales (ADAMS) program is one of several key technologies that are directly applicable to Total Information Awareness (30).

The U.S. government has also been learning from private businesses who often share customers’ data to make a profit. Letitia Long, Director of the National Geospatial-Intelligence Agency (NGA) described the shift across the post-9/11 intelligence community as the transition from a “need-to-know” atmosphere to a “need-to-share and need-to-provide” culture (31). The shift has increased the government’s effectiveness in combating terrorism, but it has also opened the door to potential leakage of classified information.



### 1.3 Edward Snowden’s NSA Leaks and PRISM

On May 20, 2013, Edward Snowden, an employee of defense contractor Booz Allen Hamilton at the National Security Agency, arrived in Hong Kong from Hawaii with four laptop computers in his possession. The computer hard drives contained some of the U.S. government’s top secret programs (32).

On June 1, *Guardian* journalists Glenn Greenwald and Ewen MacAskill and documentary maker Laura Poitras flew from New York to Hong Kong to begin a week of interviews with Snowden.

On June 5, *The Guardian* published a top-secret document by the U.S. Foreign Intelligence Surveillance Court. The April 2013 court order forced Verizon to hand over the phone records of millions of Americans, including but not limited to session identifying information (e.g., originating and terminating telephone number, International Mobile Subscriber Identity (IMSI) number, and International Mobile station Equipment Identity (IMEI) number) (33).

On June 6, a second *Guardian* story unveiled the top-secret PRISM program that allows officials to collect without court orders any data including emails, chat, videos, photos, stored data, voice-over-IP, file transfers, video conferencing, logins, and online social networking details from communication providers and social networks (See Fig. 1.4). Under the PRISM program, the NSA spends about \$20 million

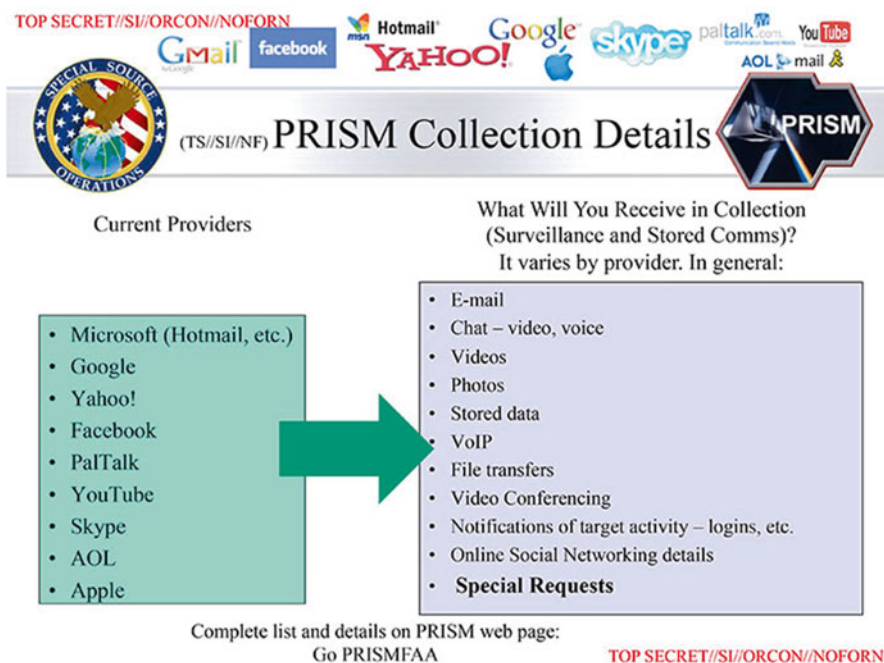


Fig. 1.4 PRISM Collection Details (Courtesy of *The Guardian*)



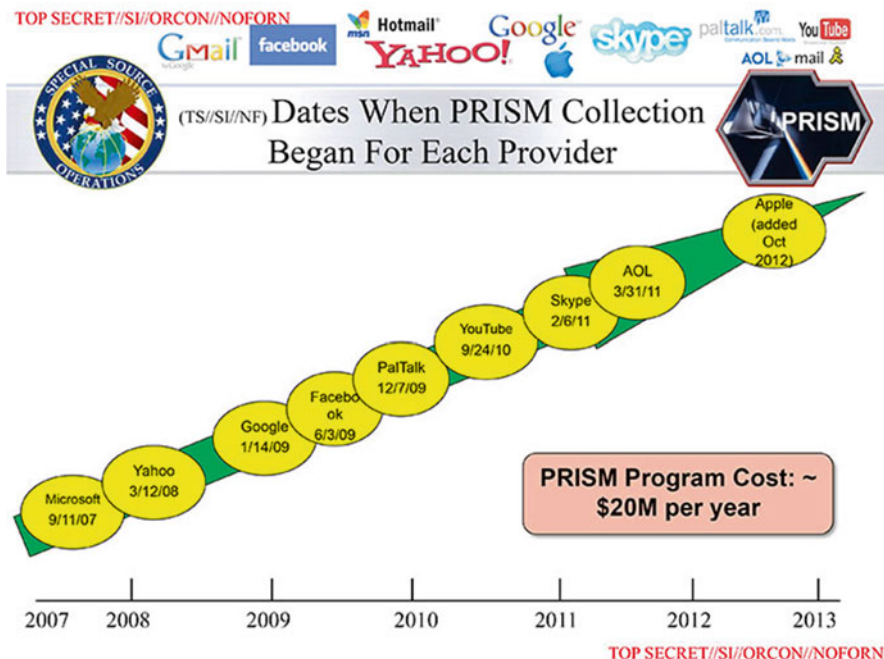


Fig. 1.5 Dates when PRISM Collection Began for each Provider (Courtesy of The Guardian)

annually to access the servers of the participating companies, beginning in 2007 with Microsoft, followed by Yahoo! in 2008, Google, Facebook, and PalTalk in 2009, YouTube in 2010, Skype and AOL in 2011, and Apple in 2012. (See Fig. 1.5).

In response to the revelation of PRISM, a senior U.S. official issued a statement: “The Guardian and Washington Post articles refer to collection of communications pursuant to Section 702 of the Foreign Intelligence Surveillance Act. This law does not allow the targeting of any US citizen or of any person located within the United State” (34).

On June 7, President Barack Obama defended the NSA dragnet surveillance programs: “They help us prevent terrorist attacks. ... It’s important to recognize that you can’t have 100% security and also then have 100% privacy and zero inconvenience” (35). A former senior U.S. intelligence official explained NSA director Gen. Keith Alexander’s rationale behind the surveillance programs: “Rather than look for a single needle in the haystack, his approach was, ‘Let’s collect the whole haystack. Collect it all, tag it, store it. .. And whatever it is you want, you go searching for it’” (36).

The NSA released a memorandum indicating that the agency monitored a mere 1.6% of the world’s Internet traffic. However, a shrewd commentator by the name “Pavel87” made the observation that “if you take away porn, advertisement, streaming video and music, you are left with the 1.6% of ACTUAL information such as email, VoIP and chats. So the NSA actually filters out 98.4% of irrelevant content and reads 100% of your actual info” (37).

Apart from Boundless Informant, MUSCULAR, PRISM, QUANTUM, Steller Wind, Tempora, Turbulence, XKeyscore and spying on foreign countries by the NSA and British's Government Communications Headquarters (GCHQ), there is much more top-secret information that has not been made public by the journalists in the know. Snowden even "demanded" the journalists that they should consult the government before publishing (38).

*The Washington Post* Editorial Board opined that "the first U.S. priority should be to prevent Mr. Snowden from leaking information that harms efforts to fight terrorism and conduct legitimate intelligence operations." It did not regret what had been disclosed to the public because "documents published so far by news organizations have shed useful light on some NSA programs and raised questions that deserve debate, such as whether a government agency should build a database of Americans' phone records." However, it warned that "Mr. Snowden is reported to have stolen many more documents, encrypted copies of which may have been given to allies such as the WikiLeaks organization" (39).

In July 2013, *The Guardian* in London destroyed the hard drives containing top-secret documents leaked by Edward Snowden after a threat of legal action by the British government. Guardian editor Alan Rusbridger said in an interview, "I explained to British authorities that there were other copies in America and Brazil so they wouldn't be achieving anything. But once it was obvious that they would be going to law I preferred to destroy our copy rather than hand it back or allow the courts to freeze our reporting. ... I don't think we had Snowden's consent to hand the material back, and I didn't want to help the UK authorities to know what he had given us" (40).

In August 2013, pro-privacy email service provider Lavabit with 350,000 users including Edward Snowden was shut down by its owner Ladar Levison amid court battle. "I have been forced to make a difficult decision: to become complicit in crimes against the American people or walk away from nearly 10 years of hard work by shutting down Lavabit," Levison wrote in a statement. "After significant soul searching, I have decided to suspend operations" (41).

While Americans are equally divided on labeling Edward Snowden a hero or a traitor (42), Snowden justified his actions by saying that "I can't in good conscience allow the U.S. government to destroy privacy, Internet freedom, and basic liberties for people around the world with this massive surveillance machine they're secretly building" (43). In a May 2014 interview with Brian Williams at *NBC News*, Snowden said, "Being a patriot doesn't mean prioritizing service to government above all. Being a patriot means knowing when to protect your country, when to protect your Constitution, when to protect your countrymen from the violations and encroachments of adversaries. And those adversaries don't have to be foreign countries. They can be bad policies. ... When you look at the carefulness of the programs that have been disclosed... the way these have all been filtered through the most trusted journalist institutions... the way the government has had a chance to chime in on these and to make their case... How can it be said that I did not serve my government and how can it be said that this harmed the country when all three branches of government have made reforms as a result of it?" (44).

## 1.4 Social Networks' Responses to NSA Leaks and PRISM

WikiLeaks founder Julian Assange said in a May 2011 interview, “Facebook in particular is the most appalling spying machine that has ever been invented. Here we have the world’s most comprehensive database about people: their relationships, their names, their addresses, their locations and their communications with each other, their relatives – all sitting within the United States, all accessible to US intelligence” (45).

Edward Snowden’s NSA leaks in June 2013 have reinvigorated Assange’s bold accusation (46). However, Facebook has vehemently denied giving the NSA and FBI “back door” access to their servers (47). Nevertheless, military and civilian technologies have interwoven into every fabric of our society. NSA’s research has contributed significantly to the development of the supercomputer, the cassette tape, the microchip, quantum mathematics, nanotechnology, biometrics, and semiconductor technology (48). The algorithm that powers Roomba, a household robot vacuum cleaner, was originally developed for clearing minefields (49). Facebook co-founder and CEO Mark Zuckerberg himself said at the 2011 annual f8 conference, “We exist at the intersection of technology and social issues” (50).

On June 7, 2013, Zuckerberg responded personally to the allegedly “outrageous” press reports about PRISM (51):

“Facebook is not and has never been part of any program to give the US or any other government direct access to our servers. We have never received a blanket request or court order from any government agency asking for information or metadata in bulk, like the one Verizon reportedly received. And if we did, we would fight it aggressively. We hadn’t even heard of PRISM before yesterday.

When governments ask Facebook for data, we review each request carefully to make sure they always follow the correct processes and all applicable laws, and then only provide the information if is required by law. We will continue fighting aggressively to keep your information safe and secure.

We strongly encourage all governments to be much more transparent about all programs aimed at keeping the public safe. It’s the only way to protect everyone’s civil liberties and create the safe and free society we all want over the long term.”

Along with Facebook, Google and Apple also denied any knowledge of PRISM. Google told *The Guardian*: “Google cares deeply about the security of our users’ data. We disclose user data to government in accordance with the law, and we review all such requests carefully. From time to time, people allege that we have created a government ‘back door’ into our systems, but Google does not have a back door for the government to access private user data” (47). Whereas Apple told CNBC: “We have never heard of PRISM. We do not provide any government agency with direct access to our servers, and any government agency requesting customer data must get a court order” (52).

For damage control as well as to bolster their public image, Apple, Facebook, Google, LinkedIn, Microsoft, and Yahoo! all have released Transparency Reports showing criminal, Foreign Intelligence Surveillance Act (FISA), and other requests for information from the U.S. government. For the six-month period from January

to June 2013, Apple received FISA and law enforcement requests affecting between 2,000 and 3,000 accounts (53), Facebook between 5,000 and 5,999 accounts (54), Google between 9,000 and 9,999 accounts (55), LinkedIn under 250 accounts (56), Microsoft between 15,000 and 15,999 accounts (57), and Yahoo! between 30,000 and 30,999 accounts (58).

Facebook said that it would “push for even more transparency, so that our users around the world can understand how infrequently we are asked to provide user data on national-security grounds.” However, Microsoft conceded, “What we are permitted to publish continues to fall short of what is needed to help the community understand and debate these issues” (59).

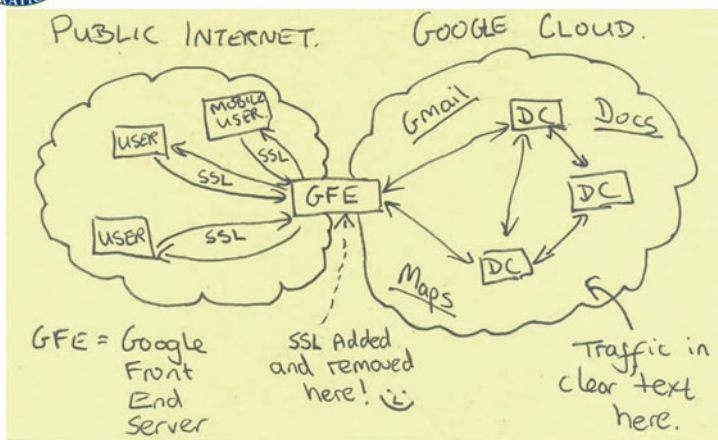
At the TechCrunch Disrupt Conference in September 2013, Yahoo! CEO Marissa Mayer gave an honest answer – a welcoming change from all the standard denial statements by most technology companies. Mayer said, “In terms of the NSA, we can’t talk about those things because they are classified. Releasing classified information is treason, and you’re incarcerated. ... It makes more sense for us to work within the system. We file suit against the government ... asking to be able to be more transparent with the numbers on the NSA requests” (60).

In October 2013, *The Washington Post* published the NSA documents about the MUSCULAR project that secretly taps into the communications links connecting Yahoo and Google data centers around the world. Figure 1.6 shows a NSA

TOP SECRET//SI//NOFORN



## Current Efforts - Google



TOP SECRET//SI//NOFORN

Fig. 1.6 Google Cloud Exploitation (Courtesy of *The Washington Post*)

presentation on “Google Cloud Exploitation.” In response, Google’s chief legal officer David Drummond said, “We are outraged at the lengths to which the government seems to have gone to intercept data from our private fiber networks, and it underscores the need for urgent reform” (61).

In November 2013, German newspaper *Der Spiegel* reported on Snowden’s leaks about NSA’s QUANTUM program that redirects some users to fake LinkedIn and Slashdot websites to plant malware on the users’ computers. LinkedIn denied any knowledge of the program and said that it “would never approve such activity” (62).

At the 2013 RSA conference, an FBI agent propositioned Wickr cofounder Nico Sell about adding a back door to her mobile app that provides military-grade encryption of text, picture, audio and video messages as well as anonymity and secure file shredding features. Sell told Meghan Kelly at *Venture Beat*, “I think he was trying to intimidate me. He just caught me really off-guard. I feel like he was mad. I mean, I said that I was doing a no-backdoor guarantee in the presentation. That was one of the major messages there” (63).

F-Secure and some fellow companies decided to boycott the 2014 RSA conference in protest of the alleged \$10 million dollar payment from the NSA to RSA for inserting a back door into its encryption products. Nico Sell questioned if those boycotters were also boycotting Google, Facebook, and Microsoft: “I bet those guys were also paid for backdoors. It’s hard to boycott everybody who is paid for a backdoor” (63).

While privacy advocates, media skeptics, and conspiracy theorists continue to question the real involvement of technology companies with the NSA, Google has beefed up the security of Gmail by encrypting communications between Google’s servers as well as to and from end users (64). Yahoo! has also encrypted all information that moves between its data centers and to/from its consumers (65). Microsoft has expanded encryption across its services and reassured customers that its products do not contain back doors (66). And Facebook CEO Mark Zuckerberg called President Barack Obama on March 12, 2014 to express his frustration about the government’s spying and hacking programs. Zuckerberg said after the phone call, “When our engineers work tirelessly to improve security, we imagine we’re protecting you against criminals, not our own government. ... The U.S. government should be the champion for the Internet, not a threat. They need to be much more transparent about what they’re doing, or otherwise people will believe the worst. ... Unfortunately, it seems like it will take a very long time for true full reform” (67).

## 1.5 Reform Government Surveillance and Reset the Net

In May 2014, the U.S. House of Representatives approved a new bill to curb NSA’s domestic dragnet surveillance. Rep. Jim Sensenbrenner who shepherded the 2001 USA Patriot Act said, “The NSA might still be watching us, but now we can watch them” (68).

The spat between American businesses and the U.S. government has now come full circle, as ex-NSA official “Chris” Inglis warned technology companies that amass

vast amounts of personal information to learn from the agency's mistakes. "There's an enormous amount of data held in the private sector," said Inglis. "There might be some concerns not just on the part of the American public, but the international public" (69). Indeed, Facebook CEO Mark Zuckerberg told Farhad Manjoo of *The New York Times* in an April 2014 interview: "Understanding who you serve is always a very important problem, and it only gets harder the more people that you serve" (70).

In June 2014, a year after Snowden's NSA leaks, the Reform Government Surveillance coalition of nine technology companies published an open letter to the members of the U.S. Senate, urging them to pass a version of the USA Freedom Act that offers more transparency than the one passed by the U.S. House of Representatives (71):

Dear Members of the Senate:

It's been a year since the first headlines alleging the extent of government surveillance on the Internet.

We understand that governments have a duty to protect their citizens. But the balance in many countries has tipped too far in favor of the state and away from the rights of the individual. This undermines the freedoms we all cherish, and it must change.

Over the last year many of our companies have taken important steps, including further strengthening the security of our services and taking action to increase transparency. But the government needs to do more.

In the next few weeks, the Senate has the opportunity to demonstrate leadership and pass a version of the USA Freedom Act that would help restore the confidence of Internet users here and around the world, while keeping citizens safe.

Unfortunately, the version that just passed the House of Representatives could permit bulk collection of Internet "metadata" (e.g. who you email and who emails you), something that the Administration and Congress said they intended to end. Moreover, while the House bill permits some transparency, it is critical to our customers that the bill allows companies to provide even greater detail about the number and type of government requests they receive for customer information.

It is in the best interest of the United States to resolve these issues. Confidence in the Internet, both in the U.S. and internationally, has been badly damaged over the last year. It is time for action. As the Senate takes up this important legislation, we urge you to ensure that U.S. surveillance efforts are clearly restricted by law, proportionate to the risks, transparent, and subject to independent oversight.

Signed,

Tim Armstrong, *AOL*

Tim Cook, *Apple*

Drew Houston, *Dropbox*

Mark Zuckerberg, *Facebook*

Larry Page, *Google*

Jeff Weiner, *LinkedIn*

Dick Costolo, *Twitter*

Satya Nadella, *Microsoft*

Marissa Mayer, *Yahoo!*



On June 5, 2014, Edward Snowden came out to support the launch of “Reset the Net” – a day of action to raise public awareness of online privacy tools (72). It was organized by the nonprofit organization Fight for the Future led by co-founder Tiffiny Cheng.

The following chapters in this book offer discourse and practical advice on the privacy issue in the age of big data, the rise of Facebook nation, business intelligence in social media, as well as personal and total information awareness.

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**Part II**  
**Privacy in The Age of Big Data**

## Chapter 2

# Social Networks and Privacy

*“You have zero privacy anyway. Get over it.”*

– Scott McNealy, Sun Microsystems (January 1999)

*“If you have something that you don’t want anyone to know, maybe you shouldn’t be doing it in the first place.”*

– Eric Schmidt, Google (December 2009)

*“People have really gotten comfortable not only sharing more information and different kinds, but more openly and with more people. That social norm is just something that has evolved over time.”*

– Mark Zuckerberg, Facebook (January 2010)

*“What children post online or search as part of their homework should not haunt them as they apply to colleges or for jobs. YouTube should not be turned into YouTracked.”*

– U.S. Representative Edward J. Markey (November 2012)

*“Privacy is not dead. ... The kind privacy that is becoming more of the norm is dependent on our ability to move freely among the myriad services and apps, and to opt in selectively, both in what we use and how we choose to use them.”*

– Author Jack Cheng (June 2013)

*“I have felt that my own communications were probably monitored, and when I want to communicate with a foreign leader privately, I type or write the letter myself, put it in the post office and mail it.”*

– President Jimmy Carter (March 2014)

*“Would you rather have your first kiss on YouTube? Or a transcript of everything you said on your first date available on Google?”*

– *Forbes* writer Jordan Shapiro’s 9-year-old son (May 2014)

*“Privacy is dead. Ownership is not dead. Everyone cares about owning their conversations and their pictures. I think that’s the word we need to start using instead of privacy, because privacy has been tainted.”*

– Nico Sell, DEF CON and Wickr (June 2014)

## 2.1 Zero Privacy and the Central Intelligence Agency

On May 7, 2013, the Central Intelligence Agency (CIA) selected undercover officer Frank Archibald as the new head of its National Clandestine Service and kept his identity secret while he remained undercover as the agency chief in Latin America.

However, within 24 hours, his name was outed on Twitter by Columbia University journalism professor John Dinges (1) who successfully pieced together publicly available information: *The Washington Post* described the new head as “a longtime officer who served tours in Pakistan and Africa and was recently in charge of the agency’s Latin America division, according to public records and former officials.” *The Associated Press* added that he “once ran the covert action that helped remove Serbian President Slobodan Milosevic from power” (2). Prof. Dinges said in a telephone interview with *Mashable*, “It was pretty obvious who he was. It took me about five minutes to find out. It wasn’t secret, nobody leaked it; it was not a big secret” (3).

On May 9, 2013, 48 hours after the CIA appointment, one website used Intelius to find Archibal’s address, date of birth, and names of relatives. The site also posted online photos of his house taken from Google Maps and Google Street View (4).

Half a year earlier in November 2012, CIA director David Petraeus resigned as head of the spy agency after the FBI uncovered his private emails that confirmed his secret extramarital affair with his biographer Paula Broadwell. *CNN*’s John D. Sutter asked, “When the CIA director cannot hide his activities online, what hope is there for the rest of us?” (5).

Way back in January 1999, Scott McNealy, co-founder and CEO of Sun Microsystems for 22 years, told a group of reporters and analysts: “You have zero privacy anyway. Get over it” (6). A decade later in December 2009, Google’s then-CEO Eric Schmidt said, “If you have something that you don’t want anyone to know, maybe you shouldn’t be doing it in the first place” (7). In defense of the NSA surveillance programs, President Barack Obama said in June 2013, “It’s important to recognize that you can’t have 100% security and also then have 100% privacy and zero inconvenience” (8).

## 2.2 The Archer, Carrier Pigeons, and President Jimmy Carter

A college friend of my wife, in his twenties, graduated from a well-known university with a Master’s degree in computer science. Instead of looking for a well-paying job, he prefers to spend most of his time living in the remote countryside without a cell phone or Internet connection. He is a skilled archer who hunts for food in the forest. He is also a self-proclaimed magician (think Tim Kring’s *Heroes*, not David Copperfield). He enjoys a life of solitude and privacy. Nevertheless, even an eccentric person like him cannot completely escape the temptation of social networks. He has a Facebook profile with a small handful of photos of himself and his hand-made enchanted objects. He updates his Facebook page rarely, but when he does, his

small circle of college friends would be glued to the computer screen to find out what he is up to. He has limited social interaction by offering limited glimpses into his life to a limited number of friends. As a result, he enjoys reasonably good privacy.

In the year 2012 when more than two billion people were connected online (9), an Arizona man in Phoenix distrusted technology so much that he refused to use a phone or computer altogether. In order to communicate with his business partner who lived across town in Phoenix, the Arizona man sent his messages via carrier pigeons (10). We could call it old-fashioned or paranoia. During World War II, about 250,000 pigeons were used by all branches of the U.K. military and the Special Operations Executive to deliver messages between mainland Europe and Britain (11).

Andrea Mitchell of *NBC News* interviewed President Jimmy Carter in March 2014. On the topic of privacy, Carter said, “As a matter of fact, you know, I have felt that my own communications are probably monitored. And when I want to communicate with a foreign leader privately, I type or write a letter myself, put it in the post office, and mail it” (12). Taking the president’s words to heart, Google began testing in June 2014 a new super-secure email feature with end-to-end encryption. “We recognize that this sort of encryption will probably only be used for very sensitive messages or by those who need added protection,” said Google product manager Stephan Somogyi (13).

The archer, the pigeon man, and President Jimmy Carter are among the few who are determined to safeguard their own privacy with strong convictions, while the overwhelming majority of people are willing to give up some part of their privacy in exchange for being connected. An old English proverb says, “If you can’t beat them, join them.”

Most people have families, friends, and business acquaintances that they keep in constant contact with through in-person meetings, emails, phone calls, and online social networking services such as Facebook, Google+, and Twitter. Most people enjoy making new friends. However, social interaction inevitably raises the privacy issue. Online social networks only exacerbate privacy concerns. The risk is often outweighed by the consumer’s need to communicate.

Facebook CEO and co-founder Mark Zuckerberg told a live audience in a January 2010 interview with *TechCrunch*: “Why would I want to put any information on the Internet at all? Why would I want to have a website? In the last 5 or 6 years, blogging has taken off in a huge way. There are all these different services that have people sharing more information. People have really gotten comfortable not only sharing more information and different kinds, but more openly and with more people. That social norm is just something that has evolved over time” (14).

Zuckerberg’s view resonated with Robert Scoble, a former technology evangelist at Microsoft best known for his blog Scobleizer. “I make everything public on my Facebook account, and I’m not worried about privacy because the more I share about who I am and what interests me, the more Facebook can bring me content that I care about,” said Scoble, “Yes, people have lost jobs because of things they have posted on Facebook, but you can also end up getting jobs and making all kinds of great connections because you’ve posted about your passions” (15).

## 2.3 The Pervasiveness of Facebook

Facebook's mission is "to give people the power to share and make the world more open and connected" (16). Launched in February 2004 by Mark Zuckerberg, Facebook has quickly become one of the most pervasive interpersonal communication tools. One month after its official launch, Facebook expanded from Harvard to Stanford, Columbia, and Yale University. Within one year, in December 2004, Facebook reached nearly 1 million active users (17).

In September 2011, Facebook's chief technology officer Bret Taylor confirmed that Facebook has more than 800 million active users, 350 million of whom use Facebook on mobile devices each month (18). In February 2012, the Facebook IPO filing revealed that the company has reached 845 million users, 483 million of them use the site every day (19) and 425 million of them access Facebook on mobile devices (20). By June 30, 2014, Facebook revised the total number of monthly active users to 1.32 billion and daily active users to 829 million on average during the month of June (17).

In August 2013, more than 128 million Americans – one out of three people in the United States – visited Facebook every day (21). According to a study done earlier in May 2011, Americans spent a total of 53.5 billion minutes a month on Facebook, more than Yahoo! (17.2 billion minutes), Google (12.5 billion), AOL (11.4 billion), MSN (9.5 billion), YouTube (9.1 billion), eBay (4.5 billion), Blogger (724 million), Tumblr (624 million), and Twitter (565 million) (22).

A 2011 research from NM Incite, a Nielsen McKinsey company, reveals no surprise that knowing someone in real life is the top reason (82%) cited for "friend-ing" someone on Facebook (23). The second main reason (60%) is to add friends of their mutual friends online. Other reasons include business networking (11%), physical attractiveness (8%), increasing friend count (7%), and friend everyone (7%). The so-called "friend collectors" send requests out of curiosity and nosiness.

Many Facebook addicted users are afflicted with the oh-so itch-able question, "I wonder what so-and-so is doing now" (24). In May 2014, Facebook added an "Ask" feature to let users inquire about their Facebook friends' relationships and other personal information (25). Facebook also rolled out an audio-recognition feature that can identify what song is playing or what show or movie is on TV, making it easier for users to share what they are listening to or watching without typing (26).

Omar L. Gallaga, a reporter for *Austin American-Statesman*, admitted his Facebook addiction on *CNN*, "More than just a daily habit, Facebook has become the place where I get important, often surprising glimpses into the lives of the 1,365 people with whom I've chosen to connect. (That's not counting friends-of-friends, for Facebook's tentacles are ever-extended)" (27).

Most people have the unquenchable need to communicate and share information. As Mark Zuckerberg wrote in his letter for the Facebook IPO filing on February 1, 2012, "We live at a moment when the majority of people in the world have access to the internet or mobile phones –the raw tools necessary to start sharing what they're thinking, feeling and doing with whomever they want" (28).

"People don't want to be talked to, they want to be talked with," said Roy Sekoff, founding editor of *The Huffington Post* (29). However, the busy lifestyle and



fast-paced society have deprived people of the face-to-face quality time among friends, families, and acquaintances. *CNN* producer Kiran Khalid, a self-admitted social-media addict, tried to disconnect from all electronic communications for five days in December 2011. Her conclusion was that severing her dependency on social networks removed an obstacle to real conversations (30).

26-year-old Paul Miller, a senior editor for *The Verge*, decided to leave the Internet for a year beginning on May 1, 2012 (31). “I think there are two kinds of people who live with technology constantly in their face: people who freak out when they’re forcefully separated from their devices or connectivity, as if their arm has been cut off, and people who feel really chill when they’re forcefully separated from their devices or connectivity, as if they’ve been let out of prison. I’ve spoken to many of both kinds as I’ve prepared for leaving the internet, and thankfully I fall in the latter camp” (32).

After a year of Internet hiatus, Miller came back online May 1, 2013 to find 22,000 unread emails in his inbox (33). He described the offline experience “existential and introspective” and the back-to-online experience traumatic: “I got on Facebook I didn’t know how to use Facebook. I almost had a panic attack that night. ... Now that I’m back on the Internet I really want to be the shining example of what it’s like to actually pay attention to somebody and put away your devices” (34).

Most people simply cannot survive without their digital fixations. Facebook is the prolific communication tool that fills the void created by the lack of real face-to-face conversations. As far back as September 2005, *TechCrunch* reported that 85% of college students use Facebook to communicate with friends, both on campus and from their former high schools (35). Today, it is almost inconceivable for a university student not to have a Facebook page.

Facebook is more convenient than emails and less intrusive than phone calls. Someone may wake up at 3 in the morning, post a new photo and write some comments on Facebook. The information goes out to all their online friends. However, there is no distinction between best friends who can keep a secret, casual friends who may laugh at it, and strangers who either do not care about it or use the information for malicious purposes. “We are close, in a sense, to people who don’t necessarily like us, sympathize with us or have anything in common with us,” Prof. Jon Kleinberg of Cornell University told *The New York Times*. “It’s the weak ties that make the world small” (36).

## 2.4 Chairs Are Like Facebook

On October 4, 2012, Facebook released a new 91-second video *The Things That Connect Us* depicting chairs, doorbells, airplanes, bridges, dance floors, basketball, a great nation, and the universe (37):

*Chairs. Chairs are made so that people can sit down and take a break. Anyone can sit on a chair, and if the chair is large enough, they can sit down together. And tell jokes. Or make up stories. Or just listen. Chairs are for people. And that is why **chairs are like Facebook**.*

*Doorbells. Airplanes. Bridges. These are things people use to get together so they can open up and connect about ideas, and music, and other things people share.*

*Dance floors. Basketball. A great nation. A great nation is something people build, so that they can have a place where they belong.*

*The universe is vast and dark and makes us wonder if we are alone. So maybe the reason we make all of these things is to remind ourselves that we are not.*

Directed by acclaimed Mexican filmmaker Alejandro González Iñárritu, the cleverly crafted video has been described by some critics as “puzzling” and “disingenuous” (38). Nonetheless, it is not difficult to see that the video alludes to the rise of Facebook nation with over 1 billion cybercitizens (39). It is truly a global phenomenon since the majority of Facebook users (81%) live outside the U.S. and Canada.

“Chairs are like Facebook” — Chairs are the most basic, ubiquitous, and indispensable furniture in most parts of the world. Facebook is one of the most prevalent social networks today. However, sitting in stationary chairs puts stress on spinal disks and increases the chance of lower-back injury, resulting in \$11 billion a year in workers’ compensation claims (40). Unlike stationary chairs, Facebook must be quick to adapt to changes.

“We are not [alone]” — Facebook users tell jokes, make up stories, or just listen to other Facebook friends. In an interview with *Ad Age*’s Ann-Christine Diaz, Facebook’s head of consumer marketing Rebecca Van Dyck linked Facebook with the innate human desire to connect. Dyck said, “We make the tools and services that allow people to feel human, get together, open up. Even if it’s a small gesture, or a grand notion — we wanted to express that huge range of connectivity and how we interact with each other” (41).

On Facebook, people volunteer their personal information such as their gender, birthday, education, workplace, city of residence, interests, hobbies, photos, friends, families, schoolmates, coworkers, past histories, relationship status, likes, dislikes, and even current location. By satisfying the insatiable desire for communication with others who seem to be willing to listen, people have voluntarily sacrificed some degree of personal privacy. “Have one’s cake and eat it too” does not apply to personal privacy in the world of ubiquitous social networks.

## 2.5 Facebook and Personal Privacy

Facebook headquarters’ address is 1 Hacker Way, Menlo Park, California 94025. (17) 1 Hacker Way was apparently the second choice after 1 Social Circle (42). Both of which fit the Facebook culture and product quite nicely.

“Hacking is core to how we build at Facebook,” the company said in a blog post announcing Facebook’s 2012 Hacker Cup competition (43). “Whether we’re building a prototype for a major product like Timeline at a Hackathon, creating a smarter search algorithm, or tearing down walls at our new headquarters, we’re always hacking to find better ways to solve problems” (44).

In 2003, Mark Zuckerberg hacked into the Harvard computer network and stole private dormitory student ID photos in order to create Facemash, the predecessor to Facebook. Similar to the Hot or Not website founded in 2000 by James Hong and

Jim Young, Facemash placed two photos next to each other at a time and asked users to choose the hotter person. Facemash attracted 450 visitors and more than 22,000 photo views in its first day of launch before the website was forced to shut down. Zuckerberg was charged by the Harvard administration with breach of security, violating copyrights and individual privacy (45). Zuckerberg wrote in an email to *The Harvard Crimson* in November 2003, “Issues about violating people’s privacy don’t seem to be surmountable. I’m not willing to risk insulting anyone” (45).

Zuckerberg, an ingenious hacker, has been known for meeting with prospective investors wearing pajamas. He remains true to himself and does not answer to anybody. “Mark and his signature hoodie: He’s actually showing investors he doesn’t care that much; he’s going to be him,” said Michael Pachter, an analyst for Wedbush Securities. “I think that’s a mark of immaturity. I think that he has to realize he’s bringing investors in as a new constituency right now, and I think he’s got to show them the respect that they deserve because he’s asking them for their money” (46).

Although Facebook became a publicly traded company in May 2012, Zuckerberg continues to hold majority control over the company. Firstly, his 23% shares of Facebook stock carry outsized voting rights that give him 31% voting power. Secondly, he has “irrevocable proxy” over the voting power of almost 56% of Facebook’s shares held by other stakeholders. The U.S. Securities and Exchange Commission (SEC) asked Facebook in February 2012 to “more fully explain how the risk of Mr. Zuckerberg’s control affects ... the Class A common stockholders on a short-term and long-term basis” (47).

Based on Zuckerberg’s history and his personal attitude towards people’s privacy, it came as no surprise that Facebook was charged by the U.S. Federal Trade Commission (FTC) for failing to keep privacy promises and violating federal law – the Federal Trade Commission Act (48). The FTC eight-count complaint lists a number of instances in which Facebook allegedly made promises that it did not keep (49). The charges include the following:

1. In December 2009, Facebook changed its website so certain information that users may have designated as private – such as their Friends List – was made public. They didn’t warn users that this change was coming, or get their approval in advance.
2. Facebook represented that third-party apps installed by the users would have access only to user information that they needed to operate. In fact, the apps could access nearly all of users’ personal data – data the apps didn’t need.
3. Facebook told users they could restrict sharing of data to limited audiences – for example with “Friends Only.” In fact, selecting “Friends Only” did not prevent their information from being shared with third-party applications their friends used.
4. Facebook had a “Verified Apps” program and claimed it certified the security of participating apps. It didn’t.
5. Facebook promised users that it would not share their personal information with advertisers. It did.
6. Facebook claimed that when users deactivated or deleted their accounts, their photos and videos would be inaccessible. But Facebook allowed access to the content, even after users had deactivated or deleted their accounts.

7. Facebook claimed that it complied with the U.S.-EU Safe Harbor Framework that governs data transfer between the U.S. and the European Union. It didn't.

Without putting up a legal fight, Facebook in November 2011 agreed to the proposed settlement (50) that the company is (51):

1. barred from making misrepresentations about the privacy or security of consumers' personal information;
2. required to obtain consumers' affirmative express consent before enacting changes that override their privacy preferences;
3. required to prevent anyone from accessing a user's material more than 30 days after the user has deleted his or her account;
4. required to establish and maintain a comprehensive privacy program designed to address privacy risks associated with the development and management of new and existing products and services, and to protect the privacy and confidentiality of consumers' information; and
5. required, within 180 days, and every two years after that for the next 20 years, to obtain independent, third-party audits certifying that it has a privacy program in place that meets or exceeds the requirements of the FTC order, and to ensure that the privacy of consumers' information is protected.

Apart from the accusations from the U.S. government, several lawsuits were filed in February 2012 against Facebook for tracking its users even after they logged out of the service (52). Computer blogger Nik Cubrilovic explained, "Even if you are logged out, Facebook still knows and can track every page you visit that has Facebook integrated. The only solution is to delete every Facebook cookie in your browser, or to use a separate browser for Facebook interactions" (53). Facebook engineers have issued numerous fixes but none to the complete satisfaction of privacy advocates.

In addition, five Facebook members in California sued Facebook for publicizing their "likes" of certain advertisers on the "sponsored stories" feature without paying them or giving them a way to opt out. In May 2012, Facebook agreed to pay \$10 million to charity in settling the would-be class-action lawsuit for violating users' rights to control the use of their own names, photographs, and likenesses (54). In December 2013, two Facebook users, Matthew Campbell and Michael Hurley, filed a lawsuit against Facebook for scanning "private" messages between users for links and other information that can be sold to advertisers, marketers, and data aggregators (55).

In fact, according to *The Zuckerberg Files* created and maintained by Prof. Mike Zimmer at the University of Wisconsin-Milwaukee, Facebook CEO Mark Zuckerberg has uttered the word "privacy" or "private" only 68 times in public between 2009 and early 2014. "Facebook is causing us to rethink so many things about our views on privacy and information," said Zimmer. "Looking at what Zuckerberg says can help us understand Zuckerberg's position and also why Facebook is what it is" (56).

## 2.6 Facebook Friends and Personal Privacy

Although Facebook has been found liable for some of the online privacy issues, many Facebook users have not been vigilant in safeguarding their own privacy. A May 2010 report by Pew Internet indicated that only two-thirds of Facebook users said they had ever changed the privacy settings to limit what they share with others online (57). A January 2012 study by *Consumer Reports Magazine* revealed, “Almost 13 million users said they had never set, or didn’t know about, Facebook’s privacy tools. And 28 percent shared all, or almost all, of their wall posts with an audience wider than just their friends” (58).

In November 2011, Lars Backstrom from the Facebook Data Team reported that an average user had 190 online friends (59). A Georgetown University study shows a much higher number among college students – young adults reported an average of 358 Facebook friends, with young women reporting 401 friends and young men reporting 269 friends (60). However, according to the GoodMobilePhones survey in January 2011, the average Facebook user does not know one fifth of the people listed as friends on the site (61).

To prove the point, a group of students at Millburn High School in New Jersey created a Facebook account in 2009 for a fictional new student in their school (62). They named her “Lauren” and gave her a fake profile including a picture of a random high school girl downloaded from the Internet. This “Lauren” requested to be Facebook friends with 200 of her classmates. Only two students messaged “Lauren” to question who she was. Nearly 60% of the 200 students accepted her friendship, and an additional 55 Facebook users requested “Lauren” to be their friends, even though they obviously did not know her.

In fact, of all the reasons why a Facebook user removes a friend online, 41% of the users answered, “Don’t know him/her well.” (23) Those unknown friends, or rather strangers – a more accurate description, have access to photos and information that are meant for only the intended audiences or trusted friends and families. A February 2012 report from Pew Internet & American Life Project indicates that less than 5% of users hide content from another user on their Facebook feed (63).

In June 2013, Alexandra Cetto and fellow researchers from the University of Regensburg in Germany launched “Friend Inspector” – a serious game aimed at 16-25 year olds to improve their privacy awareness on Facebook. The game had been downloaded over 100,000 times within five months of its launch (64).

In March 2014, Facebook started sending out “Privacy Checkups” using a cartoon dinosaur as the messenger to alert users about safeguarding their privacy (65). “Sorry to interrupt,” the message reads, “you haven’t changed who can see your posts lately, so we just wanted to make sure you’re sharing this post with the right audience.” Facebook would then ask the user to select either “Friends,” “Public,” or “More Option” for the new posts.

## 2.7 Facebook, Children, and COPPA

In a 2011 interview with the *PEOPLE* magazine, President Barack Obama and the First Lady said that they did not allow their daughters Sasha and Malia on Facebook. Their reason was, “Why would we want to have a whole bunch of people who we don’t know knowing our business? That doesn’t make much sense” (66). Sasha and Malia were only 10 and 13 years old at the time.

The American public, however, paints a different story about Facebook usage. More than 55% of parents help their underage children to lie to get on Facebook, violating the site’s terms of service that prohibit kids under 13 from joining. A 2011 survey conducted by Harris Interactive shows that one in five parents acknowledged having a 10-year-old on Facebook, 32% of parents allowing their 11-year-olds and 55% of parents allowing their 12-year-olds to use Facebook (67). According to *Consumers Reports* in May 2011, there are at least 7.5 million children under 13 and 5 million children ages 10 and under who are actively using Facebook (68).

Perhaps parents are not the only ones to blame, because children of all ages are facing increasing peer pressure from their friends and schoolmates. “I need your advice,” a mother posed a question to Danah Boyd, coauthor of *Why parents help their children lie to Facebook about age: Unintended consequences of the Children’s Online Privacy Protection Act*, “My 11-year-old daughter wants to join Facebook. She says that all of her friends are on Facebook. At what age do you think I should allow her to join Facebook?” (69).

Children are also most vulnerable to advertisements. In September 2010, *The Wall Street Journal* investigated 50 popular websites aimed at teens and children and 50 most popular U.S. sites overall (70). The investigators found that popular children’s websites install 30% more tracking technologies (e.g. cookies and beacons) than do the top U.S. websites (71). Although the tracking data does not include the children’s names, it can include their ages, races, hobbies, online habits, posted comments, likes and dislikes, as well as their general locations such as the cities of residence.

In 1998, the U.S. Congress enacted the Children’s Online Privacy Protection Act (COPPA), requiring the Federal Trade Commission (FTC) to regulate commercial websites targeted at children and web operators who have actual knowledge of a child’s participation (72). COPPA requires web site owners to notify parents and obtain their consent before collecting, using, or disclosing children’s personal information.

I was a senior staff engineer and senior producer at Disney Online between 1996 and 2006. Being a family-oriented company, Disney took COPPA and children’s online safety very seriously. We made sure that the Disney websites were COPPA-compliant and addressed COPPA-related issues at the weekly senior staff meetings.

The first-ever Disney MMORPG game *ToonTown Online* debuted in 2003 allows players, most of whom are children, to communicate with other players in *ToonTown* via a free-form chat if and only if the players know each other outside the game world (73). A “True Friends” verification involving a six-digit secret code is required to gain access to free-form chat.

Online safety for kids is number one in the website design and business decisions at Disney Online. Moreover, Disney is highly selective in accepting advertisements to display on its websites targeted for families and children. When I was a senior producer at Disney, I worked closely with strategic partners Google, Yahoo!, and WebSideStory. I had to write special software code to filter out the inappropriate ads before any sponsored ads are displayed among the search results on the Disney websites such as Disney.com and FamilyFun.com.

In August 2007, Disney Online purchased Club Penguin with 700,000 paid users (74). By mid-2011, Club Penguin has 12 million members, essentially becoming the world's largest social network for kids (75). A combination of games, educational resources, and social networking, Club Penguin presents a fictional world made up of user-created penguins that act as avatars for the millions of kids aged 8 to 11 in more than 190 countries around the world (76).

In July 2010, Disney Online acquired social-gaming company Playdom with 42 million players (77). Less than a year later in May 2011, the Federal Trade Commission charged that Disney's Playdom violated COPPA since 2006 as children under the age of 13 were able to register for the site, share their ages and email addresses, all without parental consent. Playdom continued to violate COPPA after the merger with Disney in August 2010, resulting in a tarnished reputation and a \$3 million fine (78).

"Let's be clear: Whether you are a virtual world, a social network, or any other interactive site that appeals to kids, you owe it to parents and their children to provide proper notice and get proper consent," said Jon Leibowitz, Chairman of the Federal Trade Commission. "It's the law, it's the right thing to do, and, as today's settlement [with Disney's Playdom] demonstrates, violating COPPA will not come cheap" (79).

COPPA, however, does not address the issue that addiction to social networks at an early age can be detrimental to normal child development. A 2012 Stanford University study examined the children's behaviors from a sample of nearly 3,500 girls aged 8 to 12. The researchers concluded that tween girls who spend much of their waking hours switching frantically between YouTube, Facebook, television, and text messaging are more likely to develop social problems (80). Spending too many hours online takes away the time for face-to-face personal interactions that are essential for normal mental development.

At the 119th Annual Convention of the American Psychological Association held in August 2011, Professor Larry D. Rosen at California State University, Dominguez Hills, gave a plenary talk entitled, "Poke Me: How Social Networks Can Both Help and Harm Our Kids." Rosen discussed the disturbing findings that "teens who use Facebook more often show more narcissistic tendencies while young adults who have a strong Facebook presence show more signs of other psychological disorders, including antisocial behaviors, mania and aggressive tendencies" (81).

Ironically, a May 2013 Pew Research Center report on "Teens, Social Media, and Privacy" indicated that teens' enthusiasm for Facebook was waning due to the increasing adult presence, people sharing excessively, and stressful "drama" (82). "We did see a decrease in [teenage] daily users [during the quarter], especially



younger teens,” Facebook chief financial officer David Ebersman admitted during a conference call with analysts in October 2013 (83).

In an effort to hang on to the coveted teen demographic, Facebook in October relaxed its privacy settings for teens to allow 13- to 17-year-olds to share photos, updates, and comments with the general public (84). Facebook defended its new policy by stating, “We take the safety of teens very seriously, so they will see an extra reminder before they can share publicly. When teens choose ‘Public’ in the audience selector, they’ll see a reminder that the post can be seen by anyone, not just people they know, with an option to change the post’s privacy” (85).

As federal regulators have been preparing to update COPPA since 2012, big companies like Apple, Disney, Facebook, Google, Microsoft, Twitter, and Viacom have all objected to portions of a federal effort to strengthen online privacy protections for children, citing the negative impact on economic growth and job creation. In response, U.S. Representative Edward J. Markey, Democrat of Massachusetts and co-chairman of the Bipartisan Congressional Privacy Caucus, said in a phone interview, “What children post online or search as part of their homework should not haunt them as they apply to colleges or for jobs. YouTube should not be turned into YouTracked” (86).

When Facebook introduced Graph Search at a press conference in January 2013, a Facebook employee stood on stage and searched for “friends of my friends who are single and living in San Francisco” (87). Facebook’s Graph Search lets users search for others by common interest, location, age, and other criteria. To protect minors, information on Facebook users under 18 is hidden from the search results (88).

## 2.8 Facebook, Peer Pressure, and Social Issues

Facebook can extend peer pressure from the physical world to the larger online world. Live artist-researcher Louise Orwin said, “There’s always going to be peer pressure but I think [social media] makes these issues worse” (89).

Marlon P. Mundt from University of Wisconsin, Madison, studied the influence of peer social networks on adolescents. The findings suggest that adolescents are more likely to start drinking alcoholic beverages when they have large social networks of friends (90). Soraya Mehdizadeh from York University, Toronto, published revealing research results that “individuals higher in narcissism and lower in self-esteem were related to greater online activity” and that women in particular used pictures that “include revealing, flashy and adorned photos of their physical appearance” (91).

In March 2012, *CNN* columnist Amanda Enayati reported on a story of a college student named Amanda Coleman who decided to quit Facebook. Being the president of her sorority, Coleman has counseled many young girls at her university. “They would call or come in to see me for advice, crying that they were stressed out,” Coleman said. “At some point I began noticing that Facebook was being mentioned in some way in just about every conversation. ... It’s as if somewhere along



the line, Facebook became the encyclopedia of beauty and status and comparisons. . . . [The young girls, many of them college freshmen] were walking around saying, ‘I’m not good enough. I’m not enough this or that’” (92).

The story reminds us of Facemash, the predecessor to Facebook, which placed two photos next to each other at a time and asked users to choose the hotter person. In spite of Facebook’s sophistication over Facemash, users can still compare themselves to their friends and their friends’ friends in terms of looks, fashion, popularity, and so forth.

Children and young teens are particularly susceptible to messages and images coming from their friends on Facebook. How are they going to react to their “enemies” on Facebook? The Facebook app “Enemybook,” developed in July 2007 by Kevin Matulef at MIT, could exacerbate peer pressure by bonding like-minded haters online. Enemybook is a Facebook application that you can “add people as Facebook enemies, specify why they are your enemies, notify your enemies, see who lists you as an enemy, and even become friends with the enemies of your enemies” (93).

In May 2013, Facebook was called “hatebook” by some women’s groups protesting against Facebook pages that promoted rape, domestic violence, and sexual degradation of women. Women, Action, and the Media (WAM!) complained, “It appears that Facebook considers violence against women to be less offensive than non-violent images of women’s bodies, and that the only acceptable representation of women’s nudity are those in which women appear as sex objects or the victims of abuse” (94). When a dozen companies started pulling their ads from Facebook, the social network responded swiftly by removing the offensive pages (95).

In his 2009 book *The Dumbest Generation: How the Digital Age Stupefies Young Americans and Jeopardizes Our Future*, Professor Mark Bauerlein at Emory University argues that the younger generation today is less informed, less literate, and more self-absorbed because the immediacy and intimacy of social-networking sites have focused young people’s Internet use on themselves and their friends instead of on learning new knowledge and useful skills. He observed that the language of Internet communication, with its peculiar spelling, grammar, and punctuation, actually encourages illiteracy by making it socially acceptable (96).

In 2012, former U.S. Secretary of State Condoleezza Rice issued an alarming report in which she warned that “although the United States invests more in education than almost any other developed nation, its students rank in the middle of the pack in reading and toward the bottom in math and science. On average, U.S. students have fallen behind peers in Korea and China, Poland and Canada and New Zealand. This puts us on a trajectory toward massive failure” (97).

It is high time for a major overhaul of the U.S. educational system. Peter Thiel, co-founder of PayPal, argues that colleges and universities do a poor job promoting innovation. He predicts that higher education is the next bubble waiting to burst (98). In a provocative move, Thiel awarded each of the 24 winners of the 2011 Thiel Fellowship \$100,000 not to attend college for two years but to develop business ideas instead (99).

## 2.9 Reality TV and Social Media

Popular television programs have shown to increase online social activities on Twitter, Facebook, and other social networks (100). Super Bowl XLVI on February 5, 2012 created an all-time record high of 17.46 million tweets, public Facebook posts, GetGlue check-ins, and Miso check-ins (101). Analyst Nick Thomas at Informa wrote in a recent report on the future of TV worldwide, “Many [are] already using Facebook and Twitter and other tools to communicate via the handheld devices about the content they are simultaneously viewing on the TV” (102).

Beginning in the year 2000, we have witnessed the exploding popularity of reality television shows such as *Big Brother*, *Survivor*, *American Idol*, *America’s Next Top Model*, *Dancing With the Stars*, *The Apprentice*, and *Fear Factor*. A 2010 study showed that 15 of the top 20 highest-rated television programs among young adults 18 to 49 were reality shows (103).

Following the footsteps of Donald Trump’s *The Apprentice*, other businesses are also taking a page from reality TV shows to discover new stars. The world’s largest retailer Walmart launched its “Get on the Shelf” program on the same day *American Idol* began its eleventh season on January 18, 2012 (104). The “Get on the Shelf” contest allows anyone in the U.S. to submit a video online pitching his or her invention. The public will vote on the products and three winners will have their products sold on Walmart.com, with the grand prizewinner also getting shelf space in select stores. Unlike *The Apprentice*, Walmart chose the Internet, instead of television, as the reality show medium.

While some reality shows have a certain amount of entertainment and educational values, others have little to no redeeming quality at all. *The Real Housewives of Beverly Hills*, for instance, is a prime example of legalized voyeurism and exhibitionism where the television viewers are the voyeurs and the participants in the reality show are the exhibitionists. Millions of people seem to enjoy access to private information that is really none of their business; and quite a large number of people want to expose their private lives to strangers in spite of potentially dangerous consequences including suicide (105) and murder (106).

In fact, a Brigham Young University study in 2010 reported that a reality show on average contains 52 acts of verbal, relational, or physical aggression per hour (107). Reporter Irin Carmon opines that sadism is a recurring theme in *America’s Next Top Model*: “The series has pioneered a whole new standard of placing women in danger. ... Right from the get-go, *ANTM*’s producers began manufacturing moments that would inevitably result in pain or injury to the girls. ... As the series progressed, pain became not only a by-product but a basis upon which the girls were judged, in contests requiring the women to repeatedly fall from platforms and crash onto barely padded surfaces, recline in bikinis on ice sculptures in frigid rooms, and so on” (108).

Apart from reality television, user-generated reality shows on social media are on the rise. Acquired by Twitter in October 2012, Vine is a popular mobile app that lets users create and post 6-second looping video clips (109). Former cashier Jessica Vazquez (aka Jessi Smiles) and video gamer Curtis Lepore became Vine’s first reality stars in the summer of 2013 (110). Sponsors such as Wendy’s and Virgin Mobile paid

them handsomely for their online video endorsements. Millions of followers watched their romance unfolded like a reality show, which unfortunately ended on a tragic note when Lepore was accused of raping Vazquez.

Social commentator Dean Obeidallah opined that “there’s a connection between a willingness to share private aspects of our lives and the reality TV show world in which we have been immersed for over a decade. On a nightly basis, we see people share their triumphs and tragedies, be it on shows like *Big Brother* or *The Real World* or more contrived ones like *Honey Boo Boo* or *Keeping up with the Kardashians*. They have made it easier and more acceptable for us to do the same. To me, the best thing about this new trend is that you get to control it. It’s your choice whether to disclose deeply personal information. Those who find it unnerving or inappropriate can keep that information secret. But for the rest, social media may end up being a less expensive but helpful form of therapy” (111).

## 2.10 YouTube and Facebook Videos: Am I Pretty or Ugly?

In a May 2014 *Forbes* article titled “The ‘Sex Talk’ for 21st Century Parents,” Jordan Shapiro, shared some intimate conversations with his 9-year-old son who asked, “Would you rather have your first kiss on YouTube? Or a transcript of everything you said on your first date available on Google?” Shapiro answered with a bit of anxiety, “I choose my first kiss on YouTube. No matter how awkward that looks, it is not as bad as the clumsy ways we try to express confusing feelings to people before we really know how” (112).

While reality television may be losing steam (113) and the percentage of U.S. homes with a television set is declining (114), the Internet is flourishing with reality content and attentive audiences. Mahir Çağrı, for instance, became an Internet celebrity in 1999 for his infamous homepage (115) and arguably was the main inspiration for British comedian Sacha Baron Cohen as the fictional Kazakhstan reporter “Borat” (116).

With the launch of the video-sharing website YouTube in February 2005, the Internet is becoming the new reality TV. Touted as “The Beast With A Billion Eyes” by the Time Magazine (117), YouTube reports in January 2012 that 4 billion online videos are viewed every day (118). More than tripling the prime-time audiences of all three major U.S. broadcast networks combined, over 800 million unique users visit YouTube each month, 30% of whom are from the U.S. Users upload the equivalent of 240,000 full-length films every week. In fact, more video is uploaded to YouTube in one month than the 3 major U.S. networks created in 60 years (119).

In December 2011, more than 100 million Americans watched online video on an average day, representing a 43% increase of a year ago (120). The numbers continue to skyrocket. In January 2012, some 181 million U.S. Internet users watched about 40 billion online videos (121). Internet marketing research firm comScore’s Video Metrix shows that YouTube has over 50% share of content videos viewed, followed by the distant second Vevo, Hulu, Yahoo!, Microsoft, Viacom, AOL, Netflix, ESPN, Mevio, and others (122). Thanks to Netflix, Amazon Prime, and Hulu, Americans watched more online movies than DVDs in 2012 (123).

Facebook took fifth place in the U.S. online video rankings in December 2011, with 238 million videos viewed in a month (124). Together with Facebook, YouTube has ushered in the new era of exhibitionism and voyeurism. Not everyone can be on TV, but everyone can be on YouTube. The HTML title of youtube.com is “YouTube – Broadcast Yourself” and the description meta tag reads “Share your videos with friends, family, and the world.”

Google video head Salar Kamangar said at News Corp.’s D: Dive Into Media 2012 conference, “We want YouTube to be the platform of these next generation of channels” (125), referring to bringing its audiences more high-quality content in partnership with Disney and other media companies (126).

Nevertheless, the lion’s share of YouTube videos has been and will continue to be unscripted content created by amateurs (127). Pew Research Internet Project reported that “the percent of American adult Internet users who upload or post videos online has doubled in the past four years, from 14% in 2009 to 31% in 2013” (128).

As of May 2014, the most subscribed YouTube channel of all time is PewDiePie featuring video game commentaries by 24-year-old Felix Arvid Ulf Kjellberg and Marzia Bisognin (129). The channel’s 27 million subscribers have logged a staggering 4.5 billion video views (130).

Although it takes time and energy to grow a YouTube channel, anyone can literally create a “15 minutes of fame” on YouTube. Aspiring young singers hope to become the next pop star Justin Bieber who was discovered via his homemade YouTube videos (131). Kate Upton’s YouTube video of herself at a Los Angeles Clippers game “doing the Dougie” helped catapult her onto the cover of *Swimsuit Illustrated* (132).

In addition to individuals showcasing their talents, YouTube has also become an outlet for many teenagers seeking approval. Videos asking “Am I Pretty or Ugly” have popped up all over YouTube, some of them have accrued millions of views, rivaling blockbuster movie trailers and hit music videos. In the opening of one “Am I Pretty or Ugly” video, the YouTuber says: “Hey guys, this is my first video ... but before I post any more videos making a fool of myself, and I know there’s hundreds of videos like this. ... I just wanna know, am I pretty or ugly? Cuz at school I get called ugly all the time” (133).

Indeed, many of those YouTubers are victims of bullying. Naomi Gibson’s 13-year-old daughter Faye is constantly bullied by schoolmates who call her ugly. Faye went to YouTube to get a second opinion from strangers and received mixed reactions with nearly 3,000 comments (134). Her mother appealed to YouTube to try to take down all those “Am I Pretty or Ugly” videos, but to no avail. Gibson told *ABC Good Morning America*, “I took away her Facebook and Twitter account because of bullying. She needs to stop putting herself out there. Now people are walking around asking her if she’s pretty to her face. It’s hurting her more in the long run, I think” (135).

On February 19, 2013, Canadian poet and writer Shane Koyczan published a YouTube video titled “To This Day” to confront bullying (136). It has garnered over 13.5 million views as of June 2014. Sending out one new poem each month to his readers, Koyczan wrote, “If you can’t see anything beautiful about yourself, get a better mirror” (137).

Bullying victims are not limited to a young age group. On June 21, 2012, a 10-minute YouTube video showed a 68-year-old bus monitor named Karen Klein being verbally bullied by a group of middle schoolers, on their way home from the Athena Middle School in Greece, New York (138). The video was viewed one million times within a week. Klein received widespread support from sympathizers and nearly \$650,000 in donations (139).

Another high-profile case is a graphic video uploaded to YouTube in October 2011 by 23-year-old Hillary Adams, showing Aransas County Court Judge William Adams viciously whipping her with a strap seven years earlier when she was 16 (140). The video has been viewed almost seven million times as of January 2012 (141). It is debatable whether the victim wanted to raise public awareness of child abuse or to retaliate against her father for withdrawing his financial support seven years after the incident (142).

YouTube has become the reality TV broadcast medium for the masses, and Facebook is the effective tool to disseminate the YouTube videos. Christopher Carpenter from Western Illinois University conducted research on the link between Facebook and narcissism. He concluded, “Facebook gives those with narcissistic tendencies the opportunity to exploit the site to get the feedback they need and become the center of attention” (143). Self-promoters show signs of two narcissistic behaviors: grandiose exhibition (GE) and entitlement/exploitativeness (EE). GE refers to people who love to be the center of attention. EE indicates how far people will go to get the respect and attention that they think they deserve.

Although the GE and EE readings may be off the scale on many Facebook users and YouTubers, the situation is not necessarily as nefarious as some media have portrayed. Carol Hartsell, comedy editor of *The Huffington Post*, commented at the 2012 South by Southwest Interactive festival that social media has democratized comedy by giving everyone a platform to be funny. “People just naturally want to make other people laugh,” said Hartsell. “It’s hard to find an audience when you want to be funny. When you’re a kid, it’s your family. But when you’re an adult, the Internet gives you a constant audience. It may just be 20 friends on Facebook, but it’s an audience” (144).

A September 2010 survey by the Interactive Advertising Bureau (IAB) shows that one-third of the online population is on both YouTube and Facebook (145). With over a billion users on both social networks since 2013, the seamless integration of Facebook and YouTube videos offers a powerful communication tool for hundreds of millions of people to disseminate and consume information, both private and public (146).

## 2.11 Netflix and Social Apps on Facebook

In September 2011, Facebook began rolling out new “Read. Watch. Listen. Want.” features that let “social apps” broadcast every interaction users have with them (147). The apps are opt-in, but few users read the fine print or adjust the default settings (148). Some users might be surprised to find applications like Spotify, Kobo eBooks,

Hulu, Yahoo! News, and Nike+ GPS broadcasting every song they stream, book they read, video they watch, news story they glance over, or place they visit (149).

Back in December 2007, Facebook launched Beacon, resulting in a class-action lawsuit against Facebook, Fandango, Blockbuster, Overstock, and Gamefly for violating the 1988 Video Privacy Protection Act (VPPA) that aims at preserving the confidentiality of people's movie-watching records. Facebook shut down Beacon in 2009 and agreed to pay \$9.5 million to create a new foundation for promoting privacy and security (150).

Notwithstanding the fiasco of the defunct Facebook Beacon program, Netflix, with 26 million subscribers (151) and 1 billion hours of video views in June 2012 (152), allows Facebook users see what films or television content friends are watching and will let users watch as well via Facebook (153). To clear the hurdle of the Video Privacy Protection Act (VPPA), Netflix has successfully lobbied the U.S. House of Representatives in passing a measure in December 2011 to amend the VPPA, allowing Netflix to integrate with Facebook more easily (154). And in December 2012, the U.S. Senate passed a legislation allowing Netflix users to share what movies they had watched with their Facebook friends (155).

In spite of the legislative victories, Netflix was accused in 2011 of violating VPPA that requires video rental services to destroy users' personal information "as soon as practicable, but no later than one year from the date the information is no longer necessary for the purpose for which it was collected." In February 2012, Netflix settled a class-action privacy lawsuit for \$9 million (156); and in May, Netflix announced that it would "decouple" former customers' movie rental history from their personal information within one year after they cancel their accounts (157).

In September 2014, Netflix added a privacy feature to let users control which shows they want to share with their Facebook friends. "Starting today, we're launching our new social recommendation feature that allows you to easily and privately recommend the shows you love to the people you care about," said Cameron Johnson, Netflix's director of production innovation.

With Netflix and social apps' integration with Facebook, we no longer need to call up our friends to ask what they were doing last weekend or what they are doing at the moment. Everything is on Facebook in real time. The "all-knowing" persuasive social network has diminished the necessity for real-life personal conversations. Other flourishing social apps such as the microblogging Twitter and the virtual pinboard Pinterest reinforce the popular trend of public sharing of information on the Internet (158).

## 2.12 Facebook Timeline and Open Graph

Not only does Facebook enable users to share current activities with one another, the social network has introduced at the 2011 f8 Conference new Timeline and Open Graph to facilitate "frictionless sharing" or "auto-share".

The new Facebook Timeline displays a user's life stories, sharing and highlighting their most memorable posts, photos, and life events (159). "No activity is too big

or too small to share,” said Mark Zuckerberg. “You don’t have to ‘Like’ a movie. You just watch a movie. ... We think it’s an important next step to help you tell the story of your life” (160).

Indeed, “to tell the story of your life” resonates with millions of Facebook addicts. But some critics have cautioned that Facebook may be invading too much into one’s personal life, as the user will be asked to add date of birth, key events, memories, personal events and feelings that happen outside of the social network (161).

To help users tell the story of their life with minimal effort, Facebook’s Open Graph technology allows third-party apps and websites to tell Facebook what people are doing, and to automatically publish information to their Timelines without having to ask for permission to post content to Facebook over and over again. *Mashable* calls it “real-time serendipity” (162).

By January 2012, sixty apps had been launched with Facebook’s auto-share; they include Hulu, Yahoo! News, *Wall Street Journal*, *USA Today*, *The Washington Post*, Digg, Soundcloud, Turntable.fm, Rhapsody, and Spotify (163). Apple’s iTunes and Pandora, however, did not plan to participate in the Facebook Music auto-publish feature (164).

In March 2012, Facebook announced that nearly 3,000 Timeline apps have launched in the past two months (165). The apps makers include foursquare, Nike, *The Onion*, Vevo, Fandango, Viddy, Endomondo, RootMusic, Foodspotting, Pose, and Votizen. Fandango, for instance, claimed to have tens of millions of online visitors and 1.4 million Facebook fans (166). Launched on March 13, 2012, the Fandango Timeline app “Movies with Friends” allows Facebook fans to share:

1. Movies they’ve rated and reviewed on Fandango, from “Must Go” to “Oh No!”
2. Movies they want to see, indicated by the “I’m In!” button
3. Movie trailers, clips and celebrity interviews they have just watched
4. Articles they’ve read on Fandango’s “Freshly Popped” blog

By using Facebook’s Timeline and social apps with Open Graph, an average user is knowingly communicating with an average of 130 online friends. Unknowingly, however, many of the popular apps on Facebook have been transmitting user information such as names and their friends’ names to dozens of advertising and Internet tracking companies. *The Wall Street Journal’s* investigation in October 2010 uncovered that Rapleaf, a database marketing company in San Francisco, compiled and sold profiles of Facebook users based in part on their online activities (167). Facebook has since cracked down on apps that sold user data and banned Rapleaf from data scraping on Facebook (168).

## 2.13 Ambient Social Apps

Ambient social apps are the new generation of mobile apps that automatically share information about the user’s whereabouts with nearby people in their social networks by broadcasting their locations at all times to friends.

Launched in March 2009, foursquare is a location-based social networking website and mobile app that allows users to check in at a venue, thereby posting their location



based on the GPS hardware in the mobile device. In June 2011, foursquare had 10 million users (169). By August 2014, foursquare has grown to 50 million people worldwide with 6 billion check-ins; and over 1.9 million businesses have claimed their locations to connect with their customers (170). President Barack Obama is one of its high-profile users. “The White House is now on foursquare, which is the latest way for you to engage with the administration,” Kori Schulman, Deputy Director of Outreach for the Office of Digital Strategy, wrote in *The White House Blog*, “Now you’ll be able to discover tips from the White House featuring the places President Obama has visited, what he did there, plus historical information and more” (171).

The growing popularity of foursquare has ignited a slew of new ambient social apps. Sonar, for instance, is a mobile app that analyzes Facebook, Twitter, and LinkedIn networks to see if any online friends are nearby physically. According to the Sonar website, they “bottle the 1000s of connections that you miss every day – friends, friends of friends, fellow alumni, likeminded strangers – and put them in the palm of your hand. Sonar helps you use the information you share about yourself online to connect with the person sitting next to you” (172). A screenshot displayed on the Sonar homepage shows who, among friends and friends of friends, are currently in the Museum of Modern Art and how long they have been there.

Glancee was created to be both a Facebook app and an iPhone/Android app that explores the Facebook profiles of people nearby and notifies the user when someone nearby has common friends or mutual interests (173). The Radar function on Glancee displays how close the friends are in proximity, from steps away to hundreds of yards apart. Glancee was acquired by Facebook in May 2012 and subsequently closed down (174).

Banjo started out as an ambient social app that alerts its user about friends who are nearby and pinpoints their locations on a street map. Nine months after its launch, Banjo has registered 1 million users in April 2012 (175). The Banjo website posted a story that inspired the creation of the app: “Banjo founder Damien Patton was in the Boston airport waiting for a flight to Vegas. A buddy he hadn’t seen in years was waiting for a different flight just one gate over. Damien tweeted. His friend checked in. Both posted about their locations, yet they missed connecting simply because they were using different social networks” (176). In January 2014, Banjo rebranded itself as “The Live Internet”™ for its 6 million users to discover and experience live events in real time (177).

Highlight is a free iPhone app that enables its users to learn about each other when they are close by. Using Facebook’s data, the users can see each other’s names, photos, mutual friends, hobbies, interests, and anything they have chosen to share. Highlight states in its website: “When you meet someone, Highlight helps you see what you have in common with them. And when you forget their name at a party a week later, Highlight can help you remember it” (178). Eric Eldon, Editor of *TechCrunch*, speculated that business cards would soon be replaced by Highlight (179).

And now for something completely different (in a Monty Python-esque sense of humor), Hell Is Other People is an experiment in anti-social media. Using foursquare, the site will track your “friends” and calculate optimally distanced locations for avoiding them (180).



## 2.14 Stalking Apps and Facebook for Sex

In May 2012, Facebook acquired Glancee and closed down its app (181). On June 25, 2012, Facebook quietly tested a new mobile feature “Find Friends Nearby” (aka “Friendshake”) that allowed users to find other Facebook members nearby using the mobile web as well as iOS and Android apps (182). Facebook engineer Ryan Patterson said, “I built Find Friends Nearby with another engineer for a hackathon project. ... For me, the ideal use case for this product is the one where when you’re out with a group of people whom you’ve recently met and want to stay in contact with. Facebook search might be effective, or sharing your vanity addresses or business cards, but this tool provides a really easy way to exchange contact information with multiple people with minimal friction” (183).

However, Dave Copeland of *ReadWriteWeb* called Find Friends Nearby “Facebook’s Newest Stalking App” (184). Facebook quietly pulled the feature off its website and mobile apps after a few hours of testing. A Facebook spokesperson told *Wired*, “This wasn’t a formal release – this was just something that a few engineers were testing. With all tests, some get released as full products, others don’t. Nothing more to say on this for now, but we’ll communicate to everyone when there is something to say” (185).

Ambient social apps on GPS-enabled devices can be useful and fun, but the tools inadvertently empower stalkers as well. “Girls Around Me” is an epitome of such controversial mobile apps in 2012. At the push of a button, the app would go into radar mode and fill the map with pictures of girls in the neighborhood: girls who have checked into the nearby locations using foursquare, and who have public pictures on their Facebook profiles.

After “Girls Around Me” had been downloaded 70,000 times, foursquare cut off access to the app, rendering the app useless. A foursquare spokeswoman said, “The application was in violation of our API policy, so we reached out to the developer and shut off their API access. foursquare has a policy against aggregating information across venues, to prevent situations like this where someone would present an inappropriate overview of a series of locations” (186).

“Girls Around Me” developer had no choice but to remove the app from the iTunes Store, but the developer defended itself in a public statement, “Girls Around Me does not provide any data that is unavailable to a user when he uses his or her social network account, nor does it reveal any data that users did not share with others. The app was intended for facilitating discovering of great public venues nearby. The app was designed to make it easier for a user to step out of door and hang out in the city, find people with common interests and new places to go to” (187).

The demise of “Girls Around Me” only fueled the growing popularity of Badoo – the world’s largest social network for “meeting new people” with 218 million members as of August 2014 (188). Relatively unknown in the United States, Badoo has become a mass phenomenon in Brazil, Mexico, France, Spain, and Italy after the site launched in 2006. Inspired by the nightclub known as “Telephone Bar” in St. Petersburg, Badoo’s founder Andrey Andreev created the social network to be like a nightclub on the phone (189).

The Badoo website and its mobile app enable users to meet people nearby. The app's "hook-up" feature accounts for an overwhelming 80% of usage, and a third of a million U.K. users admitted to using Badoo to find sexual partners (190). Around the world, Badoo has earned the notorious nickname "Facebook for Sex" (191).

Andreev defended his company amid controversy over heavy sexual overtones, "Badoo is not for sex, it's for adventure. If you go to a nightclub, of course you've got the opportunity to find a girl or a boy – but it's not necessarily for sex, it could be to enjoy five mojitos and nothing else. Badoo simply continues the offline lifestyle. Badoo is just a casual way to hook up with people, as you do in the street or nightclub. But we make the world work faster" (192).

Other sex apps include Bang With Friends, Pure, and Tinder. "We wanted an easy way to find sex, basically," said Pure's co-founder Roman Sidorenko (193). As more people are broadcasting their real-time location and personal information, however, privacy and personal safety are becoming an issue. There have been reports of assaults and rapes of Skout and Grindr members while the majority of crimes tied to location-based apps may go unreported (194).

Pete Cashmore, founder and CEO of Mashable.com, questions whether ambient social networking is "the scariest tech trend of 2012" (195). Paul Davison, CEO of Highlight, told *CNN* at the 2012 LeWeb London conference, "People freak out, they say it's creepy. And if they don't want to share, then that's fine, they don't have to. But the social benefits to this far outweigh any cost to privacy" (196).

In April 2014, Facebook (re)introduced a new mobile feature called "Nearby Friends" that enables Facebook friends to track each other in real time using location information (197). For privacy reason, users have to opt in in order to activate the feature.

## 2.15 Facial Recognition Apps

In October 2011, Alessandro Acquisti, professor of IT and public policy at Carnegie Mellon University's Heinz College, demonstrated a proof-of-concept iPhone application that can snap a photo of a person and within seconds display their name, date of birth and social security number (198). "To match two photos of people in the United States in real time would take four hours," said Acquisti. "That's too long to do in real time. But assuming a steady improvement in cloud computing time, we can soon get much closer to that reality than many of us believed" (199).

In June 2012, Facebook acquired Face.com – a preeminent provider of facial recognition technology on the Internet (200). Face.com wrote on its website, "Face.com builds facial recognition software that is not only highly accurate, but also works efficiently at web-scale. Our facial recognition analytics are able to identify faces well, despite difficult circumstances like poor lighting, poor focus, subjects wearing eyeglasses, facial hair, and even Halloween costumes. Face recognition isn't just for the government or in the movies – you can use it yourself in all kinds of ways, from tagging photos to social networking" (201).

Two years before Facebook's acquisition, face.com rolled out its free facial recognition API (application programming interface) in May 2010 to encourage

developers to tap its facial recognition technology for use in their own websites and applications (202). By November 2011, more than 35,000 developers have built apps to detect and recognize more than 37 billion photos (203).

Some of the popular applications include “Photo Finder,” “Photo Tagger,” and “Celebrityfindr.” “Photo Finder” is a Facebook app that scans the public photos in the user’s social network and suggests tags for the photos that are currently untagged or partially tagged (204). The app recognizes people even if they are making odd facial expressions or are turned to the side. “Photo Tagger” searches through the user’s photo albums or the albums of their friends, and tags people in batches (205). And “Celebrityfindr” scans Twitter and looks for photos of celebrities and look-alikes that have been posted publicly (206).

Other facial recognition software applications in a prototype stage include “HoneyBadger,” “Facialytics,” and “Emotional Breakdown” (207). Using face.com’s technology, “HoneyBadger” sends an alert text message to the registered owner if the laptop is being used by someone else, “Facialytics” tracks a crowd’s emotions over time, and “Emotional Breakdown” examines how happy or sad someone is in a photo.

In October 2013, Meitar Moscovitz (aka maymay) released “Predator Alert Tools” for OkCupid, FetLife, Facebook, and Lulu that use CreepShield’s facial recognition API (208) to scan user profile pictures against the National Sex Offender Registry (209).

In December 2013, FacialNetwork.com announced the beta release of “NameTag” – the first real-time facial recognition app for Google Glass (210). The app allows Google Glass users to capture images from their live video and scan them against photos from social media, dating sites, and a database of more than 450,000 registered sex offenders.

In September 2014, the FBI launched its Next Generation Identification (NGI) system for law enforcement agencies to identify people by their faces using photos from Facebook, Google images, police, surveillance cameras, and DMV records. In fact, more than half of all state DMVs have already installed facial recognition systems.

## 2.16 Facial Recognition on Facebook, Google+, and iPhone

“We wouldn’t exist without Facebook,” said Gil Hirsch, CEO of face.com. “By far the biggest scale for face recognition is your friends on Facebook” (211).

Indeed, by April 2009, Facebook users had uploaded over 15 billion digital photographs to the social network, making Facebook the single largest repository of photographs in the world (212). The growth rate is 220 million new photos per week. Every day, Facebook users are adding more than 100 million tags to photos on Facebook (213).

In December 2010, Facebook began to roll out its own facial recognition technology, Photo Tag Suggest, which scans users’ and their friends’ photos for recognizable faces, and suggests nametags for the faces by matching them with users’ profile photos and other tagged photos on the social network (214). Facebook automatically opts its users into the Photo Tag Suggest service, which prompted a security

firm to issue a warning in June 2011 that Facebook is eroding the online privacy of its users by stealth (215). Although Facebook users can disable “Suggest photos of me to friends” in the Facebook account’s privacy settings, many people are unaware of this extra privacy setting.

When *Engadget* published an article on Facebook’s facial recognition in April 2011, a commenter beneath the story quipped, “Awesome! Now I can take pictures of cute girls at the grocery store or at the park, upload them and Facebook will tell me who they are!” (216).

Lee Tien, a senior staff attorney at the Electronic Frontier Foundation, wrote in his email to *PCWorld*, “Facial recognition is especially troubling because cameras are ubiquitous and we routinely show our faces. And of course, one can take pictures of crowds, so it scales a bit better than, say, fingerprints. ... If Facebook misidentifies someone, the consequences are not the same as when a police video-camera misidentifies you as a suspect” (217).

Facebook’s acquisition of face.com in June 2012 solidifies the importance of facial recognition in social networking. The move can also be viewed as Facebook’s preemptive tactic against Google and Apple.

Back in September 2008, Google deployed facial recognition technology to its online photo service Picasa (218). Similarly, Apple released the “Faces” feature in iPhoto in January 2009 (219). With a reasonable success rate, Picasa and iPhone helped users label their photos with the names of subjects. As facial recognition technology began to mature, Apple added the Faces feature to its professional photography software Aperture in 2010 (220).

In December 2011, Google followed the Facebook footsteps and introduced “Find My Face” as a tagging suggestion tool for its Google+ social network (221). The tool has the same functionality as Facebook’s Photo Tag Suggest. Unlike Facebook, which activates its Photo Tag Suggest by default, Google prompts users to opt into the service before Find My Face is activated. Moreover, if the tagger is not in the tatee’s circles of friends, Google requires the tatee to approve the name tagging before it goes public. Facebook, on the contrary, does not require pre-approval for tags. Facebook allows all tags to go live before notifying the tatees, who are then allowed to remove unwanted tags.

Amid concerns raised by privacy advocates and U.S. Federal Trade Commission, Benjamin Petrosky, product counsel for Google+, said, “Privacy has been baked right into this feature [Find My Face]. ... We’ve been researching vision technologies for many years, including pattern recognition, facial detection, and facial recognition, and our approach is to treat this very carefully. We don’t want to deploy a technology until it’s ready and the appropriate privacy tools are in place” (222). Meanwhile, Erin Egan, Facebook’s chief privacy policy officer, defended the company by claiming that it does enough to safeguard its members’ privacy by notifying them when they have been tagged and allowing them to remove tags once they have been made (223).

While Prof. Alessandro Acquisti’s 2011 proof-of-concept iPhone application is not yet a commercial product, face.com released a free iPhone app called Klik in March 2012 (224). When Klik detects a face, it connects to the user’s Facebook account and scans all the friends’ photos in order to identify the person in view.

Given the limited number of Facebook friends that a user may have, facial recognition can be done in real time.

As smartphones and iPads are connected to cloud computing services over the Internet, it is a matter of time for companies to introduce new mobile applications that can run millions of face comparisons in seconds, even without tapping into the power of the supercomputers at the National Security Agency or San Diego Supercomputing Center. Google has developed a distributed computing infrastructure for training large-scale artificial neural networks to detect objects based on self-taught learning and deep learning research (225). By scanning YouTube videos, the artificial neural networks have been learning how to recognize faces of animals and people.

Privacy concerns with the growing adoption of facial recognition have prompted Adam Harvey at New York University to create *CV Dazzle*, a computer vision (CV) camouflage project that combines makeup and hair styling with face-detection thwarting designs (226). Some of the camouflage techniques include wearing oversized sunglasses, avoiding enhancers such as eye shadow and lipstick, and partially obscuring the nose-bridge area and ocular region (227).

Harvey might be overreacting, but Edward Snowden’s NSA leaks have revealed that the NSA intercepts “millions of images per day” including about 55,000 “facial recognition quality images” in 2011. “The government and the private sector are both investing billions of dollars into face recognition research and development,” said Jennifer Lynch at the Electronic Frontier Foundation. “The government leads the way in developing huge face recognition databases, while the private sector leads in accurately identifying people under challenging conditions” (228). In fact, Facebook’s DeepFace system outperforms the FBI at facial recognition (229). Yaniv Taigman and colleagues reported that DeepFace “reaches an accuracy of 97.35% on the Labeled Faces in the Wild (LFW) dataset, reducing the error of the current state of the art by more than 27%, closely approaching human-level performance” (230) (see Fig. 2.1).

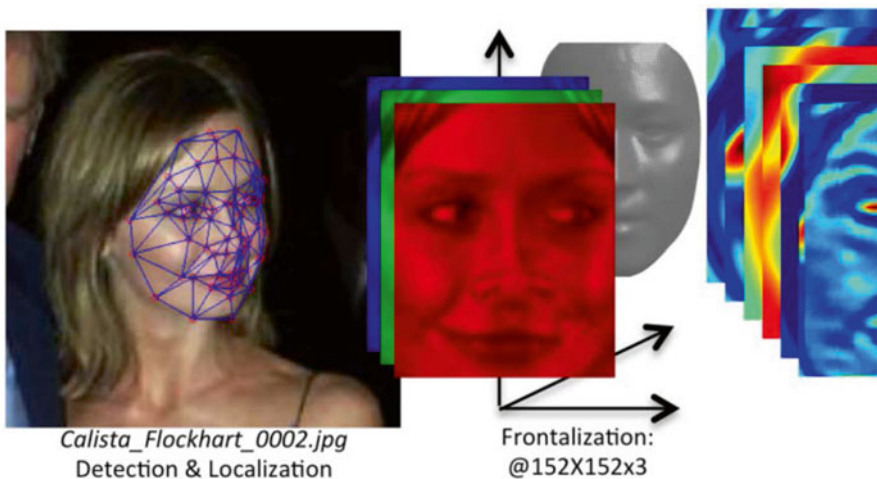


Fig. 2.1 DeepFace Analysis of Calista Flockhart (Courtesy of Facebook)

On a lighter note, animals are not concerned with privacy, and facial recognition can be quite useful. In May 2014, Finding Rover released an iOS app that uses facial recognition for dogs to help owners find their lost dogs (231). Facebook users can register their dogs for free; and if their dogs ever get lost, they can use the Finding Rover app to find the missing pets. (Not only that “every dog has its day”, but also that “every dog has its data” in the digital information age.)

Although computer vision can help identify just about any objects of interest, non-facial image recognition has a much better chance of mass adoption. In April 2014, Pete Warden, founder of Jetpac, released the open-source DeepBeliefSDK and demonstrated how to build object recognition into an iOS app (232). In June 2014, Amazon’s chief executive Jeff Bezos announced the new “Fire” smartphone. “The Firefly button lets you identify printed Web and email addresses, phone numbers, QR and bar codes, artwork, and over 100 million items, including songs, movies, TV shows, and products – and take action in seconds,” said Bezos (233).

## 2.17 Virtual Passports: from Privacy to Data Use

Mark Zuckerberg told a captive audience at the 2014 f8 Conference, “Login with Facebook’... We know a lot of people are scared of pressing this button” (234).

When Spotify, a popular music streaming service, announced in September 2011 that all new Spotify accounts would require a Facebook login, the company justified the requirement by asking the users to think of it as a virtual “passport” (235). The idea is reminiscent of Microsoft’s Passport in 1999 to provide consumers a single login and wallet for communication and commerce on the Internet (236). Privacy concerns, public distrust, and software security issues contributed to the failure of Microsoft’s Passport in 2004 as an Internet-wide unified-login system (237).

With the rise of social networks, Facebook has become a large-scale consumer identity provider (IdP) that allows users to access multiple websites with a single login (238). Unlike Microsoft, Facebook has succeeded in convincing media websites and users to adopt its unified-login system (“passport”) such that personal information can be easily shared across the Internet. Even Microsoft’s new social search network So.cl uses Facebook authentication (239).

As we know, countries issue passports. In the 2012 TEDGlobal conference, Navy Admiral James Stavridis said, “The six largest nations in the world in descending order: China, India, Facebook, the United States, Twitter, and Indonesia” (240). With over 1.32 billion monthly active users as of June 30, 2014, Facebook as a nation is about to overtake China as the largest country in the world (17). Facebook even offers a memorialization feature for families and friends to leave posts on the deceased’s profile Walls in remembrance (241). Cybercitizens are becoming as real as citizens; and their Facebook pages are more revealing than their real-life passports.

In the Facebook nation, “power users” dominate the online space by excessively tagging photos, sending messages, “like”-ing things all the time, and obsessively “friend”-ing new people on Facebook. Power users make up between 20% to 30% of the Facebook population (242).



Approximately 81.7% of the daily users reside outside the United States and Canada (17). In the U.S., Facebook ranks No. 1 in time spent and ad impressions, and No. 2 in total internet visits (behind Google) (243). And the most popular free iPhone app of all time is Facebook (ahead of Pandora, Instagram, YouTube, and Skype) (244).

Each Facebook user is sharing personal information among an average of 130 online friends, roughly 25% of whom are strangers. 20% to 30% of the Facebook populations are considered “power users” that have between 359 and 780 online friends. Without invoking complex mathematics, we can infer from the numbers that millions of people have access to information that is not really meant to be publicly shared.

Even if a Facebook user has zero online friends, they are still sharing all of their personal information with Facebook. In fact, Facebook has quietly renamed its “Privacy Policy” to “Data Use Policy” in September 2011 to reflect more accurately what Facebook does with the data collection (245).

At the January 2012 Digital Life Design (DLD) conference in Munich, Facebook's chief operating officer Sheryl Sandberg said, “We are our real identities online” (246). Cybercitizens are becoming as real as citizens. Our online identities are more revealing than our own passports.

In light of Facebook's Timeline, social apps auto-share, facial recognition photo tagging, and violation of the Federal Trade Commission Act, a *Los Angeles Times* article in September 2011 declared, “Facebook has murdered privacy” (247).

Nevertheless, Facebook is not the only culprit.

## **2.18 Social Search: Google, plus Your World & Microsoft's Bing**

In December 2009, Google's then CEO Eric Schmidt told CNBC's Maria Bartiromo in an interview, “If you have something that you don't want anyone to know, maybe you shouldn't be doing it in the first place, but if you really need that kind of privacy, the reality is that search engines – including Google – do retain this information for some time, and it's important, for example that we are all subject in the United States to the Patriot Act. It is possible that that information could be made available to the authorities” (248).

On January 10, 2012, Google began to roll out its most radical transformation ever with “social search” – a new search engine that understands not only content, but also people and relationships (249). Google search provides not only results from the public web, but also personal content or things shared on social networks such as Google+ and YouTube. Google Fellow Amit Singhal wrote in the Google Blog: “Search is pretty amazing at finding that one needle in a haystack of billions of webpages, images, videos, news and much more. But clearly, that isn't enough. You should also be able to find your own stuff on the web, the people you know and things they've shared with you, as well as the people you don't know but might want to ... all from one search box” (250).

In January 2012, Google announced its new privacy policy, effective March 1, that replaces more than 60 different privacy policies across Google. They admitted that the company has been collecting and compiling data about its users based on their activities across Google products and services including search engine, Gmail, YouTube, and Android cell phones (251). In regard to search particularly, Google states in its policies and principles that “if you’re signed into Google, we can do things like suggest search queries – or tailor your search results – based on the interests you’ve expressed in Google+, Gmail, and YouTube. We’ll better understand which version of Pink or Jaguar you’re searching for and get you those results faster” (252). Some may argue that the new Google search is way too personal, as editor Brent Rose expressed in a January 2012 *Gizmodo* article: “The fact that you can’t opt-out of shared search data, and that Google will know more about you than your wife? That’s a little creepy” (253).

A letter signed by 36 state attorneys general was sent to Google co-founder and CEO Larry Page. The letter reads, “On a fundamental level, the policy appears to invade consumer privacy by automatically sharing personal information consumers input into one Google product with all Google products” (254). In particular, questions were raised about whether users can opt-out of the new data sharing system either globally or on a product-by-product basis (255). Google responded that by folding more than 60 product-specific privacy policies into one, the company is explaining its privacy commitments in a simpler and more understandable manner (256).

The Electronic Frontier Foundation explained, “Search data can reveal particularly sensitive information about you, including facts about your location, interests, age, sexual orientation, religion, health concerns, and more” (257). Nick Mediati wrote in *PC World*, “This grand consolidation means that all of your Google account data will live in a single database that every Google service can access. Google Maps will have access to your Gmail data, which will have access to your YouTube history, and so on” (258). Users who log on to Google, Gmail, and YouTube cannot opt out of Google’s new privacy policy (259).

Before Google plus Your World, Microsoft’s search engine Bing has been collaborating with Twitter since 2009 and Facebook since 2010 to surface more personalized content in search results. Microsoft pays Twitter to obtain a real-time feed of tweets for its search engine Bing (260). Bing users have the ability to see what their friends have liked across the web, including news articles, celebrities, movies, and music (261).

The idea behind the search integration is the “Friend Effect” – a decision made when someone obtains a friend’s stamp of approval (262). For example, critics may pan a movie that you are interested in, but if your friends say the movie is worth seeing anyway, you are more likely to watch that movie. A Nielsen report titled “Global Trust in Advertising and Brand Messages” has validated the “Friend Effect” by showing that an overwhelming 92% of consumers around the world trust recommendations from friends and family above all other forms of advertising (263).

In 2011, Microsoft spruced up its mobile Bing site with Facebook integration (264) and deepened the ties between Bing and Facebook by displaying the social search results along with Facebook friends’ pictures, cities of residence, education, employment details, travel locations, and even shopping lists (265).



In response to Google, plus Your World, Microsoft redesigned Bing in 2012 to feature the new “Sidebar,” a social search function to scour user’s social networks to surface information relevant to the search queries (266). For instance, a search for “Los Angeles Chinese restaurants” will return existing posts from friends talking about a similar topic on Facebook, Twitter, and Google+.

In a 2012 interview with *The Guardian*, Google co-founder Sergey Brin complained, “all the information in [the Facebook and iPhone] apps – that data is not crawlable by web crawlers. You can’t search it” (267). Indeed, all search engines have the same mission of prying into every detail in every corner of the world in order to unearth as much information as possible. However, the walled garden of Facebook and social media have been increasingly driving more referral traffic than traditional search. Tanya Corduroy, digital development director for *The Guardian*, reported in March 2012 that Facebook made up more than 30% of the newspaper’s referrals compared to a mere 2% eighteen months ago (268).

Social search – such as Google, plus Your World, and Microsoft’s Bing – is shaping the future of search engines, making search results more personal, more comprehensive, and hopefully more useful. It is shifting the landscape of search engine optimization (SEO) to incorporate “Friend Effect” in addition to keywords, meta tags, cross-linking, and other traditional SEO techniques. Google co-founder Larry Page once said, “The ultimate search engine is something as smart as people – or smarter” (269).

## 2.19 Self-Destructing Messages

Self-destructing messages were popularized by the Mission Impossible TV series starring Peter Graves (270) and the motion pictures of the same title starring Tom Cruise (271). Like the seemingly impossible moon landing, Hollywood has repeatedly predicted the future, including self-destructing messages.

Launched in September 2011, Snapchat is a photo messaging app developed by Evan Spiegel and Robert Murphy at Stanford University. Users can send each other ephemeral photos, videos, text, and drawings (collectively known as snaps) that self-destruct after 1 to 10 seconds (272). Snapchat quickly earned a notorious reputation as a tool for sending risqué messages. In October 2013, Snapchat introduced Stories that are rolling compilations of snaps that last at most 24 hours (273).

By April 2014, over 700 million snaps are shared per day on Snapchat – more than Facebook, WhatsApp, and other social networks. Snapchat Stories have amassed 500 million views per day (274).

Although a major goal of Snapchat is to avoid the privacy pitfall of social media, it is far from foolproof. First, the recipient can take a screenshot before the time runs out. Second, “expired” Snapchats can be brought back from the dead. “As a digital forensics firm,” said Richard Hickman, digital forensic examiner at Decipher Forensics. “We offer for anyone wanting to retrieve their Snapchats for an affordable price of \$300-\$600. Parents and law enforcement can mail us phones, and we will

extract the Snapchat data, and send the phone and data back in a readable format” (275).

In May 2014, Snapchat settled charges with the Federal Trade Commission for deceiving customers about self-destructing messages. Moreover, Snapchat also uploaded entire contact lists from users’ iPhones without permission. “If a company markets privacy and security as key selling points in pitching its service to consumers, it is critical that it keep those promises,” said FTC Chairwoman Edith Ramirez (276).

When Snapchat repeatedly refused Facebook’s acquisition offers, Facebook followed suit and released the Facebook Poke app in December 2012 (277). Essentially a Snapchat clone, Facebook Poke lets users discreetly send messages, photos, and videos that are deleted in a few seconds.

In April 2013, following the trend popularized by Snapchat and Poke, Efmr offers an app that posts time-limited messages, photos, and videos to Twitter (278). Tweets are automatically deleted after a set amount of time chosen by its user, but Efmr clarifies on its website that “due to the different time zones and third party server response time, efmr may not be able to delete tweets at the exact time chosen. There may be a delay of approximately 1 to 3 minutes” (279).

In June 2014, Facebook launched the Slingshot app to allow users exchange photos and videos without requiring Facebook accounts (280). Like WhatsApp, users sign up for Slingshot with their mobile phone number. Similar to Snapchat, photos and videos disappear from users’ smartphones after they are viewed.

Apple also jumped on the self-destructing message bandwagon in June 2014 when it announced that audio and video messages within iOS 8 will automatically vanish within a few minutes. “You don’t want to have to clean these up,” said Greg Joswiak, head of iOS product marketing. “Audio and video messages can take up space, so they’re set to self-destruct unless you choose to keep them” (281).

## 2.20 Facebook Anonymous Login

In June 2010, chief political correspondent Declan McCullagh at *CNET* reported that “even if someone is not a Facebook user or is not logged in, Facebook’s social plug-ins collect the address of the Web page being visited and the Internet address of the visitor as soon as the page is loaded – clicking on the Like button is not required. If enough sites participate, that permits Facebook to assemble a vast amount of data about Internet users’ browsing habits” (282).

Four years later at the April 2014 f8 Conference, Facebook unveiled Anonymous Login that allows users to sign into apps without sharing their identities and personal information contained in their Facebook accounts (283). Circumventing privacy concerns helps to eliminate the potential barrier for many users to try out new apps – a welcome news for both app developers and users.

According to Facebook, Anonymous Login promises to be a great feature for third-party app developers (284):

- The most convenient way for people to log into your app without sharing their personal information.
- An easy way for people to try your app: Increase your conversions by helping people get started with your app quickly. They won't have to create a password or share their personal information.
- One login across every device: Just like Facebook Login, when people log in on one device, they can continue their experience across their other devices. It's the best combination of convenience and privacy.
- Fully compatible with Facebook Login: Anonymous Login is designed to work seamlessly with Facebook Login. People using your app can upgrade from Anonymous Login to Facebook Login with just a few taps.

Shortly after the introduction of Anonymous Login, Facebook announced in May 2014 that it was going to reduce the amount of automatic posts from apps to users' News Feed. In other words, Facebook gave up on automatically posting everything we do online with Instagram, Pinterest, Farmville, Spotify, RunKeeper, and other apps (285). Instead of sharing stories implicitly, users can explicitly share their Open Graph stories and have more control over when they share from the apps that they use (286).

CNN's Doug Gross commented on Facebook's privacy stand in 2014: "Critics have questioned Facebook's commitment to privacy over the course of its 10-year history, claiming the company would prefer users share as openly as possible--which advertisers like--than adjust their settings to be more private. But changes in recent months suggest the social platform has decided on a different tack" (287).

To the privacy advocates, it seems that Facebook is finally heading the right direction!

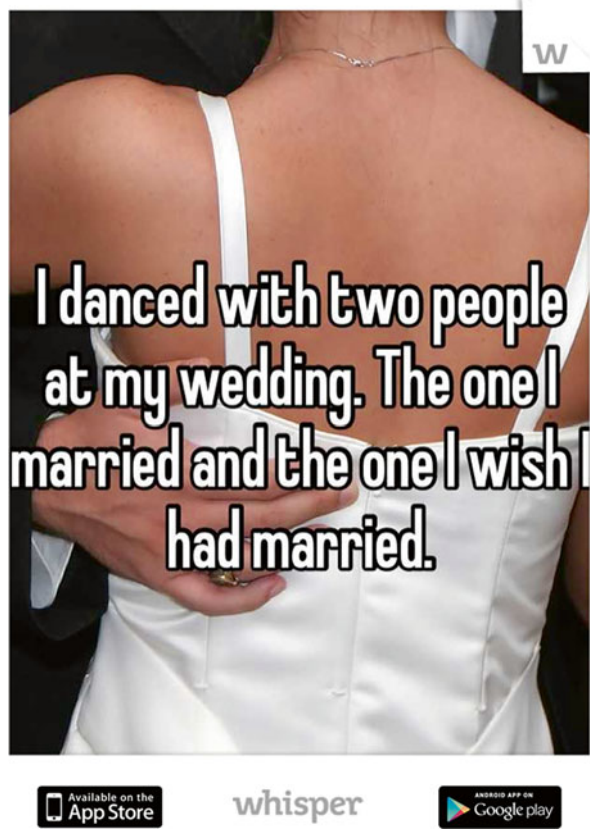
## 2.21 Anonymous Social Apps

With Confide, Rumr, Secret, Whisper, and Yik Yak, a growing number of anonymous social apps enable people to share whatever they are thinking anonymously without worrying about consequences. As a result, there is no way to tell what posts are true or false. Some messages are brutally honest while some others may be deemed offensive. One of the posts on Whisper said, "I danced with two people at my wedding. The one I married, and the one I wish I married instead" (288) (see Fig. 2.2).

Whisper CEO Michael Heyward told *Business Insider*, "You are who you are when no one else is looking. Anonymity is a really powerful tool. But we think about it like that Spiderman' quote: 'With great power comes great responsibility.' Think about all the things you can do with a hammer. You can build something great ... or you can kill someone" (289).

In June 2014 during the intensifying conflict in Iraq, many Iraqis could not get on Facebook and Twitter, but they were able to use the Whisper app to share real-time information anonymously. Before the media could confirm the U.S. embassy's

**Fig. 2.2** An Anonymous Post on Whisper



partial staff relocation, a whisper was posted online: “US embassy in Baghdad is evacuating!!! Yeppppppp!!!!” (290).

A month prior in May 2014, Secret made to the top 10 most popular downloads on the Apple App Store in Russia, Ukraine, Moldova, Latvia, and The Netherlands. Secret user registration requires no real names and no user profile, because “it’s not about who you are — it’s about what you say. It’s not about bragging — it’s about sharing, free of judgment” (291).

The anonymous social app is expanding to the United States and China. In an email to *TechCrunch*, Secret co-founder David Byttow wrote, “Secret has caught on in Russia. It climbed to the #1 social network in a number of days. They really love it. ... China is a special market, and one can’t expect to just put English product in China or simply translate it and call it a day. It takes a local team to build for the Chinese market. Usually this involves forming a joint-venture or some other arrangement” (292).

Inspired by Secret, Leak is a new service launched in August 2014 to allow people to send anonymous emails without using their own email addresses. “We

wanted Leak to be a really positive and exciting tool,” said Leak cofounder Laurent Desserrey. “It’s sure that people can send negative leaks, but that is really not what the product is about. It’s about saying the truth you’re ashamed to say. And if it’s getting negative you can block emails from Leak” (293).

Upfront Ventures’ general partner Mark Suster opines that “at its best apps like Secret or Whisper can be a place where people can reach out to the community for support. They could be a place to find solace when you’re lonely or problem solve when you don’t know who else to turn to. But for now Secret is not that. It’s something all together different. It is ... Perez Hilton. TMZ. Joan Rivers. Geraldo Rivera. All rolled up into one anonymous bitchy session” (294).

In spite of the potential risk of misinformation and disinformation, anonymous social apps can be powerful tools for citizen journalists, whistleblowers, political activists, crime tipplers, and other cybercitizens whose online privacy is a matter of the utmost importance.

## 2.22 Responses to Zero Privacy

Absolute privacy is unattainable. Everything we say can be captured and deciphered remotely by picking up the vibrations on a window, a plastic cup, or a leaf of a houseplant in the room (295) (296). Researchers at Intel and University of California, Berkeley demonstrated that private information can be extracted from encrypted HTTPS communications by searching for patterns in the data stream (297). New York artist Heather Dewey-Hagborg extracted the DNA from a strand of hair, a cigarette butt, or a chewed piece of gum from a public place, and then recreated a 3-D face in the form of a portrait sculpture that resembles the person who left the DNA behind (298).

In response to Scott McNealy’s statement, “You have zero privacy anyway. Get over it” (6), *PC World* columnist Stephen Manes wrote, “He’s right on the facts, wrong on the attitude. It’s undeniable that the existence of enormous databases on everything from our medical histories to whether we like beef jerky may make our lives an open book, thanks to the ability of computers to manipulate that information in every conceivable way. But I suspect even McNealy might have problems with somebody publishing his family’s medical records on the Web, announcing his whereabouts to the world, or disseminating misinformation about his credit history. Instead of ‘getting over it,’ citizens need to demand clear rules on privacy, security, and confidentiality” (299).

In light of Edward Snowden’s NSA leaks, author Jack Cheng wrote on *CNN*, “The revelation that the government is snooping on our communications in the interest of national security is nothing new. This latest incident doesn’t come as a shocker. ... Privacy is not dead. ... It is not simply a matter of sharing more or less; not merely how much but in what way and with whom. Privacy is contingent on who we’re trying to keep something private from – family, friends, acquaintances, employers, strangers. ... Friends of mine will untag themselves from Facebook pho-

tos to hide more unflattering images of themselves if they are ‘friends’ with their employers. Some refrain from posting to Facebook things they don’t want their parents to see, opting for Twitter instead, where their parents don’t have accounts. Snapchat is built around a privacy-minded constraint: Mission Impossible-esque messages that self-destruct shortly after opening. ... The kind of privacy that is becoming more of the norm is dependent on our ability to move freely among the myriad services and apps, and to opt in selectively, both in what we use and how we choose to use them” (300).

A security expert and longtime organizer for DEF CON, Nico Sell cofounded Wickr, a mobile app that provides military-grade encryption of text, picture, audio and video messages as well as anonymity and secure file shredding features. “Privacy is dead,” Sell told Laurie Segall in a *CNN* interview in June 2014. “Ownership is not dead. Everyone cares about owning their conversations and their pictures. I think that’s the word we need to start using instead of privacy, because privacy has been tainted” (301).

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# Chapter 3

## Smartphones and Privacy

*“We’re as surprised as anybody to see all that information flowing. It raises a lot of questions for the industry – and not [only] for Carrier IQ.”*

– Carrier IQ’s Andrew Coward (December 2011)

*“[Mobile World Congress] really should be held in Geneva, close to where Mary Shelley created Frankenstein. With our increasing addiction to our mobile phones, we are in danger of creating a monster.”*

– Social critic Andrew Keen (February 2012)

*“Your cell phone is communicating completely digital; it’s part of the Internet. The attack surfaces for adversaries to get on the Internet now include all those mobile devices. ... The mobile security situation lags. It’s far behind.”*

– NSA Director Army Gen. Keith Alexander (July 2012)

*“There are no more tables for two; tables for four are our most intimate encounters—two humans and two devices.”*

– Rev. Nancy Colier (March 2014)

### 3.1 Smartphones

By the end of 2014, 1.76 billion people are expected to own and use smartphones, up more than 25% over 2013 (1). Smartphones are the most prevalent portable social networking devices. Worldwide smartphone sales soared to 491.4 million units in 2011 alone (2). There are more than 1.2 billion active mobile web users in the world (3). In September 2011, 82.2 million Americans own smartphones, 70% of which are either iPhones or Android phones (4). 64.2 million U.S. smartphone users accessed social networking sites or blogs on their mobile devices at least once in December 2011 (5). March 2012 marked the tipping point when a majority (50.4%) of U.S. mobile subscribers owned smartphones (6).

In June 2011, a Harris Interactive survey of 2,510 Americans aged 18 and older showed that people are so addicted to their mobile devices that a majority of them would “sneak-a-peek” at their smartphones even during work meetings by employing tactics such as “hiding their mobile device under the table or in a notebook” or “excusing themselves to go to the restroom” (7).

A U.K. study in 2012 revealed that two-thirds of people suffer from “nomophobia” – the fear of being without their phone (8). Young adults, aged 18 to 24, are more nomophobic (77%) than average. 41% of people, more men than women, have two phones or more in an effort to stay connected.

In a March 2014 article in *Psychology Today*, Rev. Nancy Colier wrote, “A friend of mine is separating from her husband because he cannot separate from his iPhone. ... There are no more tables for two; tables for four are our most intimate encounters—two humans and two devices” (9).

Technology is trying to keep up with human’s demand. The tremendous growth of cell phone usage in the United States has created “spectrum crunch” – running out of the airwaves necessary to provide voice, text, and Internet services (10). To alleviate the problem, U.S. Congress authorized the Federal Communications Commission (FCC) in 2012 to hold voluntary incentive spectrum auctions for broadcast TV to turn in to the FCC spectrum that they are not using (11).

Mobile security, however, is seriously lagging behind. “Your cell phone is communicating completely digital; it’s part of the Internet,” said Army Gen. Keith Alexander, director of the NSA and commander of the U.S. Cyber Command. “The attack surfaces for adversaries to get on the Internet now include all those mobile devices. ... The mobile security situation lags. It’s far behind” (12). Nonetheless, as security strategist Brian Contos at McAfee said, “People aren’t going to go back to driving the Model T any more than they’re going to go back to rotary telephones because of the risks on smartphones” (13).

### **3.2 Location Tracking on iPhone and iPad**

In April 2011, Alasdair Allan and Pete Warden reported that iPhones and 3G iPads are regularly recording the position of the device into a hidden file called “consolidated.db” (14). The secret database file has been storing the locations (latitude-longitude coordinates) and time stamps, effectively tracking the history of movement of the iPhone and 3G iPad users for a year since iOS 4 was released in 2010. Although the data is unencrypted and unprotected on the mobile device, it is sent to Apple in an anonymous and encrypted form (15).

Apple has since learned to be more transparent and upfront with customers. On the new iPad 2 setup procedure, users can enable or disable Location Services that allow Apple’s Maps, Compass, Camera, Photos, Weather, Reminders, Safari, Find My iPad, and other apps to gather and use data indicating the user’s approximate location. The user location is determined using GPS along with crowdsourced Wi-Fi hotspot and cell tower locations. During the iPad 2 setup, Apple also asks the user

for permission to automatically send diagnostics and usage data to Apple. Diagnostic data may include location information.

In March 2013, Apple acquired indoor-GPS company WifiSLAM which combines traditional GPS coordinates with smartphone tools such as accelerometers and compasses in order to pinpoint the user's location indoors within about 8 feet. "This accuracy will change how you interact with indoor environments," said WifiSLAM co-founder Anand Atreya. "Think about going to the supermarket. We can provide information relevant to the product right in front of you" (16). Merchants can track customers by their mobile devices' permanent media access control (MAC) addresses.

U.S. retailers including American Apparel, Family Dollar, Home Depot, and Nordstrom have experimented with indoor GPS to track customers' shopping behaviors (17). Some consumers have complained about the perceived invasion of privacy and decided to turn off their smartphones while shopping.

In June 2014, Apple announced at its Worldwide Developers Conference (WWDC) that the WiFi scanning in iOS 8 would use "random, locally administered MAC addresses" instead of permanent MAC addresses. The change will essentially stop retail analytics companies from tracking shoppers in stores using their mobile devices' MAC addresses (18). However, companies can still use iBeacon, Apple's implementation of Bluetooth Low Energy (BLE) wireless technology in iOS 7 and 8, to detect the proximity of mobile devices and send them advertisements and other information (19).

### 3.3 Carrier IQ

Not to be outdone by the iPhone location tracking software, the Carrier IQ software has been found on about 150 million cell phones including the iPhone, Android, BlackBerry, and Nokia phones (20). On November 28, 2011, security researcher Trevor Eckhart posted a video on YouTube detailing hidden software installed on smartphones that secretly logs keypresses, SMS messages, and browser URLs (21). Carrier IQ responded by saying "we're as surprised as anybody to see all that information flowing" (22) and went on to explain that the hidden software allows network operators to "better understand how mobile devices interact with and perform on their network" by uploading diagnostic data once per day, at a time when the device is not being used (23).

Amid the public outcry over the Carrier IQ tracking scandal, a lone columnist Matthew Miller at *ZDNet* concurred with Carrier IQ. He voiced his opinion: "A few years back I was asked if I could install software on my phone so that a company could track my usage patterns to improve services. I accepted and was paid something like \$5 to \$10 a month for each phone used and sending this data. ... The media has made it more malicious than it really is and I am not concerned about my phone usage at all. ... It sounds to me like the software is designed to BENEFIT consumers and is not being used to track and target you" (24).



Regardless of the real intention of Carrier IQ, the truth remains that no one wants some strangers or companies snooping around behind their back. To know a person's location over time generates a great deal of information about the person. American Civil Liberties Union (ACLU) expounded on the severity of the issue, "A person who knows all of another's travels can deduce whether he is a weekly church goer, a heavy drinker, a regular at the gym, an unfaithful husband, an outpatient receiving medical treatment, an associate of particular individuals or political groups – and not just one such fact about a person, but all such facts" (25).

Although AT&T, T-Mobile, Sprint, and Apple have said that they use the Carrier IQ software in line with their own privacy policies, the Federal Trade Commission and Federal Communications Commission have opened an investigation into the practices of Carrier IQ as possibly unfair or deceptive (26).

While secret location tracking and Carrier IQ are in the spotlight, they are just the tip of the iceberg that deserves scrutiny. As people are communicating via voice, photos, and videos on their cell phones, the phone companies are recording the metadata that travels with them, including locations, identity of the callers and receivers, amount of data transferred, and the costs of the transmissions (27). Verizon keeps such data on their servers for 12 months, Sprint for 24 months, T-Mobile for 60 months, and AT&T for 84 months (28). Most individuals have over 1 million pieces of personal information in the possession of cell phone companies over a 4-year span. This information is analyzed and sold to other companies that handle localized advertisements and offer personalized search results. According to *USA Today*, AT&T, Verizon, and BellSouth have also provided this information to the National Security Agency (NSA), which reportedly aims "to create a database of every call ever made within the nation's borders" (29).

### 3.4 Smartphone Data Collection Transparency

In the 2011 article titled "Your phone company is selling your personal data," *CNN's* David Goldman wrote that "your phone company knows where you live, what websites you visit, what apps you download, what videos you like to watch, and even where you are. Now, some have begun selling that valuable information to the highest bidder" (30). In fact, all major carriers sell their customers' smartphone data. "An interesting transformation is happening in wireless, in which consumers are no longer customers – they're the product," said Dan Hays, principal in PricewaterhouseCooper's communications and technology practice. "The trick is for operators to find out how to make money without violating their relationships and trust with their users" (31).

Under the increasing scrutiny from consumers and government officials, companies are learning to be more transparent with data collection practices (32), and giving their customers the option to opt out of their data collection. For instance, Verizon Wireless sent their customers an email on November 17, 2011 about their



new privacy programs – information the phone company collects and how the phone company uses the information:

1. Mobile Usage Information:
  - a. Addresses of websites you visit when using our wireless service. These data strings (or URLs) may include search terms you have used.
  - b. Location of your device (“Location Information”).
  - c. App and device feature usage.
2. Consumer Information:
  - a. Information about your use of Verizon products and services (such as data and calling features, device type, and amount).
  - b. Demographic and interest categories provided to us by other companies, such as gender, age range, sports fan, frequent diner, or pet owner (“Demographics”).

The information is used by Verizon Wireless and shared with other companies to create business and marketing reports, as well as to make mobile ads more relevant for the consumers. As a consolation, Verizon Wireless assures their customers, “Under these new programs, we will not share outside of Verizon any information that identifies you personally.” In addition, consumers are given a chance to opt out of the new privacy programs within 45 days of receiving the email notice.

We are witnessing more transparency in business practices today. In November 2011, two U.S. shopping malls (Promenade Temecula in California and Short Pump Town Center in Virginia) announced that they would track shoppers’ movements throughout the premises by monitoring the signals from their cell phones (33). The collected data monitored how the shopping crowds moved from store to store, and how long they lingered in any given shop. Consumers could opt out by turning off their cell phones. After an intervention from a U.S. Senator who raised privacy concerns, the shopping malls ceased their monitoring programs (34).

U.S. retailers including J.C. Penney and Home Depot are reportedly also considering using the same cell phone technology to track their customers (35). Meanwhile, Neiman Marcus hosted its second in-store foursquare challenge in March 2012. For a chance to win a coffee table book, participating customers checked in using the location-based social site foursquare to a Neiman Marcus location on March 31 using their smartphones (36). At Walgreens, customers checking in to the drugstore via a foursquare or Facebook mobile app would receive e-flyers and e-coupons (37).

## 3.5 Always On

Some may say that smartphones are liberating and convenient anytime and anywhere, but others may vehemently disagree when “anytime and anywhere” becomes “all the time and everywhere.” Social critic Andrew Keen declared in a February

2012 *CNN* article that our mobiles have become Frankenstein's monster: "As always, Mobile World Congress, the world's largest mobile telephone extravaganza, is being held in Barcelona this year. But it really should be held in Geneva, close to where Mary Shelley created Frankenstein. That's because, with our increasing addiction to our mobile phones, we are in danger of creating a monster that we are less and less able to control. ... These hardware companies will articulate the benefits of their technology in terms of personal empowerment. But the real truth behind these increasingly intelligent devices is personal disempowerment" (38).

Keen's point of view is manifested in the mobile phone users' reactions to the April 2012 release of the photo-sharing Instagram app on Android devices. With 14 million users, Instagram was awarded the 2011 iPhone App of the Year (39). A cross-breed between Facebook and Twitter, Instagram enables sharing and comments on friends' pictures as well as allows people to follow other users. When the iPhone-exclusive app was made available for Android, an insidious tweet war broke out between iPhone and Android users. *CNET* associate editor Emily Dreyfuss remarked, "Which smartphone we own has begun to inform our identities. In our gadget-filled lives, our phones have become another way for us to organize ourselves into separate groups, to label each other as 'other' and 'apart.' Our tech has come to define us" (40).

Since the \$1 billion acquisition by Facebook, Instagram has hit 200 million users in March 2014 (41). Instagram users have shared more than 20 billion photos and an undisclosed number of 15-second videos (42). To allow for user control of online privacy, Facebook launched Instagram Direct in December 2013 to let users send text, video, and photo messages to each other privately on Android and iPhone (43).

Regardless of Android or iPhone, smartphone addiction can be a nuisance in public. In March 2012, a Philadelphia bus rider named Eric was so annoyed by loud phone calls on the bus that he decided to jam the cell phone signals using an electronic jammer (44). "A lot of people are extremely loud, no sense of just privacy or anything. When it becomes a bother, that's when I screw on the antenna and flip the switch," said Eric before realizing that cell phone jamming is illegal in the United States. Apparently, many share Eric's sentiment. During the weekend after Eric appeared on NBC10 News, "cell phone jammer" became one of the top 10 searches on Google Trends (45). Jokingly perhaps, controversial *CNN* contributor Bob Greene suggested bringing back the phone booths, or phoneless booths to be precise, in public places around the country for people to make their private cell phone calls (46). No one believes that the idea would work. Stationary phone booths simply do not sit well with the consumer's need for mobility that makes cell phones so attractive in the first place.

### 3.6 Mobile Apps Privacy Invasion

Besides the carrier-installed apps on cell phones, there are plenty of utility and social media apps that users may download onto their cell phones. With an install base of over 1 million people, Path for iPhone and Android is one such free app that is "the smart journal that helps you share life with the ones you love" (47). In February 2012, Arun Thampi in Singapore discovered that Path uploaded the

entire iPhone address book (names, email addresses, phone numbers, etc.) to its servers without seeking permission from the user (48). Within a couple of days, Path co-founder and CEO Dave Morin issued a public apology and released a new version of the app that asks the user for permission to upload the address book from iPhones and Android devices (49).

It turns out that Path is not alone. Twitter also acknowledged in February 2012 that when a user taps the “Find friends” feature on its smartphone app, the company downloads the user’s entire address book, including email addresses and phone numbers, and keeps the data on its servers for 18 months (50). Unlike Path, Twitter did not apologize, and the company simply clarified the language associated with Find Friends: Instead of “Scan your contacts,” it would display “Upload your contacts” for iPhones and “Import your contacts” for Android devices in order to inform the users that the entire address book would be shared with Twitter.

Path and Twitter mobile apps have become emblematic of disrespect for individual privacy in the digital information age. It is conceivable that many more smartphone apps are collecting private information without the knowledge of the users. Facebook, Flickr, and other mobile apps have been accused of reading text messages and other personal information on their installed cell phones (51). LinkedIn’s mobile app was caught collecting users’ complete calendar event, including email addresses of people users are meeting with, meeting subject, location and meeting notes (52).

Moreover, security experts have demonstrated that Apple’s iOS platform enables software developers to create mobile apps to upload all the photos, calendars, and recorded conversations on an iPhone (53). Similarly, Google’s Android platform also allows developers to build mobile apps to copy or steal photos and personal data from the Android phones of unwitting users (54).

Imagine you are talking to your friend on the phone about going to Hawaii for your next vacation. After you hang up, you start getting calls from travel agencies, sunscreen pharmaceuticals, and other companies trying to sell you something useful for your upcoming trip. There are two possible reactions to this: One, you are spooked by the invasion of privacy; or two, you are delighted by the offers of coupons and promotions without having to search for them online.

### 3.7 Mobile Apps for Children

In September 2011, the Federal Trade Commission settled its first legal action against a mobile app developer in enforcement of the Children’s Online Privacy Protection Act (55). According to the consent decree, the iOS developer was fined \$50,000 and ordered to start publishing information about the kinds of data collected via their apps and how that data is shared, to get parental consent before collecting any new data, and to delete all the data they had collected so far (56).

In February 2012, the Federal Trade Commission issued a staff report showing the results of a survey of mobile apps for children (57). The survey reveals that neither the app stores nor the app developers provide adequate information for parents

to determine what data is being collected from their children, how it is being shared, or who will have access to it. The report states, “[The FTC] staff was unable to determine from the promotion pages whether the apps collected any data at all – let alone the type of data collected, the purpose of the collection, and who collected or obtained access to the data. ... Although the app store developer agreements require developers to disclose the information their apps collect, the app stores do not appear to enforce these requirements. This lack of enforcement provides little incentive to app developers to provide such disclosures and leaves parents without the information they need. ... Ads running inside an app may incorporate various capabilities allowing the user to do things like directly call phone numbers or visit websites appearing in the ad” (58).

In a Fall 2013 research report by Common Sense Media, 72% of children age 8 and under have used a mobile device for some type of media activity such as playing games, watching videos, or using apps, up from 38% in 2011; and 38% of children under 2 have also used a mobile device for media, up from 10% in 2011 (59).

In June 2013, President Barack Obama announced the new ConnectED initiative to connect 99% of America’s students to the Internet through high-speed broadband and high-speed wireless within 5 years (60). In response, Microsoft offered \$1 billion in April 2014 to help set up public school kids with mobile devices across the country’s 14,000 public school districts (61).

There will be a lot more variety of mobile apps for children, and as a result, more scrutiny as well.

### 3.8 Android Market and Google Play

In October 2011, the Android Market had over 200,000 free and paid apps (62) available for 190 million activated Android devices around the world (63). By December 2011, Google announced that 10 billion apps have been downloaded from the Android Market (64). As of August 2014, there are over 1.33 million Android apps on Google Play (65).

With the overwhelming number of new mobile apps, Google has fallen short of ensuring that the mobile apps are tested to be free of virus and suspicious behavior (66). For example, DroidDream, a trojan rootkit exploit, was released in early March 2011 to the Android Market in the form of several free applications that were, in many cases, pirated versions of existing priced apps (67). This exploit allowed hackers to steal information such as IMEI and IMSI numbers, phone model, user ID, and service provider. Such information can be used in cloning a cell phone and using it illegally without the knowledge of the original owner. The exploit also installed a backdoor that allowed the hackers to download more code to the infected device.

In February 2012, Google revealed the use of “Bouncer” to automate the scanning of Android Market for potentially malicious software without requiring developers to go through an application approval process (68). Google reported, “The [Bouncer] service has been looking for malicious apps in Market for a while now, and between the first and second halves of 2011, we saw a 40% decrease in the num-

ber of potentially-malicious downloads from Android Market. This drop occurred at the same time that companies who market and sell anti-malware and security software have been reporting that malicious applications are on the rise” (69).

In the same report, Google also admitted, “no security approach is foolproof, and added scrutiny can often lead to important improvements” (69). Indeed, while faking an SSL certificate enabled iOS developer Arun Thampi to watch the transmitted data and thereby expose the Path app, it would be more difficult if the data was encrypted without SSL.

In March 2012, Google replaced Android Market with Google Play to offer consumers a broad spectrum of content including books (previously Google eBookstore), music (previously Google Music), movies, and mobile apps (70).

The consolidation, along with the proliferation of Android devices worldwide, seems to pay off. In Q1 2014, Google Play led the iOS App Store in downloads by approximately 45% according to App Annie Analytics (71). The growth was driven mostly by emerging markets such as Russia, Brazil, Mexico, and Turkey.

### 3.9 Apple's App Store

In March 2011, Apple's App Store had over 500,000 free and paid apps (72) available for more than 100 million iPhone users worldwide (73). By July 2011, the App Store had reached 15 billion downloads (74); and by December of the same year, iOS apps had generated six times the revenue of Android apps (75).

In June 2012, Apple CEO Tim Cook announced at the annual Worldwide Developers Conference, “The App Store now has 400 million accounts – the largest number of accounts with credit cards anywhere on the Internet. Some 650,000 apps are now available. ... Customers have now downloaded an astounding 30 billion apps” (76). In October 2013, Cook updated the audience at the annual iPad event that more than 1 million apps were in the App Store and over 60 billion total apps had been downloaded (77).

Despite Apple's assertion of its tight quality control over its App Store, a scam Pokemon game reached number 2 on Apple's App Store charts in February 2012 and raked in \$10,000 before it was pulled (78). The 99-cent “Pokemon Yellow” game crashed as soon as it opened. The debacle called into question Apple's approval process, let alone the company's ability to ensure that the mobile apps have a privacy policy in place. The consensus in the developer community believes that “overworked Apple reviewers, with thousands of apps waiting in the approval queue, likely don't test apps too thoroughly at first. But once they gain popularity, the Apple team gives them a closer look” (79).

On February 15, 2012, Apple announced that it will start requiring mobile apps to obtain explicit permission from iPhone and iPad users before the apps can collect and store information about user's personal contacts. “Apps that collect or transmit a user's contact data without their prior permission are in violation of our guidelines,” Apple spokesman Tom Neumayr told *CNN* (80).

In May 2013, Apple's App Store reached another milestone by hitting 50 billion downloads (81).

### 3.10 Facebook App Center

On May 9, 2012, Facebook unveiled Facebook App Center, a clearinghouse for social apps on the web and on smartphones. Facebook's Aaron Brady wrote in the Developer Blog, "For the over 900 million people that use Facebook, the App Center will become the new, central place to find great apps like Draw Something, Pinterest, Spotify, Battle Pirates, Viddy, and Bubble Witch Saga. ... The App Center is designed to grow mobile apps that use Facebook – whether they're on iOS, Android or the mobile web" (82).

The Facebook App Center opened in June 2012 with over 600 apps (83). Featuring mobile and web apps, the App Center gives users personalized recommendations and lets them browse through the apps that their friends are using.

A Facebook app has access to plenty of user information on Facebook, which includes the user's name, profile pictures, username, user ID, networks, friend list, gender, age range, and locale as well as a user's email address and birthday on some occasions (84). This makes a malicious Facebook app much more dangerous.

Back in January 2011, Facebook had disabled a feature that gave app developers access to user's address and phone number (85). It remains to be seen whether the Facebook App Center will do a better job than the Google Android Market and Apple Store in screening their apps.

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# Chapter 4

## Privacy Breaches

*“Quite simply, it was a mistake.”*

– Google’s Senior VP Alan Eustace (May 2010)

*“This is a bug, which we plan to fix shortly.”*

– Apple Press Info (April 2011)

*“We are sorry. We made a mistake.”*

– Path co-founder and CEO Dave Morin (February 2012)

*“It wasn’t secret, nobody leaked it; it was not a big secret.”*

– Columbia University Prof. John Dinges (May 2013)

*“Useful information for the millions outweighs the privacy of the few.”*

– Newton Lee

### 4.1 Google Street View

Google Street View is a great service in conjunction with online maps and driving directions (1). It allows Google Map users explore places through 360-degree panoramic street-level imagery. It is handy for planning a trip to a new restaurant or an unfamiliar neighborhood. Since 2007, Google has employed Street View cars, trikes, snowmobiles, and trolleys to take pictures in the streets, national parks, university campuses, sports stadiums, and museums around the world (2). (See Fig. 4.1).

Many of the pictures taken contain unsuspecting individuals and private vehicles that happened to be in the right place at the right time (or in the wrong place at the wrong time depending on our point of view). Nevertheless, useful information for the millions outweighs the privacy of the few. It would be impractical for a moving Google Street View car to issue a privacy warning such as: “By your presence in this area, you acknowledge that you have been informed that you may be photographed as part of the Google Street View. Further, by your presence here, you grant your irrevocable permission for your likeness and mannerisms to be included in the Google Street View without compensation and/or credit, and for such data to be exploited in any and all media worldwide in all perpetuity. If you do not wish to be



**Fig. 4.1** A Google Street View Car – Courtesy of Enrique Bosquet <http://bosquetphotography.com/>

photographed or appear in the Google Street View, please leave this immediate area. Thank you for your cooperation.”

Such a warning would have changed some destinies of life. In Russia, the faces of anyone caught in Yandex Street View are not blurred. In February 2013, Marina Voinova was looking at a panoramic view of an area on Yandex Maps only to find her fiancé Sasha canoodling with another woman. Voinova broke up with Sasha and opted for online dating instead (3).

Unlike Yandex, Google Maps intentionally blurs the individual faces and license plates caught in Street View. That was perfectly fine until April 2010 when the Data Protection Authority (DPA) in Hamburg, Germany raised concerns about exactly what information Google Street View cars collected as they drove the streets (4).

At first, Google confirmed taking photos, WiFi network information, and 3-D building imagery, but denied collecting any payload data sent over the WiFi networks. However, in May 2010, Google made a stunning admission that for over three years, its camera-toting Street View cars have inadvertently collected snippets of private information that people send over unencrypted WiFi networks (5). In October 2010, Google admitted to accidentally collecting and storing entire e-mails, URLs, and passwords from unsecured WiFi networks with its Street View cars in more than 30 countries, including the United States, Canada, Mexico, some of Europe, and parts of Asia (6). Alan Eustace, Google’s senior vice president of engineering and research, wrote in the Google Public Policy Blog, “It’s clear from those inspections that while most of the data is fragmentary, in some instances entire emails and URLs were captured, as well as passwords. We want to delete this data as soon as possible, and I would like to apologize again for the fact that we collected it in the first place” (7).

In March 2013, Google agreed to pay 37 states a total of \$7 million to settle complaints that its Street View cars violated people’s privacy (8). In December 2013, Spain ordered Google to pay a fine of 900,000 euros (\$1.23 million) over privacy violations in “unlawfully collecting and processing personal information” (9). Google blamed its mistakes on software bugs. Were they really bugs or were they company-sanctioned Easter eggs?

## 4.2 Google Easter Eggs in Disguise

Software based Easter eggs are intentionally hidden messages or unusual program behaviors that occur in response to some user inputs or external factors. Easter eggs are normally harmless and humorous. *The Easter Egg Archive*, [www.eeggs.com](http://www.eeggs.com), uncovers many instances of Easter eggs (10).

Google is well known for Easter eggs. If we search for the words “zerg rush“ in Google, an army of O’s would descend on the page, devour each search result one by one, and form the red/golden letters “GG” (Good Game) no matter how hard we manage to click on some O’s to eradicate them (11). In Google Earth, for another example, flying to the coordinates 44°14’39.35”N 7°46’11.53”E surprisingly reveals a pink bunny rabbit overlaid on the Satellite map. (See Fig. 4.2).

However, some software Easter eggs are more like a variant of Trojan horse, worms, adware, or spyware. Anti-virus software is useless against them because they are not malware per se, but they hide secret functionalities from their users. Indeed, uncovered Easter eggs are often disguised as software bugs by their makers.

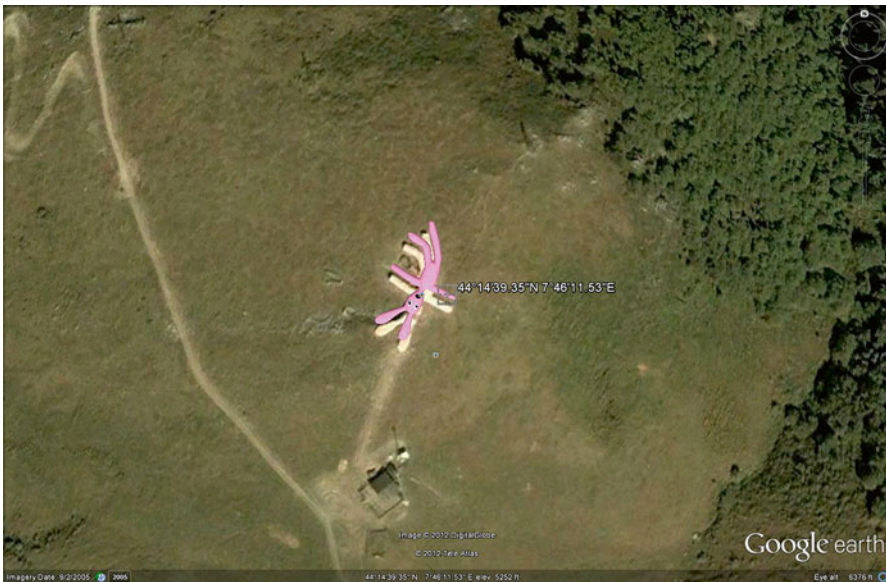


Fig. 4.2 An Easter egg on Google Earth. Courtesy of Google and Tele Atlas.

Let us examine Google's Street View privacy blunder. Google wrote in its official blog on May 14, 2010: "... It's now clear that we have been mistakenly collecting samples of payload data from open (i.e. non-password-protected) WiFi networks, even though we never used that data in any Google products. However, we will typically have collected only fragments of payload data because: our cars are on the move; someone would need to be using the network as a car passed by; and our in-car WiFi equipment automatically changes channels roughly five times a second. ... So how did this happen? Quite simply, it was a mistake. In 2006 an engineer working on an experimental WiFi project wrote a piece of code that sampled all categories of publicly broadcast WiFi data. A year later, when our mobile team started a project to collect basic WiFi network data like SSID information and MAC addresses using Google's Street View cars, they included that code in their software—although the project leaders did not want, and had no intention of using, payload data" (12).

It is a common software engineering practice to reuse pieces of software code from other projects in order to expedite the development of the current project. Repurposing well-written and thoroughly tested codes generally improves system performance and reduces software bugs. Nevertheless, no trained engineer would blindly reuse a piece of software code without reading its functional specification, examining its inline documentation, and performing unit testing. Google engineers are some of the world's brightest and most experienced software developers who pride themselves in writing efficient and clean code. It is mind-boggling to imagine that the Google engineers would leave extra and unnecessary code in the software by mistake, and the software ends up consuming more CPU cycles and taking up more data storage.

To read between the lines of the Google blog, "although the project leaders did not want" does not necessarily mean that "the upper management at Google did not want." Moreover, "quite simply, it was a mistake" might have meant, "quite simply, it was a mistake to get caught."

Five months later after the initial discovery, Google wrote in its official blog on October 22, 2010: "... Finally, I would like to take this opportunity to update one point in my May blog post. When I wrote it, no one inside Google had analyzed in detail the data we had mistakenly collected, so we did not know for sure what the disks contained. Since then a number of external regulators have inspected the data as part of their investigations (seven of which have now been concluded). It's clear from those inspections that while most of the data is fragmentary, in some instances entire emails and URLs were captured, as well as passwords. We want to delete this data as soon as possible, and I would like to apologize again for the fact that we collected it in the first place. We are mortified by what happened, but confident that these changes to our processes and structure will significantly improve our internal privacy and security practices for the benefit of all our users" (7).

Google admitted, "no one inside Google had analyzed in detail the data we had mistakenly collected" and yet they knew with certainty that "an engineer working on an experimental WiFi project wrote a piece of code that sampled all categories of publicly broadcast WiFi data." It is unfathomable that no one inside Google cared to examine the code or at least talk to the engineer who wrote the code in order to determine what type of data could have been collected.



In April 2012, the Federal Communications Commission delivered a subpoena to the Google software engineer who developed the code for downloading information from the WiFi routers. However, Engineer Doe invoked his Fifth Amendment right to avoid self-incrimination. As a result, the FCC conceded that “significant factual questions ... cannot be answered” (13).

Google released the FCC order document after Consumer Watchdog filed a Freedom of Information Act request for an uncensored version with the FCC. The document reveals, “As early as 2007 or 2008, Street View team members had wide access to Engineer Doe’s design document and code in which the plan to intercept ‘payload data’ was spelled out. One engineer reviewed the code line by line, five engineers pushed the code into Street View cars and Engineer Doe specifically told two engineers working on the project, including a senior manager about collecting ‘payload data’” (14).

Google’s code of conduct is “Don’t be evil” (15). It only makes sense to expect Google to practice what it preaches, and to come clean about its engineers and managers.

### 4.3 Apple Software Bugs

Apple’s infamous “goto fail” bug (see Fig. 4.3) caused the improper validation of SLL certificates on OS X and iOS (16). It was a genuine mistake. But back in 2008, some users had noticed Apple’s Trojan app installer that sneaked in the Safari app installation during iTunes and QuickTime software upgrade (17). It did not create much attention, unlike the 2011 discovery of the Apple iPhone location tracking app that secretly stores up to a year’s worth of location data on the users’ iPhones.

```

    hashOut.data = hashes + SSL_MD5_DIGEST_LEN;
    hashOut.length = SSL_SHA1_DIGEST_LEN;
    if ((err = SSLFreeBuffer(&hashCtx)) != 0)
        goto fail;

    if ((err = ReadyHash(&SSLHashSHA1, &hashCtx)) != 0)
        goto fail;
    if ((err = SSLHashSHA1.update(&hashCtx, &clientRandom)) != 0)
        goto fail;
    if ((err = SSLHashSHA1.update(&hashCtx, &serverRandom)) != 0)
        goto fail;
    if ((err = SSLHashSHA1.update(&hashCtx, &signedParams)) != 0)
        goto fail;
    if ((err = SSLHashSHA1.final(&hashCtx, &hashOut)) != 0)
        goto fail;

    err = sslRawVerify(ctx,
                      ctx->peerPubKey,
                      dataToSign,
                      dataToSignLen,
                      signature,
                      /* plaintext */
                      /* plaintext length */)
-uu-:---F1  sslKeyExchange.c  30% L602  (C/l Abbrev Isearch)-----
I-search: goto fail

```

Fig. 4.3 Apple’s “goto fail” Bug

Apple addressed the location data issue on its company website on April 27, 2011 (18):

**“Question:** People have identified up to a year’s worth of location data being stored on the iPhone. Why does my iPhone need so much data in order to assist it in finding my location today?

**Answer:** This data is not the iPhone’s location data—it is a subset (cache) of the crowdsourced Wi-Fi hotspot and cell tower database which is downloaded from Apple into the iPhone to assist the iPhone in rapidly and accurately calculating location. The reason the iPhone stores so much data is a bug we uncovered and plan to fix shortly (see Software Update section below). We don’t think the iPhone needs to store more than seven days of this data.

**Question:** When I turn off Location Services, why does my iPhone sometimes continue updating its Wi-Fi and cell tower data from Apple’s crowdsourced database?

**Answer:** It shouldn’t. This is a bug, which we plan to fix shortly (see Software Update section below).”

Dissecting Apple’s official answers unveils the following suspicions about Apple’s real intentions:

1. The iPhone location tracking app was to store at least seven days of location data. But the more the better.
2. Even with Location Services turned off, the tracking app was to continue to perform its function at least sporadically.
3. The twice-repeated statement “this is a bug which we plan to fix shortly” does not connote the same urgency as something along the line “this is a bug which we are working on fixing.”

Apple is a company renowned for combining art and science in the creation of innovative products. Apple’s zealous engineers and rigorous quality assurance would have easily discovered such an obvious “bug.”

Simon Davies, director of Privacy International, said about the iPhone location tracking app: “This is a worrying discovery. Location is one of the most sensitive elements in anyone’s life ... The existence of that data creates a real threat to privacy. The absence of notice to users or any control option can only stem from an ignorance about privacy at the design stage” (19).

#### 4.4 Facebook User Tracking Bug and Online Behavioral Tracking

Several lawsuits were filed in February 2012 against Facebook for tracking its users even after they have logged out of the service (20). Computer blogger Nik Cubrilovic explained, “Even if you are logged out, Facebook still knows and can track every



page you visit that has Facebook integrated. The only solution is to delete every Facebook cookie in your browser, or to use a separate browser for Facebook interactions” (21). Facebook engineers have issued numerous fixes but none to the complete satisfaction of privacy advocates.

In June 2014, Facebook announced changes to its privacy and advertising policies, extending its ability to track users after they log out of Facebook. In other words, Facebook has turned the user tracking bug into a data mining feature for advertisers. Furthermore, the “Do Not Track” setting in a web browser has no effect on Facebook. “Today, we learn about your interests primarily from the things you do on Facebook, such as Pages you like,” a Facebook blog read. “Starting soon in the US, we will also include information from some of the websites and apps you use. This is a type of interest-based advertising, and many companies already do this” (22).

To opt out of online behavioral advertising by Facebook and other participating companies, author and blogger Violet Blue provided the step-by-step instructions on ZDNet (23):

1. Bookmark the Digital Advertising Alliance (<http://www.aboutads.info/choices/>), because you’re going to visit it more than once.
2. Pick a browser that you don’t use regularly. This is your new Facebook browser. In that browser, go to the Digital Advertising Alliance and opt-out of Facebook, etc.
3. Sign out of Facebook on your regular browser. Clear all your cookies. Go to the Digital Advertising Alliance and opt out of Facebook, etc.
4. You must have cookies on to opt out: If you’re using AdBlock Plus, you need to turn it off before you can opt out.
5. You’ll need to opt out for every browser, and you’ll have to opt out again every time you clear your cookies.
6. For mobile, opt out on your device:
  - a. Apple: Open iPhone Settings and go to General > Restrictions > Advertising, and then click “Limit Ad Tracking.”
  - b. Android: Go to Google Settings > Ads > Opt Out of Interest-Based Ads, and click.
  - c. Windows: Go to Settings > System Applications > Advertising ID, and opt-out by setting the Advertising ID to “Off.”

## 4.5 Carrier IQ and Other Privacy Blunders

Joining Google and Apple’s privacy blunders, Carrier IQ released a report on December 12, 2011 (24): “... Over the course of the past week, as Carrier IQ conducted extensive reviews with the Network Operators, Carrier IQ has discovered an unintended bug in a diagnostic profile to measure radio-network-to-mobile device signaling. This diagnostic profile is used to gather network conditions during voice

calls to determine why they fail. Using these profiles, the IQ Agent collects ‘layer 3’ signaling traffic between the mobile device and radio tower, to help the Network Operator determine, for example, why a call might be dropped or which radio towers are communicating with a device during a voice call. Carrier IQ has discovered that, due to this bug, in some unique circumstances, such as when a user receives an SMS during a call, or during a simultaneous data session, SMS messages may have unintentionally been included in the layer 3 signaling traffic that is collected by the IQ Agent. ... Our investigation of Trevor Eckhart’s video indicates that location, key presses, SMS and other information appears in log files as a result of debug messages from pre-production handset manufacturer software. Specifically it appears that the handset manufacturer software’s debug capabilities remained ‘switched on’ in devices sold to consumers.”

The high-profile privacy blunders have not stopped other companies from repeating the same mistakes. Path co-founder and CEO Dave Morin issued the statement on February 8, 2012: “We are sorry. We made a mistake. Over the last couple of days users brought to light an issue concerning how we handle your personal information on Path, specifically the transmission and storage of your phone contacts” (25). Path did not blame on software bugs but took full responsibility of its action.

It is too easy for a company to disguise questionable software behavior as Easter eggs, and use software bugs as scapegoats when they are caught. Agile software development and quality assurance testing do not allow these kinds of bugs to slip past production into the consumer’s hand. More often than not, many companies intentionally inserted secret codes into their software.

In February 2012, Jonathan Mayer, a graduate student at Stanford University, demonstrated that four advertising companies, Google’s DoubleClick, Vibrant Media, Media Innovation Group, and PointRoll, have been deliberately circumventing Apple Safari’s privacy feature by installing temporary cookies on user devices in order to track users’ behavior (26). Safari is the primary web browser on the iPhone, iPad, and Macintosh computers. The Stanford findings contradicted Google’s own instructions to Safari users on how to avoid tracking.

According to a *Wall Street Journal* Research conducted by Ashkan Soltani, Google placed the tracking code within ads displayed on 29 of the top 100 most-visited U.S. websites (27). Among them are household names YouTube, AOL, *PEOPLE Magazine*, *The New York Times*, WebMD, Merriam-Webster Dictionary, Fandango.com, Match.com, TMZ, and Yellow Pages. After *The Wall Street Journal* contacted Google about these findings, Google disabled its tracking code on Safari and removed the Safari’s privacy settings language from its website.

Consumer Watchdog wrote a letter to the U.S. Federal Trade Commission about Google’s unfair and deceptive violation of Safari users’ privacy and the company’s apparent violation of the “Buzz” Consent Decree (28). “Google has clearly engaged in ‘unfair and deceptive’ practices,” said John M. Simpson, Consumer Watchdog’s privacy project director. “They have been lying about how people can protect their privacy in their instructions about how to opt out of receiving targeted advertising” (29).

Companies, big and small, have gone to great lengths and are taking chances to collect user data in order to facilitate business intelligence.

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**Part III**  
**Business Intelligence in Social Media**

# Chapter 5

## Business Intelligence

*“Data is king at Amazon.”*

– Ronny Kohavi of Amazon.com (2004)

*“We’re pretty opposed to advertising. It really turns our stomachs.”*

– Tumblr founder and CEO David Karp (April 2010)

*“I was probably being an idiot then.”*

– Tumblr founder and CEO David Karp (April 2012)

*“There is no more B2B or B2C. There is only Human to Human (H2H).”*

– PureMatter CEO Bryan Kramer (January 2014)

### 5.1 Intelligent Digital Billboards

In Steven Spielberg’s futuristic movie *Minority Report* (2002), computers scan human faces and display targeted advertisements to individuals as they walk down the street.

In July 2010, some billboards in Tokyo subway stations employed cameras and face recognition software to determine the gender and age of passersby (1). The goal was to collect data on what sorts of people look at certain ads at what times of day. “The camera can distinguish a person’s sex and approximate age, even if the person only walks by in front of the display, at least if he or she looks at the screen for a second,” said a spokesman for the Digital Signage Promotion Project. “Companies can provide interactive advertisements which meet the interest of people who use the station at a certain time” (2).

In February 2012, a billboard in a London bus stop used facial recognition technology to determine whether a viewer was male or female, and it displayed a different advertisement depending on the gender (3). With about 90% accuracy, the Oxford Street billboard had a built-in camera that measured a viewer’s facial features in order to determine the gender. Women were shown a commercial for the “Because I Am a Girl” campaign, whereas men only saw the campaign website (4).

Meanwhile in New York City, Tic Tac's new interactive Times Square billboard used augmented reality to enable passerby to view the ad through the Tic Tac Times Square app on their smartphones, and the app would insert their Facebook pictures in various ads. A manager for Tic Tac explained, "The big thing we learned from our research is that this audience is not willing to see an ad, go home and log onto their computer to learn more – they are not interested in engaging with a brand in that way. Mobile is the new medium that this group likes to engage in but it has to be fun, fresh and entertaining" (5).

These are a few of the latest hi-tech examples of businesses collecting data, engaging the audience, and selling their products in an innovative way. The billboards might save anonymous data, but not images that are personally identifiable information. If Twitter or foursquare data indicate that there is a sports game going on in the area, the billboards might show a Nike ad instead of a FedEx ad. In response to privacy concerns about billboards collecting data of passersby, Immersive Labs CEO Jason Sosa said, "If you use a service like Amazon, have a Facebook Page, or even carry a cellphone, there is data being collected about you that is a lot more personal than anything we're collecting" (6).

## 5.2 Data Mining: Amazon.com, Lowe's, Target, True&Co

"Data is king at Amazon," said Ronny Kohavi, then Director of Data Mining and Personalization at Amazon.com. "Clickstream and purchase data are the crown jewels at Amazon. They help us build features to personalize the Web site experience" (7). Minimizing "junk mail" while maximizing purchase opportunity, Amazon's recommendation engine has been cited by many company observers as a killer feature. The company reported a 29% sales increase to \$12.83 billion during its second fiscal quarter in 2012, up from \$9.9 billion during the same time in 2011. "Our mission is to delight our customers by allowing them to serendipitously discover great products," an Amazon spokesperson told *Fortune*. "We believe this happens every single day and that's our biggest metric of success" (8).

Target, the second-largest discount retailer in the United States, is another prime example. It analyzes retail transaction data and calculates not only whether a consumer was pregnant but also when her baby was due. Target uses "pregnancy prediction" to offer expectant mother store coupons tailored to her stage of pregnancy. "Our mission is to make Target the preferred shopping destination for our guests by delivering outstanding value, continuous innovation and exceptional guest experience," the company wrote in a statement to *The New York Times*. "We've developed a number of research tools that allow us to gain insights into trends and preferences within different demographic segments of our guest population" (9). Thanks to better business decision-making using data mining tools, Target's revenues grew from \$44 billion in 2002 to \$67 billion in 2010.

Home improvement store Lowe's announced in June 2014 that it has built a 20-foot by 20-foot "holoroom" that uses 3D augmented reality to allow customers to walk through a floor plan of their home. A crude resemblance of *Star Trek's* holodeck, users

can visualize their home improvements by moving furniture, changing floor tiles, and repainting the walls in a virtual reality setting. The holoroom becomes Lowe's data mining tool that can analyze "which products customers often place together, how people design their homes, and which region prefers which design" (10). Although holoroom's data mining approach is more transparent and less intrusive, the collected data are somewhat limited in scope.

For two years between 2002 and 2004, True&Co collected information from more than 500,000 women in order to identify over 6,000 different types of boobs. The data scientists then created a color-coded system called "True Spectrum" to help women find the most comfortable and fitting bras. "You need a bra that makes you feel like a million bucks and we've worked really hard to build this data and infrastructure to personalize this brand," said True&Co CEO Michelle Lam. "This is just the beginning of the future of shopping, and True&Co has only just scratched the surface on its goal to deliver on the perfect fit" (11).

### 5.3 Tumblr and Gmail: Yes to Advertisements

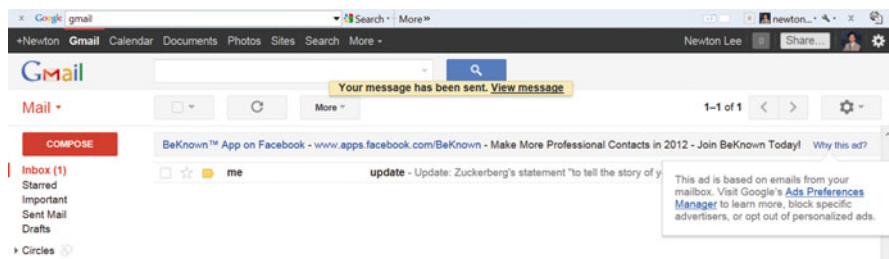
No matter where we are, online or offline, advertisers seem to follow us. Only time will tell if serendipity becomes zemblanity as consumers are constantly bombarded by advertisements.

Companies that were known for their anti-ad stance have succumbed to offering their customers advertisements. David Karp, founder and CEO of the microblogging platform Tumblr, uttered his famous statement in an interview with *The Los Angeles Times* in April 2010: "We're pretty opposed to advertising. It really turns our stomachs" (12). By February 2012, the self-described "accidental social network" (13) Tumblr has over 500 million page views a day, 50+ million posts a day, 40,000 requests per second, and hundreds to millions of followers for an average post with text, images, and videos (14). In April 2012, exactly two years after the famous anti-advertisement quote, Karp announced at the Ad Age Digital conference that Tumblr would start displaying ads on the users' dashboard, and that he had probably been an "idiot" to say no to advertising (15).

In addition, saying no to email spam does not necessarily mean no advertisement. In October 2007, Microsoft CEO Steve Ballmer publicly jabbed Google for "reading your emails" (16). Google defended and clarified its practice: "Ads that appear in Gmail are similar to the ads that appear next to Google search results and on content pages throughout the web. In Gmail, ads are related to the content of your messages. Our goal is to provide Gmail users with ads that are useful and relevant to their interests. ... Ad targeting in Gmail is fully automated, and no humans read your email in order to target advertisements or related information. This type of automated scanning is how many email services, not just Gmail, provide features like spam filtering and spell checking" (17).

Figure 5.1 shows a real-time ad based on an outbound email in my Gmail mailbox. However, Google has curtailed its scanning practices. After being sued in California for violating wiretap laws, Google has stopped scanning student Gmail accounts for advertising purposes since April 2014 (18).





**Fig. 5.1** Gmail displays an ad in my mailbox based on the content of the email that I just sent

## 5.4 Social Ads on Facebook

Andrew Lewis, a commenter on MetaFilter, expressed his wise opinion in August 2010, “If you’re not paying for something, you’re not the customer; you’re the product being sold” (19). Indeed, when users sign up for free accounts on Facebook, they volunteer their personal information such as their gender, birthday, education, workplace, city of residence, interests, hobbies, photos, and even private matters like relationship status.

User activities such as clicking the “like” button can appear as part of an advertisement on the Facebook pages of their friends. Social apps’ auto-share feature simplifies activity sharing without the need to click on “like.”

“Facebook already has more data than they are leveraging,” said Rebecca Lieb, an online advertising analyst at the research firm Altimeter Group. “There are so many infinite ways to slice and dice the data Facebook currently has, that it’s rather daunting. Slicing and dicing the data for the purposes of serving up advertisements is a tricky business. It can’t freak people out; it has to be cost-effective; it has to be relatively easy to do at scale” (20).

A game-changing advertising platform, Facebook has done an effective job in delivering “social ads” to consumers. Social ads are “those served to users who have friends that are fans of or have interacted with the advertised brand and prominently call the relationship out” (21). Advertisers tailor messages on Facebook based on demographics like age and gender, on the preferences and affinities of its users as well as those of their friends on Facebook.

Financial analyst Martin Pyykkonen at Wedge Partners said, “Facebook is highly appealing to advertisers because about two-thirds of its users fall into the coveted age demographic of 18-49. The ‘Like’ button option is a basic example of targeting. [It’s] likely that advertisers will be able to even better target their audiences as Facebook goes deeper with integrating apps, games, movies, music” (22).

A 2011 study from the Consumer Electronics Association (CEA) indicated that 81% of social media users are using social networks to help them make purchasing decisions about consumer electronics, and 84% of them are influenced by reviews on the social media sites (23).

According to the April 2012 Nielsen report, “Global Trust in Advertising and Brand Messages,” an overwhelming 92% of consumers around the world trust recommendations from friends and family above all other forms of advertising, and 70% of them believe in consumer opinions posted online (24).

The CEA and Nielsen reports have validated the growing trend that more businesses are using Facebook, Twitter, or other social networks to communicate with and advertise to consumers. “Social media now is not an option, it’s a necessity,” opined Anthony DeRosa, social-media editor at Reuters. “A couple of years ago that wasn’t the case, but I think now people have to be a part of it, whether it’s one social network or a couple of them” (25).

On the contrary, a 2011 report from Forrester Research analyst Sucharita Mulpuru painted a not-so-rosy picture. It showed that 68% of U.S. retailers said if Facebook went away, it would not hurt their online sales. While 77% said the top benefits of Facebook are brand building, only 1% said it helped them get new customers. In fact, Gamestop, Gap, J.C. Penney, and Nordstrom have all opened and closed their storefronts on Facebook. The report stated, “In the history of retail, there has probably been nothing that has been so widely anticipated yet underwhelming as the ‘era of social commerce’” (26). And Mulpuru said in a follow-up interview, “There was a lot of anticipation that Facebook would turn into a new destination, a store, a place where people would shop, but it was like trying to sell stuff to people while they’re hanging out with their friends at the bar” (27).

The LIM College National Retail Federation Student Association released in January 2012 the result of a poll of shopping trends among 18 to 25 years olds (28). The poll indicated that shoppers in this age group will “like” a brand on Facebook but would not go any further. In fact, more than 88% said they do not want to shop through Facebook or Twitter.

In May 2012, General Motors announced that it would stop paid advertising on Facebook after having already spent \$10 million, because the social media paid ads were not delivering the hoped-for buyers (29). On the contrary, spokeswoman Kelli Felker from GM’s rival Ford Motor Company said, “We’ve found Facebook ads to be very effective when strategically combined with engagement, great content and innovative ways of storytelling” (30).

The conflicting reports point to the significance of social ads on one hand and downplay the effectiveness of social ads on the other hand, which can be nerve-racking for Facebook. Advertising accounted for an overwhelming 85% of Facebook’s 2011 revenue of \$3.7 billion (31), which amounted to nearly \$3.2 billion (32). Globally, marketers spent \$84.8 billion on web advertisements in 2011, and the U.S. digital advertising expenditures amounted to \$32.2 billion (33). Facebook raked in a respectable 10% of the total U.S. online advertisement revenue in 2011. To continue the momentum, Facebook has to do something more than just leveraging the “like” button and social app auto-share.

## 5.5 News Feed, Sponsored Stories, Custom Stories, and Facebook Exchange

“The goal of News Feed”, Facebook engineers Varun Kacholia and Minwen Ji explained, “is to show the right content to the right people at the right time whether it’s from a close friend or a news source halfway across the world” (34). This goal is certainly the Holy Grail of Internet advertising.

In March 2012, Facebook suggested that its ads would no longer be “ads” but “Sponsored Stories” (35). With sponsored stories, Facebook users are delivered ads that reveal actions their friends have taken. The most common Sponsored Stories are “Page Like” stories.

Using Facebook’s new tool Reach Generator, the user-engaging stories created by advertisers would show up on the fans’ Facebook homepage or in their news feed on desktop or mobile. Reach Generator guarantees that advertisers can reach 75% of their fans each month and an estimated 50% of fans each week in a simple, always-on way (36). In other words, Reach Generator effectively overrides Facebook’s EdgeRank algorithm designed to enhance users’ experience by putting only the most relevant content in their news feeds. It appears to have confirmed some analysts’ forewarning that the Facebook IPO would only make the company even more financially driven in using personal data for marketing purposes.

Back in November 2007, Facebook launched Facebook Beacon, which was an ultimately failed attempt to advertise to friends of Facebook users based on the knowledge of what purchases the users had made online. After the initial fiasco, Facebook has successfully revamped its social ads. Facebook’s “like,” social app auto-share, and Reach Generator are just the beginning of “targeted social advertising.”

Since 2009, Facebook’s measurement research team headed by Sean Bruich has been helping agencies and brands make better ads. “Ads that were rewarding tended to be pretty clear – there wasn’t an overload of information,” said Bruich, who conducted a 2012 study with measurement researcher Adrienne Polich on best practices for brand-page postings. “But [the] rewarding ads also seemed to connect. The information seemed meaningful” (37).

Furthermore, Facebook can capitalize on the power of “Friend Effect” by publicizing users’ “likes” of advertisers on “Sponsored Stories.” Researchers have shown that an overwhelming 92% of consumers around the world trust recommendations from friends and family above all other forms of advertising (24). Facebook CEO Mark Zuckerberg was quoted as saying that a trusted referral was the “Holy Grail” of advertising; and Facebook’s chief operating officer Sheryl Sandberg commented that the value of a “Sponsored Story” advertisement was at least twice and up to three times the value of a standard Facebook ad without a friend endorsement (38).

In June 2012, Facebook took another giant leap forward by introducing real-time ad bidding Facebook Exchange (39). With standard Facebook ads, users were targeted based on their Facebook profiles and what pages they “liked.” The Exchange enables advertisers to reach users based on their Internet browsing history. For example, a travel website can drop a cookie on a user who looks at vacation

packages without making a purchase. When the user enters Facebook, advertisers can show the user travel deals on flights, hotels, car rentals, and cruises.

Facebook Exchange offers real-time advertising auctions similar to Google AdWords. An auction determines what ads will appear after a user does a search, the ad's position on the page, and the Cost Per Click (CPC) to the advertiser, among others. Marketers manage their bids and optimize performance using a demand-side platform (DSP). The DSPs with the highest bids get their ads shown to the targeted user.

In 2011, real-time bids generated \$1.07 billion in display ad sales. According to global market intelligence firm IDC's projection, real-time bidding will account for about \$5.08 billion to be spent on U.S. online display ads in 2015 (40).

In April 2014, Facebook quietly dropped Sponsored Stories. However, third-party apps can still post Custom Stories on Facebook using the Open Graph API (41).

## 5.6 Mobile Market 2011-Present: Facebook for Every Phone

While some 90% of the world's population now has access to a mobile phone, the majority of the phones are not smartphones (42). For every smartphone sold in 2010, four new "dumbphones" were purchased by consumers worldwide (42).

To reach as many people globally as possible, Facebook launched the Facebook for Every Phone mobile app in July 2011 with 20 wireless carriers in India, Germany, Indonesia, United Kingdom, Turkey, and other countries (43). The app offers a comprehensive Facebook experience with News Feed, Messenger, and Photos on more than 2,500 Java-enabled dumbphones and mobile devices. Within two years, in July 2013, Facebook for Every Phone had reached over 100 million monthly users (44).

Ran Makavy, Growth Manager at Facebook and former cofounder of Snaptu, re-launched Snaptu as Facebook for Every Phone after his company was acquired by Facebook in 2011. Makavy wrote on the *Facebook Newsroom* (44):

"Facebook's mission is to make the world more open and connected, and Facebook For Every Phone enables people around the globe to connect to the people and things they care about most, no matter what kind of mobile device they use. Today, millions of people in developing markets like India, Indonesia and the Philippines are relying on this technology to connect with Facebook, without having to purchase a smartphone. Ultimately, Facebook for Every Phone is a fast and easy-to-use native app that works on more than 3,000 different types of feature phones from almost every handset manufacturer that exists today. These devices can cost as little as 20 US dollars."

Facebook was reportedly looking to release its own smartphone by 2013. "Mark is worried that if he doesn't create a mobile phone in the near future that Facebook will simply become an app on other mobile platforms," a Facebook employee said anonymously (45). However, Mark Zuckerberg dispelled that rumor when he spoke on stage at TechCrunch Disrupt in September 2012 that introducing a Facebook phone "wouldn't move the needle" (46). Instead, Facebook has continued to forge a mobile app enhancement and acquisition strategy.

## 5.7 Mobile Market 2012-Present: Instagram and Mobile App Install Ads

In April 2012, Facebook took another major step towards strengthening its mobile market and growing its advertising revenue by acquiring the popular photo-sharing application Instagram for \$1 billion dollars (47).

Instagram had 40 million users in April 2012 (48) and over 200 million photos in September 2011 (49). These numbers were small compared to Facebook's 900 million users in April 2012 and 140 billion photos in September 2011 (50). Nonetheless, some large businesses were early Instagram adopters. Josh Karpf, PepsiCo's digital head, told *ClickZ* in an interview, "We use Instagram to humanize the brand and take people behind the curtains. You can let them see things they wouldn't normally see, whether its photos of Drew Brees at the Super Bowl, Pepsi Max at the MLB Fan Cave, or [Nascar star] Jeff Gordon during a photo shoot. Clearly, photo-sharing is something people are into. For brands, it's a lightweight way to connect with consumers" (51).

After its acquisition by Facebook, Instagram released an update for iOS devices in June 2012 to enhance user search and Facebook integration (52). Instagram also announced its plan to improve the software to go beyond the "10-hour" window of viewable photos. "We are trying really hard to take all the data that you've put into Instagram and let you see into the past," said co-founder Kevin Systrom. "I think we need to do a better job of creating these channels and silos that allow people to learn new things about the world" (53).

An April 2012 report by the research firm Strategy Analytics revealed that in-app spending by advertisers in the U.S. and Europe is set to overtake spending on display ads on smartphones (54). A May 2012 report by comScore showed that Facebook had achieved an impressive 80.4 percent reach or 78 million visitors on smartphones in the month of March (55). Acquiring Instagram will also help Facebook in seeking a much-needed breakthrough in the mobile ad market (56).

"In 2012, we connected over a billion people and became a mobile company," declared Mark Zuckerberg in the fourth quarter and full year 2012 financial report (57). Indeed, Facebook outranked Google Maps as the most popular mobile app in the United States in 2012 according to the comScore Mobile Metrix ranking report (58).

In August 2012, Facebook unveiled mobile app install ads to allow developers to buy clicks to Android and iOS App stores. Josh Constine at *TechCrunch* gave a good example: "Ads for a new iOS-only girl's fashion game could be targeted to iOS device-carrying females 16 to 45 years old, living in Los Angeles to maximize the relevance" (59). This feature has been a cash cow for Facebook. Constine's follow-up report in June 2014 stated that "These app install ads are the key to Facebook going essentially zero revenue on mobile to earning 59 percent of its ad revenue there, or \$1.3 billion in Q1 2014 alone" (60).

In December 2012, Instagram announced that it had the perpetual right to sell users' photographs to advertisers without payment, notification, or an opt-out option for the subscribers (61). Immediately, Instagram faced massive user backlash. High-profile account holders such as National Geographic suspended posting photos to

the network and threatened to close their accounts (62). Instagram promptly backed down and kept some of the original language in its terms of use.

In October 2013, Instagram introduced limited advertisement via sponsored photos and sponsored videos (63). By May 2014, Taco Bell and Hollister were among the select group of 15 brands seeing promising results. Taco Bell, for instance, saw a 29% gain in ad recall for the April rollout of its breakfast menu; and the fast-food company's Instagram following jumped 45% during its month-long ad campaign (64).

Facebook-owned Instagram is expected to roll out more ads since it has inked a \$40 to \$100 million advertising deal with Omnicom in March 2014 (65). “[The Omnicom deal] doesn’t change our advertising strategy moving forward—people will continue to see a limited number of beautiful, high-quality photos and videos from select brands who already have a strong presence on Instagram,” said Jim Squires, Instagram’s director of market operations (66).

## 5.8 Mobile Market 2013-Present: Facebook Home and Parse

In April 2013, Facebook launched the “Facebook Home” app for Android (67). The new app provides an immersive Facebook experience featuring a constant stream of full-screen photos, status updates, stories, and notifications. “Today we’re going to finally talk about that Facebook Phone, More accurately, we’re gonna talk about how you can turn your phone into a Facebook Phone” said Mark Zuckerberg (67).

In the same month, Facebook purchased Parse to offer mobile development tools as its first paid B2B service (68). A “mobile backend as a service” startup (mBaaS) founded in 2011 by a group of seasoned Googlers and Y Combinator alums, Parse provides backend services for data storage, notifications, user management, and other cloud-based infrastructure to help software companies to create and test new apps.

In August 2013, Facebook tested new mobile features designed to help public figures interact with their fans more easily like Twitter (69). Facebook also experimented with one-click checkout for mobile shopping that would compete with PayPal, Google Wallet, Amazon Payments, and others (70).

Overall in 2013, Facebook drove more than 145 million app downloads and made nearly \$900 million that year from in-app payments (71). For the first time, Facebook’s annual report revealed country-by-country mobile statistics, showing well over 50% of total users accessing Facebook from mobile in Europe and parts of the Middle East (72). Germany scored the lowest at 27% whereas Sweden was the highest at 81%.

## 5.9 Mobile Market 2014-Present: WhatsApp and Facebook Audience Network

In February 2014, Facebook announced the acquisition of the cross-platform mobile messaging app WhatsApp for a whopping \$19 billion dollars – \$4 billion in cash, \$12 billion worth of Facebook stock, and additional \$3 billion in restricted stock

units granted to WhatsApp employees and founders (73). It was also amazing considering that five years prior in 2009, both Facebook and Twitter turned down WhatsApp's cofounder Brian Acton for a job (74). Zoe Wood wrote in *The Guardian* that "it turned out to be an expensive mistake for Mark Zuckerberg. A \$19bn (£14bn) one to be precise" (75). Had Acton landed a job at Facebook in 2009, however, would Jan Koum's idea for WhatsApp have become a phenomenal success?

"[WhatsApp is] a great fit for us," Zuckerberg explained. "It's the most engaging app we've ever had on mobile ... I think that by itself its worth more than \$19 billion. There are very few services that reach half a billion people around the world" (76).

By March 2014, Facebook had over 1 billion mobile monthly active users (77) and the company profit had tripled on mobile growth (78). In April 2014, Facebook introduced a mobile opt-in feature called "Nearby Friends" that enables Facebook friends to track each other in real time using location information (79). Facebook also purchased ProtoGeo Oy, Helsinki-based maker of a fitness tracking mobile app called "Moves" (80).

At the April 2014 f8 Conference, Facebook unveiled Anonymous Login, Facebook Audience Network, FbStart, and Graph API 2.0 that target the mobile market.

The anonymous login feature allows users to sign into apps without sharing their identities and personal information contained in their Facebook accounts (81). Circumventing privacy concerns helps to eliminate the potential barrier for many users to try out new apps – a welcome news for both app developers and users.

To further encourage developers, the new version 2.0 of the Graph API comes with a two-year stability guarantee for Facebook core products (81). The FbStart program provides startups with free tools and services worth up to \$30,000 from Facebook, Parse, and 11 other companies including Adobe, Appurify, Asana, BlueJeans, Desk.com, MailChimp, Proto.io, Quip, SurveyMonkey, UserTesting, and Workable (82).

Facebook's mobile monetization chief Deborah Liu introduced the new Facebook Audience Network, "We bring it all together for you so you don't have to hire a sales team to sell ads. ... [Ad] formats really matter in mobile. We encourage you to work with us on native advertising" (83). Coca-Cola, The Walt Disney Company, and other big brands have begun testing the new ad network.

To summarize, Mark Zuckerberg told the audience at the 2014 f8 Conference, "The majority of our business is on mobile" (84). The question is how to grow the mobile business. In an April 2014 interview with *The New York Times*, Zuckerberg spoke of his approach to mobile: "On desktop where we grew up, the mode that made the most sense was to have a website, and to have different ways of sharing built as features within a website. So when we ported to mobile, that's where we started — this one big blue app that approximated the desktop presence. But I think on mobile, people want different things. Ease of access is so important. So is having the ability to control which things you get notifications for. And the real estate is so small. In mobile there's a big premium on creating single-purpose first-class experiences. So what we're doing with Creative Labs is basically unbundling the big blue app" (85).



In a move to show advertisers that there are second-screen alternatives to Twitter, Facebook in May 2014 introduced an audio-recognition feature that can identify what song is playing or what show or movie is on TV, making it easier for mobile Facebook users to share in real time what they are listening to or watching (86).

In June 2014, Facebook acquired Pryte, Helsinki-based technology provider that lets smartphone users download applications using temporary mobile data allowances. “The Pryte team will be an exciting addition to Facebook,” Facebook stated in an email. “Their deep industry experience working with mobile operators aligns closely with the initiatives we pursue with Internet.org, to partner with operators to bring affordable Internet access to the next 5 billion people, in a profitable way” (87).

In July 2014, Facebook reported that mobile ads accounted for 62% of its ad revenue in the second quarter (88). Mobile devices are not limited to smartphones or tablets. Budweiser’s “Buddy Cup” in Brazil “makes two people friends on Facebook when they clink their glasses together in a toast” (89). At Belgium’s Tomorrowland music festival, attendees wrote wristbands that not only served as a ticket, but also as a way to connect with other festival attendees by sending Facebook friend requests (90).

## 5.10 Location-based Mobile Advertisements

In the wake of the Facebook IPO, Professor Catherine Tucker at MIT Sloan School of Management said, “Facebook is probably going to face some difficult balancing issues, in terms of meeting its new shareholders’ expressed desire to exploit the data they have with the fact that if they exploit the data too much it can drag down the effectiveness of advertising” (91).

After the rocky IPO in May 2012, Facebook has been hard at work on a location-based mobile-advertising product that will enable advertisers to target users based on their whereabouts in real time. “The holy grail of advertising is finding people when they are at their closest point to making a purchase,” said Colin Sebastian, an analyst with Robert W. Baird & Co. in San Francisco (92).

In June 2012, Snapette, a 500 Startups accelerator program alum, launched the first location-based shopping application Snapette 2.0 on iPhone and iPod Touch. Snapette lets shoppers share photos and comments with friends, and see what products are trending both around the corner and around the world. Fashion brands can send real-time notifications to potential customers already shopping nearby with special discounts and inside scoops on exclusive items.

“E-commerce is growing but offline is still 90 percent of sales,” Snapette co-founder Sarah Paiji told *Women’s Wear Daily* (WWD). “For the stores, we really hope that this is a great mechanism to actively drive foot traffic” (93). Snapette co-founder Jinhee Kim added, “With Snapette, retailers can reach consumers in real time and based on location. It’s a unique and immediate way to showcase new merchandise and attract fashion-conscious customers shopping nearby” (94).



## 5.11 Business Communications on Facebook

In addition to paid advertisements, businesses are increasingly using Facebook to communicate with their customers directly. The Walt Disney Company, one of the most recognizable brands worldwide, has over 48 million “likes” on its corporate Facebook page as of August 2014 (95). Disney’s *Toy Story* has more than 34 million “likes,” *Pirates of the Caribbean* has over 23 million “likes,” and the list goes on and on. Andy Mooney, former Chairman of Disney Consumer Products, told a reporter from *Mashable*, “Social media is fundamental to the nature of how we communicate with the fans. The tone and the content is [*sic*] more causal and insight-based and insider-based, especially for the most ardent fans of the franchises” (96).

It is an understatement to say that Disney has mastered the skill of successful social media campaigns. There are annual Disney Social Media Moms Celebrations at the Walt Disney World Resort in Orlando (97). In January 2012, Track Social awarded Disney the “Facebook Audience Growth Award” for a remarkable 17,716 new fans per day, and the “Facebook Likes Per Post Award” with a phenomenal 30,291 likes per post (98).

Nevertheless, Disney has its own share of missteps. In February 2011, Disney made public its social media ambition by acquiring Togetherville, a Facebook-like social network for children under 10 years old (99). “Togetherville is very focused on trying to really reflect what the adult community has been doing on the Web and build a real online experience that adults enjoy for kids, but do it in a safe, COPPA-compliant way,” said Togetherville founder and CEO Mandeep S. Dhillon. However, a year later in March 2012, Disney shut down Togetherville social network (100).

Like Disney, any business on Facebook can reach their audiences directly and in a timely manner without relying on third-party reporters. In March 2012, for example, some advertisers decided to withdraw their ads from the popular Rush Limbaugh radio talk show (101). AOL explained their decision via a post on their corporate Facebook page: “At AOL one of our core values is that we act with integrity. We have monitored the unfolding events and have determined that Mr. Limbaugh’s comments are not in line with our values. As a result we have made the decision to suspend advertising on The Rush Limbaugh Radio show” (102).

Nonetheless, Facebook businesses are not like Facebook friends. A majority of the time, social media business-consumer communication seems to be a one-way street. According to a STELLAService survey of 20 top online retailers on Facebook, their level of responsiveness to customers is less than desirable: one out of four companies ignored customer questions posted on Facebook, and five companies took more than two days to respond to a wall post. “Retailers need to realize that two days in Facebook time is like two years in real time,” said Jordy Leiser, STELLAService’s co-founder. “Customer questions on Facebook should be granted the same urgency as a phone call. ... Brands are doing an enthusiastic job of bringing people to their [Facebook] pages, [but] I don’t think they’re also necessarily bringing with them a desire to be social. It’s just turning into a marketing message for many companies” (103).

The lack of two-way communication online can provoke consumers' distrust and dissatisfaction towards businesses. Commerce Secretary Gary Locke once said, "Consumers must trust the Internet in order for businesses to succeed online" (104).

In January 2008, Facebook and ABC News co-sponsored a Republican and a Democratic presidential debate in New Hampshire (105). "Through this partnership, we want to extend the dialogue both before and after the debate," said Dan Rose, Facebook's vice president for business development (106). "There are debates going on at all times within Facebook," David Westin, the president of ABC News and a new Facebook member, said. "This allows us to participate in those debates, both by providing information and by learning from the users."

"Providing information (or products/services)" and "learning from the users (or customers)" are the key phrases to winning consumers' trust and satisfaction. Although there were skeptics who believed that the Facebook/ABC News partnership was a failing concept out of the gate (107), experiments like it should be encouraged in order to foster more effective two-way communication between businesses and consumers – a win-win proposition.

## 5.12 B2B, B2C, and H2H on Social Media

In September 2012, Facebook changed its News Feed algorithm and 72% of movies and network TV shows experienced a dramatic decline in the number of fans who see their messages. In March 2014, a food-delivery website Eat24 with over 70,000 Facebook likes announced its breakup with the social network over an argument on Facebook's algorithm and promoted posts (108). "The days of free traffic are over," said Dennis Yu, founder and chief technology officer of BlitzMetrics. "Facebook has been trying to educate marketers on how to be social — to post the most engaging content — so as not to be penalized by their algorithms" (109).

Allison Sitch, Ritz-Carlton's vice president of global public relations, voiced a concern in May 2013 when the hotel chain bought ads to promote its Facebook page. She said, "We were fearful our engagement and connection with our community was dropping as the fan base grew" (110). Emphasizing quality over quantity, Ritz-Carlton decided to spend time analyzing its social-media conversations to see what guests like and do not like. "Fans and follower counts are over. Now it's about what is social doing for you and real business objectives," said Jan Rezab, chief executive of social-media metrics company Socialbakers AS in Prague (110).

In a June 2014 Gallup report, 62% of the more than 18,000 U.S. consumers it polled said social media had no influence on their buying decisions. "Social media are not the powerful and persuasive marketing force many companies hoped they would be," Gallup concluded (111). But it is like blaming the television instead of the TV ad that is ineffective.

The social media landscape is changing so fast that businesses have to constantly keep up in order to adjust their marketing strategy and to maximize their return on investment (ROI). In January 2014, Belle Beth Cooper summarized

“10 Big, Recent Changes To Twitter, Facebook, And LinkedIn You Should Know About” on Fast Company (112). In this book, Facebook ROI experts Dennis Yu and Alex Houg of BlitzMetrics share their latest business insights in the following chapter titled “Facebook Analytics, Advertising, and Marketing.”

We are seeing a new trend that the traditional business-to-business (B2B) and business-to-consumer (B2C) strategies are shifting towards a human-to-human (H2H) approach empowered by social media. PureMatter’s CEO Bryan Kramer explained, “It used to be that marketing was segmented into two categories; business-to-business (B2B) or business-to-consumer (B2C). ... The fact is that the lines are so far blurred now between the two marketing segments that it’s hard to differentiate between the two anymore. We all need to think like the consumers we are, putting ourselves in the mindset of the buyer instead of trying to speak such an intensely sophisticated language full of acronyms and big words, in order to sound smarter. Marketing increasingly strives to become one-to-one, with solutions to collect and wrangle the big data about us to serve up more personalized offers and experiences. On the other hand, social has become a more public and vast medium, where the things we share skyrocket quickly to a ‘one-to-many’ experience. The dichotomy between marketing and social has actually flipped... and it’s out of balance. Social and marketing need to work together to personalize individual conversations, as well as deliver shared global experiences that crowds of common values can benefit from. This is what our social and digital mediums have gifted us, and how humans interact and feel more compelled take action. ... There is no more B2B or B2C. There is only human to human. That is #H2H” (113).

Take, for example, the Facebook response to a grieving father’s emotional plea: On February 5, 2014, John Berlin in Arnold, Missouri posted a YouTube video on Facebook saying, “I’m calling out to Mark Zuckerberg and Facebook. You’ve been putting out these new movies, these one-minute movies that everyone’s been sharing. Well, my son passed away ... and we can’t access his Facebook account. I’ve tried e-mailing, and different things, but it ain’t working. All we want to do is see his movie. I know it’s a shot in the dark, but I don’t care. I want to see my son’s video. His name’s Jesse Berlin. So please help me.” That night, Facebook called Berlin to tell him that they would indeed make a personalized “A Look Back” video for his late son (114). Facebook understands H2H.

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# Chapter 6

## Facebook Analytics, Advertising, and Marketing

Dennis Yu and Alex Houq

### 6.1 The Viral Cycle

When you amplify your own content, you are able to activate fans that may have joined the page a long time ago, but haven't heard from you since they originally liked the page. Plus, you'll be able to increase the feedback rate on content (likes + comments).

People make decisions based on the trust of their friends. It doesn't matter what the marketing channel is. What Facebook has done is *create a social layer* that exposes those relationships that have always been there, between people's real friends. Because those relationships are visible, we can think of all these friendships as dots with lines connecting them. This created an advertising system that sits on top of the layered friendships and allows you to inject your content - Social ads that are about amplifying user actions, not broadcasting creativity.

Now let's say your content is testimonials, specials, videos of procedures, whatever kinds of content might be interesting. Identify who your best customers are; these are not people who could be customers, but people who already love you and your brand. Amplify what you already have that's great. Facebook is this "word-of-mouth" amplifier.

We believe that pay per click (PPC) and content marketing are now the same thing. Whoever creates/gathers the content is best equipped to amplify and reamplify it, as well as follow-up to retarget by creating spin-off (derivative) content, interviews, and community support. This is the framework that drives social. Here is why:

**Goals:** Each business has a story. The founder, CEO, or President has a distinct vision that is shared throughout the company with its employees. This vision and story make great content (1)! By sharing these stories and goals, this builds your relevant audience. These specific goals and strategy, when combined with social, takes your advertising to new heights. Your viewers then understand that for which you stand and can form that personal relationship.

**Content:** These clearly defined goals lead to great content. Sharing the success stories, interesting and relevant news, and things that are relevant to your business all build your audience even further; content drives this “engine.” Once you find what kinds of things your audience “likes” and relates to, you can then move on to the next part of the cycle. This can be done through split testing (also known as A/B testing) and other methods (2).

**Targeting:** Once you have found the goal of your content, why not share it with more people? Fans of your page, friends of fans, people who have the same interests, etc. By running ads to specific audiences (3), you are able to find who your valuable fans are. These are the people who are going to support your cause, or better yet, will lead you and your brand to conversions. .

**Amplify:** Once you have found your fan crowd, make sure your content reaches them. They are the ones who care about your cause/business, and resonate most with your message. This is where the conversions start to take place. Whether it is page likes, going to your website, or even to a specific landing page, these are the loyal fans (4).

## 6.2 Metrics Analysis Action (MAA)

We call it MAA—and it stands for Metrics > Analysis > Action. The idea is this: Sort to find the top performers, ignoring the rest. Don’t mass-multiply; spend a few minutes per day, not three hours once per month. Amplify what’s working by using different forms of social retargeting via sponsored stories (5) and custom audience targeting (6). Don’t waste time making reports, unless you’re in that type of company — focus on insights and actions. Software is nice, but expert action is better. Software can’t mask missing competency. Repeat these cycles quickly — you can get them down to minutes and go through multiple cycles per day.

Now, in more detail: You’ve made 183 different Facebook ads. You’ve targeted multiple interests and tested out various creatives and landing page combinations. So, what?

Over time, your garden has grown to quite an unwieldy mess. Maybe you use power editor (7), but you probably don’t know that if you have more than 50 ads in a campaign, the sorting doesn’t work. Maybe you’re an AdWords veteran trying your hand at Facebook ads, but you’re finding that the same optimization flow doesn’t quite work, because it’s not about title, copy, and image combos. Maybe you spend more time making reports and having meetings than actually optimizing, or your stubborn IT brethren are being uncooperative.

Well, here’s how to cut right to the chase to make maximum impact with your limited time. May this be the Tim Ferriss of Facebook ads, minus the pill business he ran under that model. I’m assuming you have a target metric, such as more traffic, or perhaps more conversions at a lower cost per conversion. If you don’t, then stop reading this article and set some goals in this area since you have no goal for optimization or growth. And I’m assuming you have power editor ready.

### 1. Sort all ads by spend descending, looking at today.

If you spend less than \$100 per day, then look at the last few days. Optimize just the top 10 ads, ignoring the rest. By optimize, I mean look at your cost per conversion, cost per click, and click-through rate (CTR). If you have the new offsite pixel (8), you can get a CPA (cost per acquisition). When you have new ads, optimize to CTR first — kill the ones that have low CTR on at least 10,000 impressions.

I like to see at least a 0.1 percent CTR, but your CTR will vary depending on the placement (I prefer mobile news feed) and the vertical that you're in. Usually CTR is inversely related with cost per click. If you're going for conversions, then you should be using optimized cost per mille (CPM) anyway (9).

Sometimes ads don't have quite enough data to tell if they are winners or not. See these ads? The fact that one ad has a couple more conversions than another is statistical noise if you optimize on CPA alone. Look at CTR as a leading indicator of relevancy so you can kill these ads before they spend enough to be statistically relevant from a CPA standpoint.

### 2. Convert your winners at lower cost.

These are any ads that generate conversions at less than your target CPA. Clone the top couple ads in this way:

- (a) Add in larger audience targets. Often, the best performers start out as small audiences, so find related interests to expand the audience. Prune the audience. Maybe the ad is nearly profitable, but if you narrow it down by demographics, fewer interests, or adding in a broad category target on top of a set of precise interest targets, it can be profitable. Look at the demographic responders report in the Web-based version of the ads tool for clues. Some colleagues are big fans of mass-multiplication — to immediately start out with hundreds of ads, then prune. I believe in smaller cycles where we can move quicker. That means just a few ads at a time. Because Facebook doesn't report on interest-level performance in either case (mass-multiplication or rapid testing), you will eventually need to get down to one ad per audience.
- (b) Try other landing page tweaks, especially if you have the right audience, but it's just not converting. *You want them to get to your landing page.* I prefer to use landing pages that already convert on display or search traffic. If it's a fresh landing page, you are starting from scratch — and that means the bulk of your efforts will be here, not in actually making the ads. So you are killing the bottom 10 percent of your ads, creating more variations of your winners, and ignoring the middle 80 percent. While a script can mindlessly do this for you, whether through the Facebook ads application-programming interface (hard to get) or Google AdWords API (easy), you will want to do most of this manually. It's not about self-inflicted torture, so much as being able to spot a pattern as to what is working or not, while you're turning stuff on and off.
- (c) Remember that the *why* is the most important piece. You may discover that a certain meme is working really well. For example, Marketo found that a music theme was not only driving interest at the top of the funnel, but subsequent conversions, too. Thus, you should pump out more of this type of successful content.

Use services like Fiverr or FancyHands to get folks to write articles, do designs, do research, and other busywork that can be delegated. This will eliminate whining about not having enough time or money, since these jobs will cost you \$5 per job and save you hours of work.

### **3. Amplify the hot content.**

Determine hot by what's getting the most engagement or conversions. Split your account into three segments: branding, lead capture, and conversion. The amplification of your hot content will likely be branded content — the funny photos, as opposed to the downloadable guide that requires an email to see it. Run page posts that tell stories to drive more engagement (10). You won't be able to measure the direct return on investment (ROI) from this type of ad unit, but it definitely will drive influence among the people you want to reach.

### **4. Steal from your other marketing campaigns.**

Have you tried your top-performing copy and creatives from other channels? Not only is it more likely to perform, but you enforce a single brand, especially if you run your social ads at the same time you're doing direct mail, TV, PPC, or whatever else you use for marketing.

## **6.3 Everything You Need to Know about Website Custom Audiences (WCA)**

I had just visited these sites and immediately, they were showing me messages related to whatever I was just looking at. With jiveSYSTEMS, I was learning about how to do video email. As a result, they were tempting me with more articles from the blog. With autocustoms.com, they're a client, so that's what happens. If I had clicked on a particular product, I might see that again. With priceline.com, I'm looking at hotels for next week in Salt Lake City. They know I am cheap, but they aren't smart enough to stop ads when I have already booked something else.

Some pitfalls to avoid with WCA (Website Custom Audiences): Just because they're effective, don't overuse them. Watch your frequency and rotate your creatives. Have different calls to action. You're not going to use the same creative for driving awareness as you would for engagement or conversion (11). Segment your content by where they are in your sales funnel. Make sure to use negatives. Don't send new customer offers to existing customers. Run exclusion audiences. Use combinations. You can use WCA to catch folks who didn't open your email, didn't buy, or aren't a fan. Why not use cross emailing, connection targeting, and other attributes with your WCA? There are so many combos possible for segmented messaging.

Jon Loomer, one of my favorite Facebook geeks, wrote a great post about WCA (12). Let's take a geekier point of view for the hard-core folks, shall we? You can create lookalike audiences from a WCA, but it's currently only available via the Facebook Ads API. We are one of a few dozen companies with Ads API access, so feel free to contact me if you want to see how it works programmatically.

For most folks, wait a few weeks and you'll get it. Facebook says WCA is not a replacement for Facebook Exchange (FBX) (13), which is technically true if you're using FBX for product retargeting. However, WCA dynamically updates, allows overlay of other data elements, and has access to mobile inventory. These are three HUGE advantages.

If you're a small biz, you won't need FBX. Although this is not something FBX vendors want known. It was only a matter of time before the hidden markups charged by third parties would get competed down to commodities. The max audience duration is 180 days. (Notice I didn't say cookie expiration.)

Once these folks are tied to Facebook userids, your targeting of them does not die a cookie death, which is normally 30 days. This is how Facebook can reach them on both mobile and desktop. If you are in business-to-business (B2B) with a long sales cycle, this is critical (14). If you're Consumer Packaged Goods (CPG), where the consideration time frame is days, it doesn't matter. You get up to 200 audiences. We've not seen anyone hit that limit, but a couple B2B companies we do this for have gotten over 100. We are curious to see how many rules folks are applying, perhaps directly in step with how sophisticated their marketing automation segment flows are.

## 6.4 Ten Questions Any Facebook Marketing Consultant should be Able to Answer

If you don't work on cars, how do you know your mechanic isn't ripping you off? Even if he's honest, he could still be inefficient, and that costs you money.

Lately, it seems like everyone on Facebook is a self-proclaimed social media expert. There are no degrees or certifications, so we all operate without a license. Scary, isn't it? More so, what if you're selling Facebook marketing services yourself? How do you distinguish yourself from all of the other guys who claim to be amazing social gurus?

To start, you should be able to answer the following 10 questions:

### 1. What's the "people talking about this" (PTAT) figure on your Facebook page? (15)

Be prepared for plenty of hemming and hawing about how they've been so busy with client projects that they haven't had time for their own stuff. Yes, I know – the cobbler's son has no shoes.

### 2. Can you show me a few live examples of Facebook pages you manage?

You might not believe it, but this is where most consultants fail altogether, or they can only show you a couple pages with pathetic traffic. Have them log in to show you. The catch-22 of any job is that a big brand isn't going to let you touch its stuff unless you have experience with other big brands. If you're a consultant in this space but don't have the experience with big brands, you need to partner with the folks who do have access, because apprenticing is a faster way to learn than taking on a couple small businesses or start-ups (the worst) with no fans.

### 3. How do you promote posts?

If they say they simply hit the “promote” or “boost” button, walk away. That button is designed for small businesses owners who need something simpler than choosing targeting options inside Power Editor. If they say they don’t believe in paid, walk away. You don’t have to spend much; often, a couple of dollars per day against the right micro-audience is enough. But nowadays, it’s a paid game, even more so than Google. If they don’t mention Power Editor, run away (16).

### 4. How do you measure return on investment on Facebook?

If they say it can’t be done or that it’s only about driving fans or engagement, they’re ignorant. You can absolutely measure ROI by looking at referral traffic to your site (Google Analytics and Adobe SiteCatalyst), collecting emails in Facebook custom tabs (now called apps), measuring coupon redemptions, and so forth. The smart ones will ask you what your business goals are. Forget about Facebook-specific metrics. We’re talking about metrics that a chief financial officer or business owner would care about. They’ll figure out how to tie Facebook traffic to these goals.

### 5. I’d like to build a custom application: What do you think?

The only sensible answer is “no,” unless you’re a gaming company or have an engineering staff with more than 10 folks. If they mention QR codes, the answer is, “Heck no.” These are easy ways to blow \$20,000 for virtually no traffic.

### 6. What should my custom audience strategy be?

Here, you’re just testing them to see if they know what custom audiences are and if they’ve used them effectively before. You can upload lists of your emails, phone numbers, and Facebook user IDs, but really, you’re just loading up emails from Constant Contact, Salesforce.com, MailChimp, or whatever. On a clean list, you should match north of 80 percent for consumer businesses and 30 percent for business-to-business (17). Facebook matches against these, so you can use it as social remarketing to help opportunities convert, bring opt-outs back, and amplify what’s in your regular email trigger system.

If you have a small list (under a few thousand), ask them what you can do. The answer is to use two types of lookalike audiences — where Facebook finds additional people that are similar (a smaller expansion) or a broader audience (to increase reach). Custom audiences are the most powerful feature Facebook has released on the ads side in seven years, even stronger than sponsored stories, although you can run custom audiences into sponsored stories.

### 7. I want to run a contest, what should I give away?

If they say an iPad, cash, or something like that, fire them. Those contests attract traffic, but not the people who want your product or service. The only appropriate answer is to give out in-kind products and services. If you sell chocolates, then you should give out chocolates. In this case, you would have their odds of winning contingent upon inviting others. Tell them that you would like to ask people to comment on your post and that you would like to choose a winner from among the entries. What they should tell you — the correct answer — is that you do not want to do that. Because it’s against Facebook’s terms of service, they can consequently shut down your page, profile, and whatever else they deem necessary. The *only* acceptable way to run contests, according to the terms, is via an app.

**8. What's your content strategy for my niche?**

This question is designed to catch the social prima donnas who think they only need to know social, but not understand your business. Quite the contrary, whoever is posting on your behalf represents your brand. They must be credible against your best users, who can easily spot a fake.

One of our clients provides environment lab testing equipment to engineers. I don't think any Blitz people are qualified to have a discussion with customers of that company. The correct answer is that they will strive to learn your business, while developing internal processes for your own people to produce content regularly in-house. If they say they want to use HootSuite to spam every social media channel at the same time, as well as load up the posting calendar a month in advance, you should cringe. These people are called "noisemakers" and will only erode your brand with your serious customers and their circles of influence. I'm not saying you can't post pictures of cats, but most of the content must be relevant and relateable.

**9. Who are the top five social practitioners you admire most?**

If they can't readily name five people, they're either too new to the space or they're not willing to keep up with the times. Their knowledge is outdated at best and lethal (the most likely) at worst.

**10. Is Facebook for marketing, PR, advertising, customer care, or what?**

This is to pull out whether they only have a single view. Many of them come from just the PR or community management angle. Successful Facebook marketing means that all parts of the company are involved, since Facebook is not a specific "channel" for any one kind of customers. People will complain, so we have to respond, and sometimes we even have to escalate. Will your consultant know what to do, or have a team in place to do it? What if your organization is running TV or other types of media? Will social be able to amplify these messages and ready to respond with one voice? What will happen if there's a tragedy, such as the Boston bombings? Do they know what to do and have they built processes for it before? (18).

Now, how many of these questions can you answer? To be able to screen mechanics at your car dealership, you have to be a master mechanic yourself, or at least hire one who can screen them. No matter how busy you are, you must still own your Facebook strategy, even if you delegate the execution.

**6.5 The Insider's Guide to Facebook Traffic**

As a small brand, the following issues may be familiar: You're posting diligently, but not getting much engagement. You're not a big brand with big budgets, but you still recognize that you need the right exposure. You're concerned that Facebook is "hiding" your posts from the newsfeed (19). How can you ensure you are reaching the most relevant and influential people through your Facebook page?



Once you have created engaging content, there are 4 kinds of targeting you can use to amplify your content to potential customers (20):

### 1. Workplace

Combining these targeting methods with demographic criteria will narrow your audience, increase CTR, and reach more potential customers. Did you know you can target just folks who work at Conde Nast, Glamour, and other publications? Only users who have “Conde Nast” listed as their employer will see your ad, allowing you to influence their brand directly (21).

However, if the brand you’re targeting is small, it won’t show up. Use these methods instead: Include the brand as an interest, or target only people who like that Facebook page. Limit your audience to a tight geographic area around the brand’s headquarters. Research how many employees the brand has to determine ad effectiveness. Take Infusionsoft, for example. Based on the ad count and employee count, 58% of everyone you reach will likely be an Infusionsoft employee.

### 2. Competitive

Competitive interests are targeting your competitor’s fans based on their brand name, allowing you to ‘piggyback’ and steal traffic (22). Use Facebook Power Editor to grab interest counts and to filter by gender, showing brand influence.

Let’s use Ralph Lauren as an example: If you sell men’s clothing, targeting all 2.6 million users is inefficient. Ralph Lauren is a brand of variety, not just fashion. Filter your ad to fit using category, age, gender, and even partner categories (23). This allows you to hone in on an audience that would make the biggest impact (24).

### 3. Lateral

Lateral interests are things your demographic finds interesting. Fashion brand lateral interests might include “breast cancer awareness,” “prom,” and “evening gown.” Limit your audience to *only the most relevant interests*. Lateral interests can vary easily. Unless you’re a big brand with a huge budget, it’s not feasible to reach millions of people. Stay away from being too general, like “I love my kids,” and focus close to your brand. Narrow it further with demographic targeting. Stores that sell goods or organizations you sponsor would also be lateral interests. Now, combine these with some demographic targeting.

### 4. Literal

Literal interests include terms directly related to your brand. If you are a wedding gown boutique, target women who are getting married. Literal interests are the easiest to start with, but they tend to be broad. Segmenting and testing your campaigns helps you derive what combination is most effective.

Your advertising cost depends on audience and content. As an incentive, Facebook rewards engaging ads with higher reach and lower CPC. Optimizing your campaigns every day will let you do that. Use workplace, competitive, lateral, and literal targeting with demographic criteria to build your audience.

## 6.6 Using Exclusion Targeting to Filter Out Unwanted Targets

In Power Editor, you can exclude folks you DON'T want to hit. For Google PPC veterans, this is the equivalent of negative keywords. For example, if you ran a personals site, you'd bid on "dating", but have "carbon" as a negative to not match on "carbon dating". With Facebook, we can choose targets and exclude audiences within them. For example, maybe we want to target the entire US minus San Diego, or maybe you're a mortgage company licensed to operate in 47 states— you could list out all 47 states as a target or just select United States and negative out the three states you don't serve.

Let's say that you've got your marketing automation running smoothly (25). You have content for those new to your brand and then content bucketed out mid-funnel as well as conversion. You can exclude folks who are already fans, so they don't see top of funnel messages. Same for those you already have emails for— exclude them if they're on your list already.

The pros by now are nodding their heads vigorously, as using the right combos of positive and negative audiences is critical to not wasting traffic. Even if you bid CPC or optimized CPM, failing to target as precisely as possible will cause your CPC to be higher. Remember that Facebook is maximizing their eCPM (effective CPM), so they will charge you more when you waste inventory to make up for who didn't click. Negative feedback will hurt your organic rankings, as well as damage your brand value (26).

You don't want to be known for irritating users, right? Many folks have asked for Boolean logic— the ability to specify ANDs and ORs wherever they like.

For example, there is a difference between those folks who:

- like Coke
- like Pepsi
- Like Coke and Pepsi
- Like Coke or Pepsi

With precise targets, we can determine the audience size of those who like A or B as well as A and B. However, we are, as of this writing, unable to target those who like A and B— despite being able to extrapolate the counts via some Venn diagram magic. In broad category targeting, you actually can get this. You can specify ANY (which is OR) as well as ALL (which is AND). If you add in a bunch of broad category targets with "AND," you will keep cutting down your audience size, the more you AND along.

Likewise, if you choose ANY, then you're expanding the audience, since you're saying you're looking to reach folks who like one or more of these topics, as opposed to ALL of them. Watch your counts. Put too many in the ALL bucket and you end up slicing your audience down to zero. If the estimator says "20 or fewer", that means zero.

We have 50,000 people when we target ANY of these broad interests; we have just 1,260 when we try to do ALL of these broad interests. I had to remove one of them, since it was too many for Facebook's tool to estimate. One day we'll be able to specify ANDs and ORs (Boolean logic) between target groups and within target groups. Until then, however, you'll just have to make a lot of ad combos and clever custom audiences.

## 6.7 Guess Where Users are Spending More Time — TV or Mobile/Web?

For the first time, mobile/web wins— at 197 minutes per day versus 168 minutes. That would seem to be 6 hours per day, but it's actually closer to 4, since most people have their phones while watching TV. So what should you do about it?

Mobile is where your customers are, whether you are a real-estate agent, B2B company, pizzeria, marketing consultant, or whomever. Smartphone penetration in the United States passed 50%. You can buy ads on Facebook mobile in the newsfeed for 30% less than what you're paying for RHS (right-hand side) ads.

Are you taking advantage of this discount, plus the fact that on the iPhone, your page post ads will take up the whole screen? (27)

You're busy, but a few minutes to learn to set up these ads to run on auto-pilot for the next year is worth your time. How many items are being liked on Facebook each day? Answer: 2.7 billion. And since January 2009, Facebook has accumulated 1.3 trillion likes, according to Andrew Bosworth, engineering director.

Fans for the sheer sake of fans is vanity, at best, and wasting money at worst (28). But legitimately lighting the fire on word of mouth to get your best fans (real world customers) talking about you is no different than getting more reviews on Yelp, Zagat, or other similar sites.. In fact, the head of Bing search told me it influences search engine rankings.

Remember, you're competing in Google and Facebook to "show up" in the search results and the newsfeed. Forget the black magic about EdgeRank (Facebook themselves even tells authors like us to not mention the term, but to call it "the algorithm"). Instead, focus on more interactions, since that's the signal both engines use. Comments on your site affect Google rankings, too, in the same way that directory reviews affect your local rankings if you have a store or office.

To get more "votes", which then influences search rankings, run page post ads on Facebook. Promoted Posts are easy to run, too. Just make sure you're targeting the right audience in your geography and interest segments, as opposed to all friends of your fans. Oh, and this helps your newsfeed exposure on Facebook, too. Bonus! Putting a like button on your site and implementing FBConnect will also help you get more interactions, even when people aren't on Facebook, such as my favorite method of getting them to be a fan via text (29).

What's a Facebook fan worth? \$1.07, according to research released by the Wall Street Journal, but realistically, some fans are worth more than others.

Facebook says the average Facebook user has 130 friends, but that the average fan has 320 friends. Why? If you're a fan of one thing, you're likely to be a fan of many things and also more likely to be someone who is less sensitive about privacy, plus more interested in sharing. We know the average cost per click on Facebook is about 70 cents and the average CTR (click-through rate) is 0.040%.

It's important to know, however, that the performance for a fast food company promoting pictures of bacon will perform quite differently than a plastic surgeon promoting new research on laser varicose vein removal. This is not apples to apples. One is going for likes and the other is going for leads. Comparing against broad averages is fruitless.

All that matters is real ROI for your business— the metrics you choose. The majority of case studies out there either worked in very special circumstances (they have a well-known brand, had a supporting direct mail budget to drive traffic, got unique news coverage, are in a different industry than you, or didn't actually drive success). Ignore them. If you want phone calls, measure phone calls with one of many call tracking tools. If you're low-tech, just ask people how they heard about you. If you are a marketing consultant, forget about mass and target people by their job titles and where they work (30).

How much of your ad budget is being wasted? , According to the famous quote by John Wanamaker, it can be upwards 50%, but he doesn't know which half.

With few exceptions, online performs better than print, magazine, or other offline marketing. The yellow pages are nearly dead— 500 million directories printed each year, which is half a billion, and 24 million trees cut down (31). That's a lot of door stops, kindling, or whatever other clever uses for which the phone books are now used.

Should you stop print advertising altogether? We know many businesses that have made the switch cold-turkey, never looking back, but certain vertical directories are still considered useful, so it's not a black-and-white issue; it's yellow.

What we do know for sure, however, is that micro-targeted ads on Facebook, no matter what the industry, are massively effective. For example, actions like running sponsored results will dominate search results on Facebook for whatever keywords you choose. You can get these for 5 cents a click at a 12% CTR. Don't screw it up.

There is no magic bullet, but with the right strategy for your business, you can select the right tactics for your business. That means rapid cycles of posting content, amplifying it, and repeating it— as opposed to spending a lot of time perfecting your website or spending a lot of time just doing just one other thing (32).

You'll likely not have success if you just hire a consultant without being in charge of your social strategy. If you're a consultant, don't be like this guy who pinged me while I'm writing this article. The world of cold-calling is dead. Write great content, sharing it freely on your blog and influential sites. One of the best examples of passionate storytelling while sharing deep expertise is right here: big data, more noise, not enough time, too many tools. Break through the clutter by getting your best customers to do the work for you. That's why you should be so bullish on Facebook Sponsored Stories and highly targeted page post ads.

You have to generate the great content (not merely good— but amazing) that people will talk about. Then, you use ads to amplify it. You can't make chicken salad

out of chicken poo. If you can't write your own content, interview the people who are pros and place the conversation on your blog. They will likely promote your interview to their audience, too!

The new age of inbound marketing is the death of the traditional sales channel. You lead now with expertise and the word of what your loyal customers say about you.

## 6.8 The Mechanics of Facebook Ad Budgeting

How much should you spend on Facebook ads? How should you allocate budget between campaigns-- and then within the ads for each campaign? Let's walk through the strategy behind effective budgeting, then tactically how you implement it.

We start by understanding Facebook's point of view. Facebook wants to maximize their revenues--and they do that by getting as much money as they can per thousand impressions (CPM) of ad inventory, an industry standard handed down long ago (The M is Latin for Mille, which translates to thousand.).

Whether you bid CPM, CPC, or CPA, you're still effectively paying based on how many impressions you're serving. If what I just said was a bunch of alphabet soup to you--hang with me for a minute. It will all make sense.

If you think bidding CPC means a "better deal" because you're "only paying when there's a click", you're wrong. Watch what happens when one of your ads has a third the CTR (click-through rate) of another ad on the same audience—you'll pay three times the CPC. Why? See point #1 about Facebook looking at maximizing their revenues. Run two ads--CPC and CPM with the same placement (newsfeed only or Right-Hand Side only, for example), and you'll see the net CPM price should be similar. Run multiple ads with different creatives against the same audience, and even though they have different CPC/CTR combos, the net CPM is still similar.

What you're really paying for is how much inventory you're using. That means what drives your cost is how big your audience is. If you're targeting audiences of hundreds of thousands, no matter how you're bidding, you're squandering inventory. Assume that Facebook needs to make \$5 per thousand ads they serve (CPM). If you have a \$10 daily budget, then you can serve up 2,000 impressions a day. If you want to be able to have 5 ads run at any point in time, which means you'll need to run 400 impressions per day per ad.

If one of your ads has an audience target of 100,000 people, then it will hog the inventory away from the other ads in the campaign. Let's calculate your target audience sizes. Take your daily budget for a campaign, divide by 5 and add 3 zeros. So if you have a \$100 daily budget, then you have 20,000 impressions per day. I like to have 5-10 ads in a campaign--for sake of simple math, call that 10 ads. That means each ad can consume 1/10th of the 20,000 impressions per day, or 2,000 impressions.

It's important to remember this: *You're not going to be able to reach everyone in your target audience.* They might not be online when your ads are live, or someone else's ads might serve instead of yours. So assuming you are reaching 50% of your

target audience, you can target an audience size that's DOUBLE the impressions you want to serve. In other words, if I want to serve 2,000 impressions on an ad, then I'm going for an audience size of 4,000.

Tune your ads to your ideal audience size. You can also have some ads that are well below your target audience size, such as when you're doing workplace targeting, custom audiences, or ads that are restricted by size (maybe by geography, a small precise interest, or an ad that has many filters to whittle down the audience size). You don't want to go too far above your target audience size, for risk of that ad hogging the entire inventory in that campaign. If your audience target is too big, then add more filters. Specifically, you can add a FOF (friend of fan) filter. You will see the audience counts drop significantly, unless you have a large fan base (33). Assume that the average fan has 330 friends. If you have 2,000 fans, then the FOF audience is 660,000 that you're crossing against that initial target. Restrict down by age, gender, or location. People in your hometown are more likely to convert, since they know you and are more likely to be influenced by your existing customers. Filter by a partner category or broad category, such as income, whether they have kids, the kinds of items they have bought in-store, the kind of car they drive, their profession, their ethnicity, and so forth.

Be careful here, since these can cut down your audience size drastically. Facebook used to tell us with fine accuracy what our counts were. Then a couple years ago, if the audience was really small, they would say "less than 20 people". Now they just say "under 1,000 people", which means it could be anywhere from zero to 999 people in that audience. As a result, there is a need to stack your audience, engagement, and conversion campaigns. Allocate the percentages you want on audience, engagement, and conversion. Even if you really want conversions, you still need to put some amount in audience and engagement, so that your revenue factory has a steady stream of traffic flowing from audience to engagement to conversion. Even if you really wanted more conversions, you're limited by how many friends of fans you have and the potential size of your universe (especially if you're a local services provider).

We once talked to a day care in a suburb of Phoenix that asked for 10,000 new enrollments a month. There are just not that many kids in daycare in the whole metro.

If you did allocate more than 50% of your budget towards conversion, then you risk a low conversion rate (an unacceptably high cost of conversion) and alienating people on Facebook with too many self-promotional ads in their newsfeed. If you have a small fan base, you're going to disproportionately allocation on fan growth and engagement so you can build up your company's awareness and word of mouth power. Keep in mind that this is a long-term play and there are likely to be no immediate sales here. It's about nurturing. You certainly can adjust your percentages over time between audience, engagement, and conversion, and you can adjust your total budget, as well, as you start to learn what works and doesn't.

Building up to your total Facebook budget, you could sum up the daily campaign budgets for audience, engagement, and conversion to get your account budget. But if you're just starting a campaign and aren't sure what to spend, start off with 5-10%

of your total marketing budget. Then it's not a major risk, but still gives you room to optimize. That number should be at least \$5 a day, which is \$150 a month. If that's a lot of money for where you are now, then you might wait until your business can afford to invest in building long-term brand on Facebook.

Facebook marketing is not an immediate sales strategy, but some types of Google ads do fit the bill here, as well as FBX (retargeting on Facebook). Run your campaigns for 6-8 weeks, which gives you enough time to optimize for result-finding the right combos of content and interest targets that produce results. You should continue to refine your content to see what drives the most engagement and conversion. This includes your landing pages and email nurture program (a sequence of emails your system sends out to folks who gave you an email in the bottom of the engagement campaign).

A word about bidding: Just use the default bid of "optimized CPM" to make your life easy. When you tell Facebook your goal (to get fans, drive engagement, or drive conversion), then their system will automatically figure out which users in your target audience to hit, plus bid the appropriate price.

Only in rare circumstances should you override this. For example, if you can't get your ads to serve against a particular audience then you can force bid to a \$10 CPC. The more complex your campaigns, the more time it takes to optimize them. The more ads you've created, the more "weeding" your garden needs. The lesson here is to not go crazy making a ton of ads at once--just 5-10 per campaign within the 3 campaigns.

This is why we advocate the simple 3 layer campaign strategy of audience, engagement, and conversion. These campaigns are "always on", so they'll continue to pass your traffic through these three levels automatically. When you have only a handful of ads in a campaign, you can quickly see which ones to kill off and which ones to create more variations from. This is a modified version of "winner stay on", where you keep cloning the top performer with similar audiences, but slightly different.

See, our earlier discussion on creating ad combos of one or multiple interest filters. Most of our ads, by the way, have 3-4 filters on them each. Some might have 7-8 filters on them. Having multiple combinations is called the "onion targeting" (34). For a new set of campaigns, you should check in 2-3 times a week, spending only 15 minutes each time. It's better to make a few adjustments over time than try to create a ton of ads at once and have only one cycle of optimization. You want to work with just a few ads per campaign, allowing you to nimbly pause a couple of ads (don't hit "delete") and create a couple new ones.

This allows you to quickly get to statistical significance--a minimum number of clicks to be able to tell whether the difference in performance between groups of ads is a real difference or just random noise. General rules of thumb for people who forget what they learned in stats class: get 10,000 impressions or at least 20 clicks for any ad. Any less and it's noise, and unfortunately you can't really tell the difference.

Once your pilot is successful and you reach a point that you have been able to prove your campaigns are successful, then you can scale up the daily budgets.

That also means you can readjust your audience sizes to reflect the larger budgets. More likely, though, once you get the hang of performing bulk operations in Power Editor, you'll likely absorb the budget increase by just managing more ad combos (35).

At this point, you'll be creating more and more audience targeting combination to include custom audiences and FBX. You then clone your three campaigns so you now have two of each — two audiences, two engagements, and two conversions. Except you have one “test” campaign and one “production” campaign for each type of campaign. The test campaign now becomes that with which you've been experimenting, while the production campaign is much larger. When you find a winner in the test campaign, you should copy it over to the production campaign. You will not want to test out new ads in the production budget, since it could risk eating up the larger budget on a larger audience. For those who are veterans of Google AdWords, this is called the “paste and stick” method.

Here are some super pro tips: Just keep in mind that if the audiences are small for an ad, it would cap out on the audience well before it capped out on the daily campaign budget. Budgets are set at the campaign level, not the ad level, so you still need to be careful. Facebook doesn't have frequency capping or ad rotation features natively in Power Editor, the regular ads interface or the API—but we have heard that it's coming. Meanwhile, that means you have to watch your frequency per ad carefully, as well as look at frequency at the campaign and account level.

If you're doing a great job at onion targeting, some of your users are seeing multiple ads from you—perhaps not the same piece of content, but different newsfeed posts, dark posts, and sponsored stories. You know that reach  $\times$  frequency = impressions. Facebook shows reach and frequency, not impressions, but you can calculate it easily. They choose to show reach and frequency instead, because it's more actionable. Your reach tells you who is exposed to your ad, while frequency is how often those folks see it.

If you have a reach of 10,000 people and an average frequency of 10, then you've served 100,000 impressions. A synonym for reach is unique impressions, meaning unique users who have seen at least one impression. You don't want your newsfeed frequency to exceed 2, since this is a sensitive area of Facebook. You don't want users to say “get off my Facebook page” or other adverse ad reaction. The negative feedback would hurt you, too. You certainly can run frequency on the RHS (Right Hand Side), however, up to 20 or even 30. Yes, the CTR will burn out—even lower than the average RHS CTR of about 0.070%, but if it's still converting and you're not getting complaints, keep those ads alive.

In general, the newsfeed placements (desktop newsfeed and mobile newsfeed) are better for audience and engagement campaigns. For conversion campaigns, sometime the RHS placement performs better—better CPC or better CPA. You just have to test. It may be that non-social businesses (think of things like hemorrhoid crème, industrial plastic extrusion machinery, or personal injury attorneys) produce content that people wouldn't want to actually click like on, even if they're interested. Phew—did you get it all? There you have it! Glad you made it through all the material and exercises. Give yourself a pat on the back.



## 6.9 How Spending a Few Dollars on Facebook can Turn You into an Influencer

You are a member of the public, and thus a member of the press. So when you get terrible service, should you complain? The levers of power have been tipping toward the public, thanks to social media: A hotel treats me wrong (it's happened to you, too), so I write about it (36). My best friend has a problem with his Toyota, blogs about it, and runs a Facebook ad for \$20, targeting executives of Toyota in Japan (37). A cruise line screws up its Fourth of July cruise, so someone writes an exposé on Business Insider (38). An airline accidentally kills a woman's golden retriever, so she uses her blog and Facebook account to warn others about neglect (39).

We resort to this only when we've exhausted our regular channels. Complaining on social media should be a last resort, since it's basically jumping the line. When you're a journalist, blogger, or an influential person in other ways, you wield a megaphone. Even if you're not one of those, running Facebook ads gives you that same power for a few dollars (40).

A lot of people will file a complaint or go to the Better Business Bureau when this happens. Try that first and let me know how it works a few weeks later, counting up how much time and money you spent chasing wild geese. Then run Facebook ads with workplace targeting (targeting folks who work at the New York Times, Wall Street Journal, or wherever folks need to see your message). Target executives at the offending company by following some easy steps. Because you're targeting just a few dozen or a few hundred people, it can be done for a few dollars and in a few minutes. The next day, the general manager of the dealer calls to profusely apologize. Folks in Japan at Toyota HQ have seen the ad and are asking what happened. Of course, as members of media, you and I have to be careful not to abuse our status. Yet with Facebook ads targeted by workplace, any consumer now has this lethal weapon available for their use.

Sure, at one point, you could get a message into Mark Zuckerberg's mailbox for \$100 (41). But why not target employees at Facebook for far less and reach a couple of thousand people, too? We attended a mobile hackathon, wrote a post about it, and targeted Facebook mobile engineers. Matt Kelly and James Pearce noticed it and liked it (42). An intern decided to "play a trick on his boss" and ran ads targeting me (43). B2B firms target the press to get more coverage and show up in the Facebook newsfeed (30).

Jim Williams of Inluitive shared this with us: "Xactly's advocate marketing program generated hundreds of recommendations, follows and shares on LinkedIn, and a single advocate challenge resulted in nearly a hundred new Facebook fans and Twitter followers" (44). Customers are already talking about the companies that they love or hate online, but advocate marketing programs allow marketers to better organize those customers, tying their activity to sales and marketing initiatives and results. Have a grudge or complaint? Would you spend \$5 to scratch this itch? (23).

## 6.10 The Danger of Buying Facebook Fans

A word of warning to brands looking to expand their Facebook footprint: There are NO shortcuts. Should you “buy” Facebook fans from vendors that sell on a cost-per-fan basis? We have gotten this question a lot over the last couple of years, so let this be your guide. The short answer is: If it sounds too good to be true, listen to your instincts. Whatever you decide, make sure the ads are being run in your own account, no matter what excuse they give you. You’ve probably come across services that promise to deliver fans for just pennies each (or even cheaper!). That’s like saying you can buy a brand new iPod for a dollar.

What’s the catch? Most of them can’t deliver, and most of the ones that do are offering you what’s effectively poison. Some reputable social advertising agencies like Epic Social can deliver you quality, but they are rare.

Here are the main flavors of social media snake oil, why they’re dangerous, and how to spot them. If you see any variation of this, run. Often they have only a couple of hundred fans themselves. It’s no different than SEO vendors that promise links and yet have no Google PageRank or inbound links to show for themselves. Notice that you don’t see any customer testimonials — at least not real ones. And their fan page looks like something pulled out of an infomercial selling dietary supplements. They probably just switched the images out on that landing page to sell whatever is hot.

*Fans for pennies!* If you see a self-checkout right on the page where you can send a PayPal payment or order fans in bulk, run. You’re getting bot traffic, international traffic, traffic rings and other so-called fans that will never result in engagement or sales of any kind. However, if you just want to be able to say you have 100,000 fans but don’t care beyond a single boasting metric, then go for it.

*Link exchanges!* The idea here is: If you fan me, I’ll fan you. Often there’s a credit system in place where it’s not a one-to-one trade, as you find on Twitter. Some of these trades are automated fan exchanges. Not only is this against the Facebook Terms of Service, but these “firms” usually require you to give them administrative access to your page. You might as well give them your social security number, while you’re at it.

*Our ‘proprietary’ system!* These charlatans will try to sell you an e-book or software, promising the “secrets” to making millions. If you believe that, I’d like to sell you some oceanfront property in Colorado. Do they have real examples to share, or must you pay to see them?

The alternative: A marketing strategy for fan acquisition and valuation. In the end, there’s just no substitute for a clear marketing strategy for fan acquisition and valuation. On Facebook, three things are keys when appealing to customers: Decide what your best customers look like, write ads that appeal to them, and send them to a landing page that makes good on that compelling value proposition. Then you can test like crazy to fine-tune your targeting, ad copy, and landing pages. Know what your fan costs and what a fan is worth; hopefully, the former is greater than the latter.

The hucksters described above present you with a simple shopping cart check out to sell fans. Rather, you should select how many fans you want and then pay. Yet how could they possibly deliver on that promise if you don't inform them of your unique selling proposition, which particular audiences to go after, and how you will engage or convert them? Are you trusting them to write whatever ad copy they want, buy traffic from underdeveloped countries, or make misleading promises about your brand to encourage users to click Like? We've seen some firms place a dozen "Like" buttons on a page and offer an incentive to users who click on all of them. Those users who are clicking on the Like buttons machine gun style — have they had a chance to learn about your brand?

No amount of software or gimmicks can substitute for not having a strategy in place. A key component of that strategy is analytics. You must be able to measure fan quality so that you can use this as a basis to optimize your campaigns. What is a fan worth to you? What are you doing with these folks once they become a fan? And how do you identify and reward your most loyal fans — the people who love your product or service in real life?

The idea of spending money on Facebook ads just because your CEO said to do it or your competitor has more fans is ludicrous. You might be inviting derelicts to loiter in the lobby of your high-end hotel, which will discourage the very customers you want to serve. Your real fans will notice who is in your community and decide whether they want to spend time with you there.

Imagine your fan page now has a bunch of 13-year-olds from Indonesia and Turkey (no offense, folks). These could be people who clicked Like on your page because they wanted to earn some FarmVille dollars for a Facebook game. Not only do they not know about your product, but they don't even speak English. Here's a simple litmus test for quality: Of 11,000 Facebook campaigns we analyzed in a recent study, the cost per fan was \$1.07 — but the cost to acquire a customer varies dramatically depending on sector. Whether you're evaluating your page, the agency you're considering, or the clients they put forth as examples, just look at their wall. Is there a lot of user interaction relative to how many fans they have?

Count up the number of Likes and comments for the most recent post, which is the number of interactions. Divide that by the number of fans they have. If it's less than 1 in 200 (half a percent), then the engagement rate is low. Your cost per fan depends upon the industry your company is in, how well you can capitalize on your brand's real-world awareness, and how effectively you run your Facebook campaigns.

Of 11,000 Facebook campaigns we analyzed in a recent study, the cost per fan was \$1.07. But that averages out entertainment categories that are half that cost, versus healthcare and financial companies that might be five times the cost. Just like in regular Pay Per Click marketing or even direct marketing as a whole, the cost to acquire a customer varies dramatically. You'll need to determine what your real world customer is worth, ensure that your Facebook fans are of the same quality, and then apply the same ROI measurements you'd apply to any other channel.

Don't entrust your marketing strategy or Facebook advertising to an outsider. Does this mean don't hire an agency? No, just make sure you run the strategy, while they execute the details. Does this mean don't buy Facebook ads? No, just make sure you're connecting with your valuable customers and nurturing them in a profitable way.

## 6.11 How to Tell if Your Ad is Working and Diagnose Newsfeed Burnout

The newsfeed placements (desktop and mobile) are tricky. It's considered "personal" space for Facebook users, so you wouldn't want to burn out from a high frequency or push overtly promotional messaging. Save that for the dark posts to fans and the RHS placements.

We have a newsfeed that that is at a frequency of 6.5. The CTR has fallen to 0.352%. We like to see CTR stay above 1% and frequency below 2.0. You can also look at your negative feedback to tell if users are weary. Grab this via your page insights, downloading the clunky CSV file on post insights. You can also expand the comments to see if you have people demanding that you "get off my Facebook". Besides user experience, a poor CTR or quality score (now defunct) is financial, and Facebook will charge you more. 126 clicks for \$91.40 is 72 cents a click. Had this ad not burned out, we'd likely see a 1% CTR (3 times better) and 24 cents a click (a third the price).

The exception to a seemingly high frequency ad is the page post ad that is always on "promote most recent post". Provided that you're posting daily, this ad is not going to burn out, no matter the budget you allocate against it. The true frequency is lower than stated. Facebook is progressively limiting the frequencies of newsfeed ads based on your negative feedback. The rule doesn't apply to RHS (right hand side) placements, since users expect ads there.

How do you tell if your Facebook ad is working or not? Do you let it run for a certain number of days? Or perhaps wait until it gets a certain number of clicks and impressions? How do you know when to turn off an ad or create a similar ad? What's the simple answer for those who are not math geeks? The simple answer: Let each ad generate 10 clicks or \$10 in spend, whichever comes first. This gives you enough data to tell if the CTR or the CPC is not where it needs to be.

If you can't get a 1% CTR in the newsfeed, something is wrong with either your targeting or your content. If you have multiple ads in a campaign, sort them by how you've spent over the last 7 days, high to low. Pause (not delete) the low performers, such that you keep 3 ads live at any one time. Each time you optimize (every couple of days), you should create a few new ads and kill a few ads. This takes 5 minutes, tops.

Here's the sophisticated answer: If you have your ads set up properly, with the right counts and structure, you've got your Facebook funnel of Audience, Engagement, and Conversion set up to nurture your customers (45). At 3 campaigns of 8 ads each, you've got 24 ads to watch— each with a different combination of content and targeting, along with varying business objectives and audience counts.

Within Audience, you're looking to gain new fans and reach people who don't know about you yet. You're comparing your audience ads against only the other audience ads, since the engagement and conversion campaigns have other objectives. The CTR on your conversion campaigns will be much lower than your engagement campaigns, but the revenue per click is higher for conversion. Your cost per fan (CPF) is lower for your Audience campaign, since you're explicitly asking Facebook to generate new fans.

The early indicator on ad performance is CTR, since it tells you if there is a mismatch between your content and audience. I like to see a 1% CTR in the news-feed, though you might be able to get 5-10% if you are in a “social” vertical (entertainment, food, babies, pets, etc). If you’re running RHS your CTR will be much lower, but likely generate the same CPC, since the decrease in CTR is offset by the decrease in price for CPM bidding.

We like to see 10 clicks or \$10 in spend before making a decision to pause an ad. Anything less and you’re looking at an issue of statistical significance – results that are noise from not enough data. For example, if you got one click on only 2 impressions, that’s a 50% CTR, but is still just noise. Ads that have a decent CTR can stay alive for the second level of ad pruning, which is a decent CPC and engagement rate.

Usually CTR and CPC have an inverse relationship. When you bid on CPM (which you should always do, except in rare exception), Facebook is going to allocate inventory for you automatically based on your chosen business objective. They select who within your target is most likely to engage / convert and they determine the right price to pay for you. In an engagement campaign, you’re looking for a strong CTR and a low cost per action. Look at the ratio of your total actions versus your total clicks. If that’s high, you know that only is your content interesting enough to generate interest, but that people will also engage.

In your conversion campaign, you’re looking at 3 levels of progressive culling of your ads– a decent CTR, a strong engagement rate, and a good CPA (Cost Per Acquisition). Of course, the cost per conversion (also called CPA) is most critical, but the early indicators of CTR and engagement will help you shut off ads before they spend too much. I like to see 10 conversions per ad before I can make a proper decision about an ad working well. In most cases, especially if this were Google AdWords, we’d cut this ad for being unprofitable. However, this ad might be profitable with some landing page optimization, and it may contribute as an “assist” by driving more people into Google searches for our name. This is a tricky example, since Facebook does drive more Google traffic, enhance the performance of email campaigns, and boost other marketing efforts, in general.

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# Chapter 7

## Consumer Privacy in the Age of Big Data

*“America needs a robust privacy framework that preserves consumer trust in the evolving Internet economy while ensuring the Web remains a platform for innovation, jobs, and economic growth.”*

– U.S. Commerce Secretary Gary Locke (December 2010)

*“I will include easier access to one’s own data in the new rules. People must be able to easily take their data to another provider or have it deleted if they no longer want it to be used.”*

– E.U. Justice Commissioner Viviane Reding (January 2012)

*“Who doesn’t like getting those retail discounts or free gift coupons from their favorite stores? But did you know there were strings attached, invisible eyes tracking your every consumer move?”*

– FTC Chairwoman Edith Ramirez (May 2014)

*“The Good, the Bad and the Ugly: data brokers are like the Wild West – untamed and without governance.”*

– Newton Lee

### 7.1 Oil of the Digital Age

A February 2012 article on *The New York Times* reads, “Facebook’s pending initial public offering gives credence to the argument that personal data is the oil of the digital age. The company was built on a formula common to the technology industry: offer people a service, collect information about them as they use that service and use that information to sell advertising” (1).

In a February 2012 report on data services for U.S. insurance companies, Martina Conlon and Thuy Nguyen wrote, “In addition to claims, credit, consumer and cost information, we can now collect information on buying behaviors, geospatial and location information, social media and internet usage, and more. Our electronic trails have been digitized, formatted, standardized, analyzed and modeled, and are up for sale. As intimidating as this may sound to the individual, it is a great opportunity for insurers to use this data and insight to make more informed and better business decisions” (2).



While traditional lenders rely heavily on FICO credit scores, some financial lending companies such as Lenddo look at borrowers' Facebook friends to determine their creditworthiness. "It turns out humans are really good at knowing who is trustworthy and reliable in their community," said Jeff Stewart, co-founder and CEO of Lenddo. "What's new is that we're now able to measure through massive computing power" (3).

In a February 2012 article, Charles Duhigg of *The New York Times* revealed how companies learned their consumers' "secrets." Target, the second-largest discount retailer in the United States, employed statisticians like Andrew Pole to analyze retail transaction data and calculate not only whether a consumer was pregnant but also when her baby was due. Target then used the "pregnancy prediction" to offer expectant mother store coupons tailored to her stage of pregnancy. A Minneapolis man complained to Target that his teenage daughter in high school was receiving coupons for baby clothes and cribs, only to learn a few days later from his daughter that she was indeed pregnant. Pole told Duhigg, "Just wait. We'll be sending you coupons for things you want before you even know you want them" (4).

Data mining in the age of big data is a lucrative business. Using applied statistics and artificial intelligence to analyze complex datasets, companies repackage our private information for their own use as well as selling it to make a profit.

## 7.2 Data Brokers: The Good, the Bad and the Ugly

Federal Trade Commission (FTC) Chairwoman Edith Ramirez wrote an opinion piece for *CNN* in May 2014 to warn consumers about the invisible data brokers (5):

### *The Invisible Eyes:*

Who doesn't like getting those retail discounts or free gift coupons from their favorite stores? But did you know there were strings attached, invisible eyes tracking your every consumer move? ...

Businesses have long sought to attract and retain customers by recording and analyzing your shopping and lifestyle habits. To do so, they often rely on "data brokers" – companies that collect and share our personal information and label us based on what they learn. And they do this mostly without our knowledge. ...

Data brokers scoop up the digital breadcrumbs we leave as we shop in stores and online, and apply "big data" analytical tools to predict where we're going, what we'll buy, and what we'll do.

### *The Good:*

There's no question that the personal information that data brokers sell to retailers, financial firms, hotels, airlines and other businesses can provide benefits to consumers and our growing digital economy. It can help direct goods and services that are tailored to our interests and assisting businesses to combat fraud by verifying consumers' identities.

### *The Bad:*

They also take this information and use it to lump us into various, shorthand categories like "Affluent Baby Boomer" and "Bible Lifestyle." But if a data broker categorizes you as an

“Urban Scrambler,” meaning a low-income minority, are you more likely to receive an offer for a payday loan than a credit card? What are the implications of being labeled as “financially challenged?” Will it mean you are cut off from being offered the same goods and services, at the same prices, as your neighbors?

*And the Ugly:*

Data brokers are also making potentially sensitive inferences about consumers – about their health, financial status, and ethnic backgrounds. And consumers have little if any window into this process, let alone meaningful control or choice about how their data is shared among businesses. ... data brokers should be required to take reasonable steps to ensure consumer information is not used for unlawful purposes, such as to illegally discriminate.

The Good, the Bad and the Ugly: data brokers are like the Wild West – untamed and without governance. Personally I prefer targeted ads to junk mail, but there are still plenty of paper ads that I wish I could just eliminate from my mailbox. According to Ramirez, the FTC called on the U.S. Congress in May 2014 to improve the transparency of the data broker industry, and to provide consumers more control over their personal information. The FTC also recommended that Congress require data brokers to create a centralized website so that consumers can access their own data and opt out of data collection and retention.

“The user that’s going to interact with your brand really needs to know what they are giving up,” cautioned Jay Giraud, CEO and cofounder of Mojio. “If I’m being offered an insurance discount because Geico looked at my data, I want to be the one in control” (5).

Touted as the world’s first personal data marketplace, Datacoup pays up to \$10 per month for consumers who opt in to share their debit card and credit card transactions as well as data from Facebook, Twitter, and LinkedIn. Datacoup would provide companies analytical results such as “how often women in a certain age group mention coffee on Facebook on the same day they use their credit card in a coffee shop”.

### **7.3 Consumer Privacy Bill of Rights**

American Civil Liberties Union (ACLU) is a strong advocate for privacy: “Americans shouldn’t have to choose between new technology and keeping their personal information private. Protections for online privacy are justified and necessary, and the government must help draw boundaries to ensure that Americans’ privacy stays intact in the Digital Age” (6).

Since 2010, the Obama administration has been pushing for an online privacy bill of rights. Commerce Secretary Gary Locke said in a prepared statement, “America needs a robust privacy framework that preserves consumer trust in the evolving Internet economy while ensuring the Web remains a platform for innovation, jobs, and economic growth. Self-regulation without stronger enforcement is not enough. Consumers must trust the Internet in order for businesses to succeed online” (7).

At the 2012 Black Hat security conference in Las Vegas, Jennifer Granick, director of civil liberties at the Stanford Law School Center for Internet and Society, asked the audience of security professionals who they trusted less, Google or the

government? The majority raised their hands for Google. “I fear Google more than I pretty much fear the government,” said panelist Jeff Moss, founder of Black Hat and DEF CON. “Google, I’m contractually agreeing to give them all my data” (8).

In February 2012, the White House unveiled its proposed “Consumer Privacy Bill of Rights,” a voluntary set of guidelines for Internet companies to provide transparency, security, and user control of their data. The Consumer Privacy Bill of Rights calls for (9):

1. **Individual Control:** Consumers have a right to exercise control over what personal data companies collect from them and how they use it.
2. **Transparency:** Consumers have a right to easily understandable and accessible information about privacy and security practices.
3. **Respect for Context:** Consumers have a right to expect that companies will collect, use, and disclose personal data in ways that are consistent with the context in which consumers provide the data.
4. **Security:** Consumers have a right to secure and responsible handling of personal data.
5. **Access and Accuracy:** Consumers have a right to access and correct personal data in usable formats, in a manner that is appropriate to the sensitivity of the data and the risk of adverse consequences to consumers if the data is inaccurate.
6. **Focused Collection:** Consumers have a right to reasonably limit the amount of personal data that companies collect and retain.
7. **Accountability:** Consumers have a right to have personal data handled by companies with appropriate measures in place to assure they adhere to the Consumer Privacy Bill of Rights.

Although the White House fell short of making the Consumer Privacy Bill of Rights mandatory, Jon Leibowitz, former Chairman of the Federal Trade Commission, acknowledged that, “it’s not the end, it may not be the beginning of the end, but it’s a very important step forward” (10).

In April 2012, John M. Simpson, Privacy Project Director at Consumer Watchdog, called on the U.S. Department of Commerce to offer legislation to implement the Consumer Privacy Bill of Rights. Simpson said, “Calls for action in policy papers are easy. The test of commitment is to translate high-minded principles like the Consumer Privacy Bill of Rights into real legislative language” (11).

Two years later in April 2014, Simpson at Consumer Watchdog and 22-member coalition called on the White House to introduce baseline privacy legislation and to implement the Consumer Privacy Bill of Rights according to the following guidelines (12):

1. **TRANSPARENCY:** Entities that collect personal information should be transparent about what information they collect, how they collect it, who will have access to it, and how it is intended to be used. Furthermore, the algorithms employed in Big Data should be made available to the public.
2. **OVERSIGHT:** Independent mechanisms should be put in place to assure the integrity of the data and the algorithms that analyze the data. These mechanisms should help ensure the accuracy and the fairness of the decision-making.

3. **ACCOUNTABILITY:** Entities that improperly use data or algorithms for profiling or discrimination should be held accountable. Individuals should have clear recourse to remedies to address unfair decisions about them using their data. They should be able to easily access and correct inaccurate information collected about them.
4. **ROBUST PRIVACY TECHNIQUES:** Techniques that help obtain the advantages of big data while minimizing privacy risks should be encouraged. But these techniques must be robust, scalable, provable, and practical. And solutions that may be many years into the future provide no practical benefit today.
5. **MEANINGFUL EVALUATION:** Entities that use big data should evaluate its usefulness on an ongoing basis and refrain from collecting and retaining data that is not necessary for its intended purpose. We have learned that the massive metadata program created by the NSA has played virtually no role in any significant terrorism investigation. We suspect this is true also for many other “Big Data” programs.
6. **CONTROL:** Individuals should be able to exercise control over the data they create or is associated with them, and decide whether the data should be collected and how it should be used if collected.

## 7.4 Federal Trade Commission Privacy Report

On March 26, 2012, the Federal Trade Commission (FTC) issued its final report setting forth best practices for businesses to protect the privacy of American consumers and give them greater control over the collection and use of their personal data (13). The report, titled “Protecting Consumer Privacy in an Era of Rapid Change: Recommendations for Businesses and Policymakers,” expands on a preliminary staff report released in December 2010, which proposed a framework for consumer privacy in light of new technologies that allow for rapid data collection and sharing that is often invisible to consumers. The goal is to balance the privacy interests of consumers with innovation that relies on information to develop beneficial new products and services. The FTC also recommends that Congress consider enacting general privacy legislation, data security and breach notification legislation, and data broker legislation.

The FTC Privacy Report calls on companies handling consumer data to implement best practices for protecting privacy, including:

- **Privacy by Design:** Companies should build in consumers’ privacy protections at every stage in developing their products. These include reasonable security for consumer data, limited collection and retention of such data, and reasonable procedures to promote data accuracy;
- **Simplified Choice for Businesses and Consumers:** Companies should give consumers the option to decide what information is shared about them, and with whom. This should include a Do-Not-Track mechanism that would provide a simple, easy way for consumers to control the tracking of their online activities.

- **Greater Transparency:** Companies should disclose details about their collection and use of consumers' information, and provide consumers access to the data collected about them.

"If companies adopt our final recommendations for best practices – and many of them already have – they will be able to innovate and deliver creative new services that consumers can enjoy without sacrificing their privacy," said Jon Leibowitz, former Chairman of the FTC. "We are confident that consumers will have an easy to use and effective Do Not Track option by the end of the year because companies are moving forward expeditiously to make it happen and because lawmakers will want to enact legislation if they don't" (14).

But the end of the year 2012 came and went. More than two years later in May 2014, Do Not Track continues to elude consumers as the privacy advocates and the advertising industry cannot agree on what "tracking" means and includes. Small advertising-technology companies complained that the proposed Do Not Track implementation would end up benefiting the likes of Facebook and Google. Yet, Yahoo! said it would ignore do-not-track signals in the Internet browsers (15), and the "Do Not Track" setting in a web browser has no effect on Facebook (16).

## 7.5 California Online Privacy Protection Act

Effective July 1, 2004, California Online Privacy Protection Act of 2003 (OPPA) is a California State Law governing operators of commercial websites that collect personally identifiable information from California's residents. Such websites are required to conspicuously post and comply with a privacy policy that meets certain requirements stated in the Business and Professions Code Section 22575-22579 (17).

On February 22, 2012, California's Office of the Attorney General has gotten agreements from Apple, Google, Microsoft, Amazon, Hewlett-Packard, and Research In Motion to improve privacy protections on mobile apps. California's Online Privacy Protection Act, one of the strongest consumer privacy laws in the country, would now be applied to mobile apps as well.

"This will give more information to the consumers so they understand how their personal and private information can be used and potentially manipulated," said California Attorney General Kamala Harris. "Most mobile apps make no effort to inform users. ... Consumers should be informed what they're giving up before they download the app" (18).

## 7.6 European Union's "Right to be Forgotten" Law

In January 2012, the European Commission proposed a comprehensive reform of the EU's 1995 Data Protection Directive in order to strengthen online privacy rights and to unify the implementation of privacy law in the 27 EU Member States (19). European Union Justice Commissioner Viviane Reding unveiled details of the

proposed "Right to be Forgotten" law at the January 2012 Digital Life Design (DLD) conference in Munich. Reding outlined her proposal:

"First, people need to be informed about the processing of their data in simple and clear language. Internet users must be told which data is collected, for what purposes and how long it will be stored. They need to know how it might be used by third parties. They must know their rights and which authority to address if those rights are violated.

"Second, whenever users give their agreement to the processing of their data, it has to be meaningful. In short, people's consent needs to be specific and given explicitly.

"Thirdly, the reform will give individuals better control over their own data. I will include easier access to one's own data in the new rules. People must be able to easily take their data to another provider or have it deleted if they no longer want it to be used" (20).

In May 2014, the European Court ruled that Google can be forced to erase links to content about individuals on the Web. It was a resounding victory for Mario Gonzalez, a Spanish citizen, who sued Google for refusing to remove a search result linked to a 1998 report on his real estate auction and social security debts. Gonzalez's line of reasoning is simple: "This is really old information, and it no longer reflects who I am" (21).

Professor Jeffrey Rosen at the George Washington University commented in *Stanford Law Review* of how the EU law could affect Facebook and Google: "The right to be forgotten could make Facebook and Google, for example, liable for up to two percent of their global income if they fail to remove photos that people post about themselves and later regret, even if the photos have been widely distributed already" (22).

Since the May 2014 European Court ruling, Google has been flooded with demands from people to remove links from its search results. While innocent people and "revenge porn" victims could benefit from the "Right to be Forgotten" law, an unpopular politician, a poorly reviewed physician, and a pedophile were also among the first to have issued Google removal requests. "The ruling has significant implications for how we handle take-down requests," a Google spokesman said. "This is logistically complicated – not least because of the many languages involved and the need for careful review" (23).

In implementing the European Data Protection law, Google has provided an online form for search removal request for people in 28 European Union countries and four neighboring nations (24). The form states, "A recent ruling by the Court of Justice of the European Union found that certain users can ask search engines to remove results for queries that include their name where those results are *inadequate, irrelevant or no longer relevant, or excessive in relation to the purposes for which they were processed*. In implementing this decision, we will assess each individual request and attempt to balance the privacy rights of the individual with the public's right to know and distribute information. When evaluating your request, we will look at whether the results include outdated information about you, as well as whether there's a public interest in the information—for example, information about financial scams, professional malpractice, criminal convictions, or public conduct of government officials" (25).

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**Part IV**  
**The Rise of Facebook Nation**

# Chapter 8

## Twitter – a World of Immediacy

*“The pen is mightier than the sword.”*

– Edward Bulwer-Lytton (1839)

*“Too many tweets might make a twat.”*

– British Prime Minister David Carmeron (July 2009)

*“Freedom of expression is essential.”*

– Twitter’s @biz and @amac (January 2011)

*“They [the newspapers] seem incapable of breaking real, meaningful news at Internet speed. It’s why they like Twitter so much. Twitter does the hard work for them.”*

– Mike Hudack, director of product at Facebook (May 2014)

### 8.1 The Pen is Mightier than the Sword

Edward Bulwer-Lytton coined the metonymic adage “the pen is mightier than the sword” in 1839 (1). Chairman Mao Zedong seemed to concur, “As communists we gain control with the power of the gun and maintain control with the power of the pen” (2).

On April 10, 2008, University of California, Berkeley grad student James Karl Buck was photographing an anti-government protest in Mahalla, Egypt when he was arrested by the authorities. He managed to send a quick tweet: “Arrested.” His Twitter followers contacted the university, the American Embassy, and media organizations to put pressure on the Egyptian government to release him. In less than 24 hours, on April 11, Buck sent another one-word tweet: “Free” (3).

On October 9, 2012, 15-year-old Pakistani girl Malala Yousufzai was shot in the head by Taliban gunmen who flagged down her school bus. Malala survived the attack and took the stage at the United Nations on July 12, 2013, her 16th birthday, to advocate the universal right for all children to attend school. A few days later, Adnan Rashid, militant commander of Tehreek-i-Taliban Pakistan, sent Malala a letter to explain the atrocious attack: “The Taliban believe you were intentionally writing against them and running a smear campaign to malign their effort to establish an Islamic system in (the) Swat Valley, and your writings were provocative.

You have said in your speech ... that the pen is mightier than the sword. So they attacked you for your sword not your books or school” (4).

In the ancient historical past, the sword had exerted considerable influences on the pen. Qin Shi Huang (秦始皇), the first emperor of the unified China in 221 B.C., outlawed and burned many books in order to enforce the uniformity of the Chinese language (5). His censorship succeeded in imposing one basic written language throughout China, even though there still exists today hundreds of spoken Chinese dialects that sound like entirely different languages (6). And for some periods of time in Catholic history, lay Catholics were discouraged from directly reading the Bible for fear that they would misinterpret the Scripture. The printing press and Protestant Reformation in the 16th century resulted in the proliferation of the Bible and the freedom of new Bible translations.

When I was in college, a saleswoman tried to sell me a set of Encyclopedia Britannica that contains all of the above historical events and literary commentaries. In March 2012, after 244 years, Encyclopedia Britannica decided to cease production of its iconic multi-volume print book sets, making the 2010 version its final edition. The company would instead focus on digital encyclopedia and educational tools. “The print set is an icon,” said Britannica president Jorge Cauz. “But it’s an icon that doesn’t do justice to how much we’ve changed over the years. Updating dozens of books every two years now seems so pedestrian. The younger generation consumes data differently now, and we want to be there” (7).

For the same reason of the behavioral change in consumers’ data consumption, AT&T in April 2012 ditched the Yellow Pages directories that used to go out to about 150 million homes and businesses in 22 states (8). It was inevitable, since major cities such as Seattle and San Francisco were moving to ban the unsolicited delivery of Yellow Pages in order to reduce waste (9).

In the digital age, information is abundant with immediacy and is easily accessible anytime and anywhere. In June 2012, Google.org launched the Endangered Language Project in an effort to save 3,054 dying languages around the world (which will hopefully help undo some of the deeds by Chinese emperor Qin Shi Huang) (10). Project managers Clara Rivera Rodriguez and Jason Rissman said, “Documenting the 3,000+ languages that are on the verge of extinction is an important step in preserving cultural diversity, honoring the knowledge of our elders, and empowering our youth” (11).

Thanks to the Internet, words can travel at the speed of light, and no amount of censorship can stop the flow of information. Although the online social networking site Twitter said in January 2012 that it would delete users’ tweets in countries that require it, Twitter would still keep those deleted tweets visible to the rest of the world (12). Sarah Kendzior at Washington University in St. Louis has published online papers to help Uzbek refugees find a safe haven abroad and to introduce contemporary Uzbek literature into the lives of Midwestern teens (13).

Thanks to Malala’s courage, no militant can silence her. Thanks to the Internet, the pen is mightier than the sword.

## 8.2 Citizen Journalists

Mike Hudack, director of product at Facebook, ranted about the state of the media in his blog: “They [the newspapers] just report what people tell them, whether it’s Cheney pulling Judith Miller’s strings or Snowden through the proxy of Glenn Greenwald doing roughly the same. They seem incapable of breaking real, meaningful news at Internet speed. It’s why they like Twitter so much. Twitter does the hard work for them” (14).

On January 15, 2009, eyewitness Jānis Krūms sent a TwitPic photo of passengers waiting to be rescued from a US Airways plane after its emergency landing on the Hudson River. His wrote on Twitter, “There’s a plane in the Hudson. I’m on the ferry going to pick up the people. Crazy” (15) (See Fig. 8.1). Hundreds of Flickr users also posted photos of the crash, but Krūms’ eyewitness report went viral.

On May 1, 2011, IT consultant Sohaib Athar (@ReallyVirtual) was coding some software after midnight in Pakistan when he heard the annoying noise outside his apartment (16). Athar sent out a series of tweets as the event developed (17):

- “Helicopter hovering above Abbottabad at 1AM (is a rare event)”
- “Go away helicopter – before I take out my giant swatter :-/”



Fig. 8.1 Eyewitness Jānis Krūms’ Tweet and TwitPic

- “A huge window shaking bang here in Abbottabad Cantt. I hope its [*sic*] not the start of something nasty :-S”
- “@m0hcin all silent after the blast, but a friend heard it 6 km away too... the helicopter is gone too.”
- “@m0hcin <http://bit.ly/ljB6p6> seems like my giant swatter worked !”
- “@m0hcin the few people online at this time of the night are saying one of the copters was not Pakistani...”
- “@raihak Funny, moving to Abbottabad was part of the ‘being safe’ strategy”
- “Since taliban (probably) don’t have helicopters [*sic*], and since they’re saying it was not ‘ours’, so must be a complicated situation #abbottabad”
- “@kashaziz technically, it is unidentified until identified, and it is a flying object, so year [*sic*], why the hell not, we have seen weirder stuff”
- “The abbottabad helicopter/UFO was shot down near the Bilal Town area, and there’s report of a flash. People saying it could be a drone.”
- “@smedica people are saying it was not a technical fault and it was shot down. I heard it CIRCLE 3-4 times above, sounded purposeful.”
- “@smedica It must have been more, I started noticing the helicopter when the noise got irritating - which part of Abbottabd are you in?”
- “@smedica I live near Jalal Baba Auditorium”
- “Two helicopters [*sic*], one down, could actually be the training accident scenario they’re saying it was >> <http://bit.ly/ioGE6O>”
- “and now I feel I must apologize to the pilot about the swatter tweets :-/”
- “And now, a plane flying over Abbottabad...”
- “Interesting rumors in the otherwise uneventful Abbottabad air today”
- “Report from a taxi driver: The army has cordoned off the crash area and is conducting door-to-door search in the surrounding.”
- “RT @ISuckBigTime: Osama Bin Laden killed in Abbottabad, Pakistan.: ISI has confirmed it << Uh oh, there goes the neighborhood :-/”
- “For the curious, here is life in abbottabad two minutes ago <http://twitpic.com/4s8nfq>”
- “Uh oh, now I’m the guy who liveblogged the Osama raid without knowing it.”
- “and here come the mails from the mainstream media... \*sigh\*”

Until the official news reached Sohaib Athar, little did Athar know that he was live tweeting the secret U.S. military raid by the SEAL Team Six that killed Osama bin Laden at a hideout compound in Abbottabad, Pakistan. The IT consultant went on to photograph bin Laden’s compound a mile away from his home, and interviewed neighbors living in that area. Athar was soon hailed as the accidental “citizen journalist,” the man who live-tweeted Osama’s death. His 750 or so Twitter followers on May 1, 2011 have swelled to over 100,000 followers in a matter of days (18).

Steve Myers, managing editor of Poynter.org, said at the 2012 South by Southwest Interactive festival, “In an era when mobile-phone owners walk around with a video camera in their pocket at all times and tools like Twitter, Facebook and YouTube make broadcasting the results quick and simple, people like Athar can turn into journalists without even knowing it” (19). *CNN*’s sports columnist Terence Moore

agreed, “New media have created a slew of investigative reporters among average citizens through personal blogs, Twitter, YouTube, talk-show radio, cellphone cameras and recorders, Facebook and fan websites” (20).

In August 2013, *NBC News* embraced citizen journalism by acquiring user-generated live video service Stringwire. “You could get 30 people all feeding video, holding up their smartphones,” NBC News Chief Digital Officer Vivian Schiller told the *Times*, “and then we could look at that. We’ll be able to publish and broadcast some of them” (21). As citizen journalists and bloggers are becoming more important in news gathering and timely dissemination, mainstream media has found an important ally in the Fifth Estate.

### 8.3 A World of Immediacy

Morning newspapers are yesterday’s news; social media news are the now moments. Twitter, in particular, has created a world of immediacy. Twitter’s mission is “to instantly connect people everywhere to what is most meaningful to them.” For this to happen, Twitter expresses in its official blog, “freedom of expression is essential. Some Tweets may facilitate positive change in a repressed country, some make us laugh, some make us think, some downright anger a vast majority of users. We don’t always agree with the things people choose to tweet, but we keep the information flowing irrespective of any view we may have about the content” (22).

In 2011, Apple integrated Twitter into its iOS 5, making Twitter the default social graph and social network on iPhone, iPod Touch, and iPad (23). As a direct result of the iOS integration, Twitter has enjoyed a 25% increase in monthly signups (24). In October 2011, Twitter CEO Dick Costolo announced at the Web 2.0 Summit that there were 250 million tweets every day (25). By August 2013, the daily number of tweets had doubled to 500 million as reported by Raffi Krikorian, vice president of platform engineering at Twitter (26).

The Super Bowl XLVI on February 5, 2012 set a new record for simultaneous tweeting in the United States, with 12,233 tweets a second at its peak during the final three minutes of the game (27). Super Bowl XLVI host city Indianapolis built the first-ever “social media command center” for a team of strategists, analysts, and techies to monitor the fan conversation via Facebook and Twitter from a 2,800-square-foot space downtown (28).

The U.S. record, though impressive as is, was dwarfed by the world record of 25,088 tweets per second during the December 9, 2011 television screening in Japan of the animated film *Castle in the Sky* directed by Hayao Miyazaki (29). The Japanese viewers were challenged to use social networks to say the spell “balse” together with the two characters at the climax of the film. It was a resounding success in audience engagement.

Not only does Twitter provide up-to-the-minute personal news to keep us informed of the people and events that we are following, it also helps spread information among would-be followers. NASCAR driver Brad Keselowski, for example,

tweeted about the explosion and fire caused by a crash during the Daytona 500 in February 2012. Some of his fans re-tweeted the accident. Within two hours, Keselowski gained more than 100,000 new followers on Twitter (30).

When Hurricane Sandy was sweeping through New York City in October 2012, hundreds of tweets pleading for help were sent to the New York Fire Department (@FDNY). Emily Rahimi, NYFD's social media manager, responded and relayed tweets to 911 dispatchers. "You could see the panic and fear in the words they were typing," said Rahimi. "A lot of people couldn't get through to a 911 dispatcher. So I took their information and called our dispatchers myself to make sure they sent an emergency crew. I reassured everyone asking for our help that rescuers would eventually reach them" (31).

On March 24, 2012, a piece of a debris from a Russian Cosmos satellite passed dangerously close to the International Space Station hosting the Expedition 30 crew (32). NASA tweeted at 11:29 PM on March 23 as the event was unfolding: "The six crew members are in their Soyuz spacecraft and will close the hatches to isolate themselves from #ISS until the debris passes" (33).

On August 13, 2013 when billionaire investor Carl Icahn tweeted about having a large position in Apple and his meeting with Apple's CEO Tim Cook, Apple's stock price soared 5% in less than two hours (34).

Such were a few of the many quintessential real-life, real-time dramas via Twitter.

## 8.4 Prevalence of Twitter

In a July 2009 interview, British Prime Minister David Cameron told *Absolute Radio* host Christian O'Connell, "I am not on Twitter. As politicians we have to think about what we say. The trouble with Twitter – the instantness of it – is that, I think, too many tweets might make a twat" (35). Cameron changed his mind in October 2012, created a Twitter account, and told *Sky News*, "In this modern world you have got to use every means to try and communicate your message and explain to people why you are doing it. You've got to get with the programme, I suppose" (36).

Indeed, Twitter is so prevalent that we can tweet at 75% of the world's leaders. According to a 2013 report by Digital Daya, a total of 123 world leaders out of 164 countries have accounts on Twitter set up in their personal name or through an official government office (37). For example, President Barack Obama (@BarackObama), First Lady Michelle Obama (@MichelleObama), Russian President Vladimir Putin (@KremlinRussia\_E), South Africa's President Jacob Zuma (@SAPresident), Dalai Lama (@DalaiLama), and Pope Benedict XVI (@PopeBenedictXIV) are all tweeting (38).

Since Obama joined Twitter on March 5, 2007, his popularity has grown to 43 million followers in June 2014 as Obama was ranked #3 on twitaholic.com in terms of number of followers, behind Justin Bieber (#2) and above Lady Gaga (#5) among all celebrities in the world (39) (see Fig. 8.2).











#	Name (Screen Name)	Location	URL	Followers	Following	Updates	Joined
1.	 <b>KATY PERRY</b> @katyperry		<a href="http://t.co/TUWZuWtWtr">http://t.co/TUWZuWtWtr</a>	53,816,374	147	5,688	65 months ago
2.	 <b>Justin Bieber</b> @justinbieber		<a href="http://t.co/8tGKt4y3p2">http://t.co/8tGKt4y3p2</a>	52,367,734	130,129	27,042	64 months ago
3.	 <b>Barack Obama</b> @BarackObama	Washington, DC	<a href="http://t.co/G5Yhnef2z1">http://t.co/G5Yhnef2z1</a>	43,378,939	650,417	11,839	89 months ago
4.	 <b>YouTube</b> @YouTube	San Bruno, CA	<a href="http://t.co/F36_cbt8Yf">http://t.co/F36_cbt8Yf</a>	42,598,158	666	10,500	80 months ago
5.	 <b>Lady Gaga</b> @ladygaga			41,536,612	134,438	4,772	76 months ago
6.	 <b>Taylor Swift</b> @taylorswift13		<a href="http://t.co/33bGR8u8E">http://t.co/33bGR8u8E</a>	41,379,768	130	2,231	67 months ago
7.	 <b>Britney Spears</b> @britneyspears	Los Angeles, CA	<a href="http://t.co/F9MaC4fEas">http://t.co/F9MaC4fEas</a>	37,647,357	403,075	3,666	70 months ago
8.	 <b>Rihanna</b> @rihanna	LA, BARI?	<a href="http://t.co/hv8dLc4yrf">http://t.co/hv8dLc4yrf</a>	35,791,889	1,065	9,011	<a href="#">Details...</a>
9.	 <b>Instagram</b> @instagram		<a href="http://t.co/53hw7AXY3M">http://t.co/53hw7AXY3M</a>	33,274,744	16	5,096	<a href="#">Details...</a>
10.	 <b>Justin Timberlake</b> @jtimberlake	Memphis, TN	<a href="http://t.co/SFod8Evc5C">http://t.co/SFod8Evc5C</a>	32,694,810	79	2,304	64 months ago

Fig. 8.2 Top 10 Twitterholics based on Followers (as of June 2014) – Courtesy of Twitaholic.com

Twitter is not off-limits to dead celebrities whose legends live on. Among the verified authentic accounts on Twitter are Marilyn Monroe, Elvis Presley, and Michael Jackson (40). Behind Twitter’s Marilyn Monroe, for instance, is a marketing firm who purchased the rights to all things Marilyn Monroe.

In June 2009, Twitter began to institute the verification of accounts in order to establish authenticity of identities on Twitter and to reduce user confusion (41). Verified accounts display a blue “Verified Badge” on their Twitter bio. However, this program is currently closed to the public as of March 2012. Twitter only verifies some trusted sources from their advertisers, partners, and high-profile personalities (42).

Twitter’s concoction of the hashtag as a short and handy identifier is becoming as important as Tim Berners-Lee’s creation of web URLs for companies and politicians alike. For example, during the 2012 Super Bowl XLVI, eight out of 42 TV advertisers included a Twitter hashtag in their commercials (43). And shortly after Clint Eastwood’s Super Bowl commercial was shown to more than 111 million Americans watching the game, White House communications director Dan Pfeiffer sent a tweet: “Saving the America Auto Industry: Something Eminem and Clint Eastwood can agree on” (44).

Twitter has become the most prevalent tool for spreading news and getting feedback in real-time. Immediately following President Obama’s State of the Union address on January 24, 2012, an online panel from the White House answered questions submitted by citizens via Twitter (#WHChat & #SOTU), Google+, Facebook,



and the in-person audience of “tweetup” participants (45). A “tweetup” is an event where people who tweet come together to meet in person.

Since the first tweet was sent by Twitter co-founder Jack Dorsey in 2006, a billion messages had been sent on Twitter every two and a half days in 2013. *TIME Magazine*'s Victor Luckerson wrote about the seven most important moments in Twitter's history (46) while *CNN*'s Brandon Griggs, Heather Kelly, and Doug Gross identified 23 key moments between 2006 and 2013 (47). Combining them produces the following list of 27 key events:

1. March 2006: Twitter co-founder Jack Dorsey posts the first-ever tweet “just setting up my twttr” as part of an internal messaging system for the podcasting company Odeo.
2. July 2006: Twitter publicly reveals a full version on July 15.
3. March 2007: Twitter becomes popular among attendees at the South By Southwest Interactive festival in Austin, Texas.
4. August 2007: Twitter user Chris Messina proposes the idea of using # (the hashtag) for groups.
5. April 2008: University of California, Berkeley grad student James Karl Buck shows the power of a one-word tweet: “Arrested” on April 10 and “Free” on April 11.
6. January 2009: On January 15, eyewitness Jānis Krūms tweets a photo of passengers waiting to be rescued from a US Airways plane after its emergency landing on the Hudson River. His message says, “There’s a plane in the Hudson. I’m on the ferry going to pick up the people. Crazy.”
7. April 2009: Actor Ashton Kutcher becomes the first Twitter user with 1 million followers.
8. June 2009: Demonstrators in Iran start a “Twitter Revolution” by tweeting about the disputed election in Iran and protests in the streets of Tehran.
9. August 2009: Justin Halpern creates a Twitter account called “Sh\*t My Dad Says” to disseminate his father’s blunt wisecracks.
10. January 2010: Astronaut Timothy Creamer sends the first live tweet from space: “Hello Twittersverse! We r now LIVE tweeting from the International Space Station — the 1st live tweet from Space! :) More soon, send your ?s.”
11. April 2010: The Library of Congress announces plans to archive every public tweet on Twitter.
12. April 2010: Twitter introduces promoted tweets in order to generate ad revenue.
13. October 2010: Twitter names Dick Costolo its CEO.
14. January 2011: Twitter and Facebook play a key role in “Arab Spring” uprisings as people in Tunisia, Egypt, Syria, Libya and other countries use social networks to message each other and organize protests.
15. March 2011: An anonymous jokester heralds a new wave of parody Twitter feeds by tweeting “Leaving Wall Street. These guys make my skin crawl.” on behalf of an Egyptian cobra that has escaped from the Bronx Zoo in order to sightsee around New York City.

- 16. May 2011: Sohaib Athar, a 33-year-old IT consultant in Abbottabad, Pakistan, unwittingly live tweets the secret U.S. military raid by the SEAL Team Six. One of his tweets says, “Uh oh, now I’m the guy who liveblogged the Osama raid without knowing it.”
- 17. June 2011: U.S. representative Anthony Weiner resigns after confessing to sending lewd photos of himself to women on Twitter.
- 18. June 2012: NASA lands the Curiosity rover safely on Mars and begins sending updates to the public via Twitter.
- 19. November 2012: President Barack Obama acknowledges his successful re-election in a tweet “Four more years” along with an image of him embracing his wife. It becomes the most shared tweet ever – with over 770,000 retweets (see Fig. 8.3).
- 20. November 2012: The Israel Defense Forces live-tweets its rocket attacks against the Hamas in Gaza, making it the first time that a military conflict is chronicled in real time on social media.



Fig. 8.3 President Barack Obama’s “Four More Year” Tweet on November 6, 2012

21. December 2012: Pope Benedict XVI becomes the first pontiff to join Twitter (@Pontifex).
22. January 2013: Twitter users in Japan and Korea set a world record by posting 33,388 tweets per second on their New Year's Day.
23. January 2013: Justin Bieber dethrones Lady Gaga to become the most followed person on Twitter.
24. January 2013: Twitter launches Vine app to let users shoot and share 6-second looping videos.
25. February 2013: Super Bowl XLVII generates more than 268,000 tweets per minute, and 24.1 million for the entire game.
26. April 2013: The Syrian Electronic Army hacks into the Associated Press Twitter account and posts "Breaking: Two Explosions in the White House and Barack Obama is injured."
27. September 2013: Twitter announces IPO on September 12.

A key Twitter event in 2014 is Ellen DeGeneres' Oscar-night group selfie on March 2nd during the 86th Academy Awards (48) (see Fig. 8.4). It generated a record 3.4 million retweets, breaking Twitter's servers as well as the record held by President Barack Obama's "Four More Years" post known as the "most retweeted photo ever."



**Fig. 8.4** Ellen DeGeneres' Oscar-Night Group Selfie on March 2, 2014

Another memorable 2014 Twitter event is Super Bowl XLVIII which generated 24.9 million tweets for the entire game, topping the 24.1 million from the previous year's game (49).

## 8.5 Advertisements and Campaigns on Twitter

Advertisers and campaign strategists have caught Twitter fever as well. Twitter CEO Dick Costolo said in October 2010, "We feel like we've cracked the code on a new form of advertising" (50). Businesses pay a fee to have their "promoted tweets" appear near the top of a user's feed. In February 2012, Twitter announced that it would also start sending promoted tweets to mobile phones (51). In July 2013, Twitter introduced Tailored Audience Advertising to better target ads to potential customers (52). In April 2014, Twitter announced plans to roll out 15 new ad products over the following six months to compete with Facebook in ad revenue (53).

Some brands have been using the hashtag to engage consumers in constant conversation and to spread the news through retweeting by the more proactive customers to their friends. Politicians pay Twitter to help shape opinions. Social media consultant Vincent Harris said, "The beauty of Twitter's ad unit is that it's the best rapid-response tool that exists in politics right now" (43). A case study about a customer acquisition campaign in Q4 2013 showed that leads coming from the Twitter promotion were 20% more likely to convert to paying customers than any other marketing channels (54).

Nevertheless, freedom of speech on Twitter carries its own risk for advertisers and campaign strategists. In January 2012, McDonald's launched a marketing campaign with the innocuous hashtag #McDStories as part of a larger campaign to share stories about the farmers who grow McDonald's food and their commitment to fresh produce and meats. Within two hours after the launch, however, McDonald's pulled down #McDStories due to the critics of McDonald's tweeting stories of food poisoning, weight gain, and poor employee hygiene.

In defense of the Twitter campaign fiasco, McDonald's social media director Rick Wion wrote, "McDonald's is mentioned on Twitter more than 250,000 times each week, it is very easy to cherry pick negative (or positive) tweets that are not representative of the overall picture. Bottom line – the negative chatter wasn't as much as today's headlines have lead [*sic*] people to believe. This happened almost a week ago and the hashtag is only living on because many media outlets are using the chance to push a provocative and tweetable headline" (55).

Similar to McDonald's fiasco, the NYPD Twitter campaign backfired badly in April 2014 when the New York Police Department asked citizens to post photos of themselves with the officers using the hashtag #myNYPD. Deputy Chief Kim Y. Royster explained, "The NYPD is creating new ways to communicate effectively with the community. Twitter provides an open forum for an uncensored exchange and this is an open dialogue good for our city" (56).



**Fig. 8.5** Similar hashtags inspired by #myNYPD sprang up around the world in April 2014

However, the exchange and dialogue were shortchanged by overwhelmingly negative tweets with photos showing police brutality and misconduct (57). The minority voices supporting the NYPD were few and far between. Moreover, similar hashtags sprang up around the world: #myLAPD (Los Angeles Police Department), #myCPD (Chicago Police Department), and #MiPoliciaMexicana (Mexican Police), to name a few (see Fig. 8.5).

In spite of the backlash, the NYPD should be lauded for bringing up an age-old sensitive topic that needs to be addressed in order build more trust between the police and the citizens. Social media such as Twitter certainly offers a powerful mechanism to take the pulse of public opinion.

## 8.6 Cuban Twitter: ZunZuneo

During 2011, Twitter and Facebook played a key role in “Arab Spring” uprisings as people in Tunisia, Egypt, Syria, Libya and other countries use social networks to message each other and organize protests. What if a country, such as Cuba or China, bans the use of Twitter and Facebook?

In April 2014, Cuba accused the Obama administration for secretly financing a social network in Cuba to stir political unrest and undermine the country’s communist government (58). Dubbed “ZunZuneo,” a slang for a Cuban hummingbird’s tweet, drew in some 40,000 subscribers in Cuba. The U.S. Agency for International Development (USAID) was the mastermind behind the creation of the “Cuban

Twitter,” hoping that the text-messaging tool would be used to organize political demonstrations. ZunZuneo went offline in June 2012 when the program ran out of government funding and failed to obtain private investment from Jack Dorsey, cofounder of Twitter.

Josefina Vidal, director of U.S. affairs at Cuba’s Foreign Ministry, said that the ZunZuneo program “shows once again that the United States government has not renounced its plans of subversion against Cuba ... The government of the United States must respect international law and the goals and principles of the United Nations charter and, therefore, cease its illegal and clandestine actions against Cuba, which are rejected by the Cuban people and international public opinion” (59).

Nonetheless, no one would argue that the U.S. government should be credited for being creative.

## 8.7 Creative Uses of Twitter

Given the skyrocketing volume of public tweets, analytical tools are being developed to comb through the tweets to gauge public opinions. Developed by the *Los Angeles Times*, IBM, and the USC Annenberg Innovation Lab, the Oscar Senti-Meter uses language recognition technology to analyze the positive, negative, and neutral opinions about the 2012 Academy Awards race (60). When the Academy announced the best actor nominations, Jean Dujardin of *The Artist* scored the highest in positive sentiment while George Clooney of *The Descendants* had the highest volume of tweets. The Oscar Senti-Meter analysis seemed to concur that Dujardin beat Clooney and won the best actor in a leading role.

MIT Professor Erik Brynjolfsson explained, “Data measurement is the modern equivalent of the microscope. Google searches, Facebook posts and Twitter messages, for example, make it possible to measure behavior and sentiment in fine detail and as it happens” (61).

With more than 250 million tweets per day as of October 2011, people around the world are co-authoring the equivalent of a 12.5 million-page book every day (assuming that an average tweet has 100 characters and an average book page contains roughly 2,000 characters). That is a gigantic book, to say the least.

Speaking of books, author Neil Gaiman and BBC Audiobooks America in 2009 used Twitter for interactive storytelling (62). In May 2012, Pulitzer Prize winner Jennifer Egan released her new novel *Black Box* on Twitter in a series of 140-character bursts every minute for the hour between 8 and 9 p.m. daily from May 24 to June 2 (63).

In May 2013, researchers at the University of Vermont released a study titled “The Geography of Happiness: Connecting Twitter sentiment and expression, demographics, and objective characteristics of place” (64). The Twitter data found Hawaii to be the happiest state and Napa in California to be the happiest city, whereas Louisiana to be the saddest state and Beaumont in Texas to be the saddest city (65). According to the study, cities with a higher density of tweets tended to be less happy.

In October 2013, Jiwei Li at Carnegie Mellon University and Claire Cardie at Cornell University developed an algorithm that could identify a Twitter user’s most



significant events and assemble them into an accurate life history. “Experiments on real Twitter data quantitatively demonstrate the effectiveness of our method,” said Li and Cardie. “It can be extended to any individual, (e.g. friend, competitor or movie star), if only he or she has a twitter account” (66).

In February 2014, Nathan Kallus at MIT reported his research finding on how to predict crowd behavior using statements made on Twitter (67). “The gathering of crowds into a single action can often be seen through trends appearing in this data far in advance,” said Kallus. “We find that the mass of publicly available information online has the power to unveil the future actions of crowds” (68).

In March 2014, four W hotels in New York began to offer couples a “social media wedding concierge” to live-tweet their wedding, upload photos to Instagram, post updates on Facebook, and create inspirational Pinterest boards from the start of a wedding planning (69). The concierge will also make sure that the wedding guests all use the same hashtag in order to get the wedding to “trend” on Twitter.

In May 2014, a wealthy California real estate investor (@HiddenCash) conducted an anonymous social experiment for good (70). He hid \$100 bills in public places in San Francisco, Oakland, San Jose, Los Angeles, and other cities; and then posted clues to the money’s whereabouts on Twitter. On May 28, he had 172,000 followers (71); and by August 13, the number of followers had ballooned to 719,000 (72).

In July 2014, Arab-American journalist Sulome Anderson gave her Jewish boyfriend Jeremy a kiss on Twitter to show their support for a New York-based social media campaign called “Jews and Arabs refuse to be enemies.” Anderson tweeted, “He calls me neshama, I call him habibi. Love doesn’t speak the language of occupation #JewsAndArabsRefuseToBeEnemies”.

In August 2014, Bruno Gonçalves at the University of Toulon in France and David Sánchez at the Institute for Cross-Disciplinary Physics and Complex Systems in Spain released a report on their study of dialects on a global scale using messages posted on Twitter. Based on 50 million geo-located tweets, the researchers mapped the distribution of dialects and grouped them into two “superdialects” that are indicative of an “increasing homogenization of language caused by global communication systems like Twitter” (73).

## 8.8 The Downside of Twitter

While the creative uses of Twitter signify the beginning of brave new possibilities empowered by Twitter in specific and social media in general, there is always a downside. Before Google tied all accounts to Google+ in 2013, YouTube comments were the angriest place on the Internet with all forms of trolling, bullying, racism, sexism, and other offensive expressions (74). Now, the Twitterverse has become the favorite go-to place for intolerant bile.

When U.S. born Indian-American Nina Davuluri was crowned the 2014 Miss America, ignorant and racist tweets started spewing (75):

- “This is Miss America... not Miss Foreign Country”
- “shes [*sic*] like not even american and she won miss america”

- “More like Miss Terrorist #MissAmerica”
- “How the fuck does a foreigner win miss America? She is a [sic] Arab!”
- “Miss New York is an Indian.. With all do [sic] respect, this is America”
- “9/11 was 4 days ago and she gets miss America?”
- “Congratulations Al-Qaeda. Our Miss America is one of you.”
- “Asian or indian are you kiddin this is america omg”
- “Well they just picked a Muslim for Miss America. That must’ve made Obama happy. Maybe he had a vote”

It is no surprise that Miss America Nina Davuluri, President Barack Obama, and many high achievers in the public eye have been attacked by racial slurs. Social media amplifies both the good side and the dark side of human nature. Prof. Lesley Withers at Central Michigan University offered this explanation: “[Twitter] allows us to go off in ways that we wouldn’t choose to do if we had to look at another person’s face when we did it. ... People use Twitter to get reactions out of others. It’s like a popularity contest: If you can put something out there that’s quick and inflammatory and it gets retweeted a ton, that’s your feedback – that’s how you know that it was an interesting or effective tweet. And people don’t seem to be as concerned if the response is positive or negative” (76).

Notwithstanding human ignorance, freedom of expression is essential. In George Orwell’s novel *Nineteen Eighty-Four*, the totalitarian regime deliberately promotes Newspeak, an impoverished language without any words or possible constructs that describe the ideas of freedom and rebellion. “We’re cutting the language down to the bone,” philologist Syme said wickedly. “It’s a beautiful thing, the destruction of words” (77). We certainly do not want that to happen.

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## Chapter 9

# Misinformation and Disinformation

*“Facts have been replaced by opinions. Information has been replaced by entertainment. Reporters have become stenographers. I can’t be the only one who’s sick of what passes for the news today.”*

– Superman Clark Kent (2012)

*“There’s an old economic principle, that bad money drives out good. One thing that worries me is that bad information is driving out good.”*

– Professor Frank Farley (2012)

*“The loudest voices should be particularly careful not to rush to conclusions.”*

– Former U.S. Secretary of Education William J. Bennett (2012)

*“The Internet is so full of junk and not-researched material.”*

– American populist historian and TV commentator  
David Wallechinsky (2014)

*“For me having to explain every day that I am not a prostitute is a daily complication. I am in favor of freedom of expression, but not the kind of freedom of expression built on lies.”*

– Argentine model María Belén Rodríguez (2014)

*“Information is power. Disinformation is abuse of power.”*

– Newton Lee

### 9.1 The War of the Worlds

On Sunday, October 30, 1938, millions of radio listeners were stunned by the CBS radio “news” on the Martian invasion of Earth:

“Good heavens! Something’s wriggling out of the shadow like a gray snake. Now it’s another, and another. They look like tentacles to me. There, I can see the thing’s body. It’s large as a bear and it glistens like wet leather. But that face. It ... It’s indescribable. I can hardly force myself to keep looking at it. The eyes are black and gleam like a serpent. The mouth is V-shaped with saliva dripping from its rimless lips that seem to quiver and pulsate. ... The thing is raising up. The crowd falls back. They’ve seen enough. This is the most extraordinary experience. I can’t find

words. ... I'll have to stop the description until I've taken a new position. Hold on, will you please. I'll be back in a minute" (1).

Orson Welles' radio adaptation of H.G. Wells' novel *The War of the Worlds* (1898) caused widespread panic in America. Thousands of people called the police about the Martian landing in central New Jersey. Some residents loaded up their cars and fled their homes as the radio broadcasted a statement from the U.S. Secretary of the Interior voiced by an actor who sounded like President Franklin D. Roosevelt:

"Citizens of the nation: I shall not try to conceal the gravity of the situation that confronts the country, nor the concern of your government in protecting the lives and property of its people. However, I wish to impress upon you – private citizens and public officials, all of you – the urgent need of calm and resourceful action. Fortunately, this formidable enemy is still confined to a comparatively small area, and we may place our faith in the military forces to keep them there. In the meantime placing our faith in God we must continue the performance of our duties each and every one of us, so that we may confront this destructive adversary with a nation united, courageous, and consecrated to the preservation of human supremacy on this earth. I thank you" (2).

Surprisingly, the Federal Communications Commission decided not to fine CBS Radio or Orson Welles for the stunt that fooled countless numbers of American citizens as well as some officials at the New York City Department of Health (3). Ironically, the department was later revamped and renamed as the New York City Department of Health and Mental Hygiene (4).

## 9.2 Misinformation and Disinformation on Twitter and Facebook

Fast-forwarding 74 years from the old radio days to March 2012, American film director Spike Lee retweeted to his 250,000 followers the wrong address of George Zimmerman, the man who shot and killed 17-year-old Trayvon Martin in February (5). The tweet took off on a life of its own. Consequentially, the homeowners at the address – Elaine McClain, 70, and her husband David McClain, 72 – started receiving hate mail and death threats that eventually drove them out of their home and into a hotel (6). Realizing his gross mistake, Lee apologized to the McClains and reached a settlement deal with them. The rush to judgment in the Trayvon Martin case in the world of immediacy via Twitter, Facebook, and other social networks can be chaotic and downright dangerous. Former U.S. Secretary of Education William J. Bennett warned about the behavior of influential people and celebrities, "The loudest voices should be particularly careful not to rush to conclusions" (7).

Users of Twitter, Facebook, and social networks often follow the Chinese maxim "Say all you know and say it without reserve" and ignore the Japanese proverb "Never let an opportunity pass by, but always think twice before acting." In a world of immediacy, Twitter has become the perfect tool for instant gratification and rapid dissemination of information as well as misinformation. Every day, information is being circulated on the Internet without verification or clear thoughts.



Fig. 9.1 “Get a real job” Hoax – Photoshopped Receipt vs. Real Receipt

In February 2012, one of the strangest receipts from America’s restaurants went viral on Twitter and Facebook. Twitterer @FutureExBanker sent Receiptrocity at eater.com a picture of the receipt showing that his boss left the waitress a miniscule 1% tip, \$1.33, on a \$133.54 bill with the message, “Get a real job” (8). As it turned out, it was a Photoshopped hoax. The restaurant spokesperson was able to locate the merchant copy of the real receipt that showed a \$7 tip for a \$33.54 bill (9). (See Fig. 9.1).

On May 8, 2012, Blogger Nate St. Pierre wrote an amusingly elaborate hoax article about U.S. President Abraham Lincoln filing a patent for Facebook in 1845 (10). The story deliberately raised a few red flags by mentioning the infamous prankster P.T. Barnum and inserting a poorly Photoshopped copy of the December 24, 1845 newspaper *Springfield Gazette*.

St. Pierre put out one tweet and posted a link on Facebook. Within 36 hours, he got 16,000 Facebook “Likes” and 104,463 unique pageviews to his blog. He was interviewed by reporters from *CNN*, *The Atlantic*, and *The Washington Post*.

On May 10, St. Pierre deconstructed the entire experience and expounded on the hoax, “It’s a tip of the hat to P.T. Barnum’s celebrated hoaxes (or humbugs) and Abe Lincoln’s tall tales. ... there are clues throughout the entire article telling you it’s a hoax ... I wanted to illustrate one of the drawbacks to our ‘first and fastest’ news aggregation and reporting mentality, especially online. ... In addition to social media and bloggers, it ran as fact on a lot of big-name sites and news aggregators. That’s the thing that surprised me the most. ... I can tell you that virtually nobody checked with me to ask if it was true” (11).





**Fig. 9.2** Nolan Daniels’ “Lotto Ticket” Hoax

In spite of the numerous red flags throughout St. Pierre’s story, *Forbes* posted his story under the headline “Abraham Lincoln Filed a Patent for a Dead-Tree Facebook in 1845” for a day before pulling it down. “A *Forbes* contributor took Nate St. Pierre’s story at face value,” said a *Forbes* spokeswoman. “Once *Forbes* realized it was a prank, the article was pulled from the site” (12). Nevertheless, *ZDNet* kept the story “Abraham Lincoln tried to patent Facebook in 1845, but failed?” on its website, but the *ZDNet* reporter Emil Protalinski crossed out some of the fake information and added an apology: “Update: Sorry everyone but this was indeed a hoax” (13).

In November 2012, software developer Nolan Daniels tricked more than two million Facebook users into sharing his fake lotto ticket on the social network. He posted on Facebook a picture of himself holding a Photoshopped multimillion-dollar winning lotto ticket with a catchy status update: “Looks like I won’t be going to work EVER!!!! Share this photo and I will give a random person 1 million dollars!” (See Fig. 9.2) (14). To redeem himself from the shenanigans, Daniels said, “Instead of

thinking of ways to profit from a hoax or eating up media attention, I spent the weekend setting up a fundraiser for Brooke and was determined to use my short-term fame to reach out to 1 person in need and if at minimum bring awareness for her and other with her condition [of brain disorder known as Chiari malformation]” (15).

### 9.3 Ramifications and Repercussions of Misinformation and Disinformation

Misinformation and disinformation abound in the digital information world on social media and news broadcast. They can lead to serious ramifications and repercussions.

In November 2010, a Nicaraguan general cited Google’s map of the border with Costa Rica to justify a reported raid in a disputed area (16). Costa Rica had written to Google about its map asking for changes, but the Nicaraguan Embassy in London said, “The Government of Nicaragua has formally requested to Google not to accept the petition of Costa Rica to modify the border demarcation presented on Google Maps service, which recognizes Harbour Head as Nicaraguan territory. The path presented by Google corresponds to the various treaties that define the Nicaragua-Costa Rica border” (17).

In May 2012, Iran threatened to sue Google for not labeling the Persian Gulf, whereas nearby bodies of water – including the Gulf of Oman, Arabian Sea, Gulf of Aden and Red Sea – are labeled. “Toying with modern technologies in political issues is among the new measures by the enemies against Iran, (and) in this regard, Google has been treated as a plaything,” said Iran Foreign Ministry spokesman Ramin Mehmanparast (18).

In July 2012, then Kenyan President Mwai Kibaki’s party was blamed for stoking xenophobic sentiment when the Kenyan Twitterati began writing about Somali refugees as culpable for a host of Kenya’s domestic problems and terrorist attack (19).

In the midst of the Aurora, Colorado shooting rampage in July 2012, *ABC News*’ Brian Ross speculated on air that suspect might be Jim Holmes of a Colorado Tea Party organization. *ABC News* later apologized, “*ABC News* and Brian Ross apologize for the mistake, and for disseminating that information before it was properly vetted” (20).

In October 2012, hedge fund analyst and campaign manager Shashank Tripathi (@ComfortablySmug) sent his 6,500 followers tweets of fake reports on flooding and destruction intended to spread confusion and fear when Hurricane Sandy was approaching New York City. Tripathi later apologized for his action and resigned from the campaign of New York Republican Christopher Wight. “While some would use the anonymity and instant feedback of social media as an excuse,” he said, “I take full responsibility for my actions. I deeply regret any distress or harm they may have caused” (21).



In the aftermath of the Sandy Hook Elementary School shooting in Newtown, Connecticut in December 2012, *Buzzfeed*, *CNN*, *Fox News*, and *Gawker* identified the wrong person, Ryan Lanza, as the shooting suspect (22). Harassment outpacing verification in the social media space, Lanza fanatically tried to undo the reputational damage online. Lanza's Facebook friend Matt Bors, a political cartoonist, was also inundated with angry and bizarre messages like "Why are you friends with a monster?" and "Looks like this killer is a fan of yours." Bors wrote in *Salon*, "We have a problem with rushing to judgment. News organizations racing to be first know that an article with a snappy headline thrown up when people are hungry for information can bring in incredible amounts of traffic – forget glory or prestige, keep the servers running ads. But accuracy and being first seem to conflict" (23).

In April 2013, Syrian Electronic Army hacked into the official Associated Press Twitter account (@AP) and tweeted, "Breaking: Two Explosions in the White House and Barack Obama is injured." The message was re-tweeted more than 3,000 times before Twitter took the account offline, and the Dow Jones Industrial Average dropped sharply on the news but regained its losses when the report was deemed false (24).

After the Boston Marathon bombings on April 15, 2013, well-meaning Reddit users joined the hunt for the Boston bombers but ended up diverting attention and suspicion on innocent bystanders. After police had apprehended the true suspect Dzhokhar Tsarnaev, Reddit's General Manager Erik Martin wrote in a blog, "During the tragedy and the aftermath, people found many different avenues to help on reddit. The vast majority of these activities were positive. They provided a way for people to stay informed, as well as a place to just discuss, cope, and try to make sense of what happened. Primarily, reddit served as a great clearinghouse for information. ... However, though started with noble intentions, some of the activity on reddit fueled online witch hunts and dangerous speculation which spiraled into very negative consequences for innocent parties. The reddit staff and the millions of people on reddit around the world deeply regret that this happened. We have apologized privately to the family of missing college student Sunil Tripathi, as have various users and moderators. We want to take this opportunity to apologize publicly for the pain they have had to endure. ... A few years ago, reddit enacted a policy to not allow personal information on the site. This was because 'let's find out who this is' events frequently result in witch hunts, often incorrectly identifying innocent suspects and disrupting or ruining their lives. We hoped that the crowdsourced search for new information would not spark exactly this type of witch hunt. We were wrong" (25).

When a subreddit community page "FindNavyYardShooters" appeared in September 2013 after the Washington Navy Yard shooting, Reddit shut it down almost immediately so that the social media site would not make the same mistake twice (26).

## 9.4 Trustworthiness of Wikipedia

When Encyclopedia Britannica decided in 2012 to cease production of its iconic multi-volume print book sets, Britannica president Jorge Cauz conceded, “Google’s algorithm doesn’t know what’s fact or what’s fiction. So Wikipedia is often the No. 1 or No. 2 result on search. But I’d bet a lot of money that most people would rather use Britannica than Wikipedia. Wikipedia is a wonderful technology for collecting everything from great insights to lies and innuendos. It’s not all bad or all good, just uneven. It’s the murmur of society, a million voices rather than a single informed one. As a result, consumers are craving accuracy and are willing to pay for it [Encyclopedia Britannica]” (27). Prof. James S. O’Rourke at the University of Notre Dame concurred, “The problem with crowdsourcing the answer to any particular question is, of course, that you’re as likely to find ideologically driven opinion as hard fact. You also have little in the way of support for judgments about credibility, reliability, and accuracy” (28).

Prof. Yochai Benkler, co-director of the Berkman Center for Internet & Society at Harvard University, pointed out that “Wikipedia’s organizational innovation is in problem solving more than innovation: how to maintain quality contributions together with potentially limitless expansion, a problem that scarcity absolved Britannica from solving” (29).

In the age of big data, Wikipedia has become the de facto encyclopedia. Its online content is searchable, revisable, and up-to-date. Its credibility, reliability, and accuracy depend mostly on citations from trusted sources. Wikipedia flags articles for incompleteness and biases by displaying warning messages on the content pages. For example, “This biographical article needs additional citations for verification. Please help by adding reliable sources. Contentious material about living persons that is unsourced or poorly sourced must be removed immediately, especially if potentially libelous or harmful” (30).

Given the open crowdsourcing nature of Wikipedia, unverifiable content can be misleading at best or malicious at worst. In November 2005, American journalist John Seigenthaler – who was Robert Kennedy’s administrative assistant in the early 1960s – told his story about Internet character assassination on *USA Today*. An anonymous user with IP address 65.81.97.208 created a defamatory biography of the 78-year-old Seigenthaler on Wikipedia, scurrilously claiming that “for a brief time, he was thought to have been directly involved in the Kennedy assassinations of both John, and his brother, Bobby. Nothing was ever proven” (31). Seigenthaler phoned Wikipedia’s founder Jimmy Wales and asked, “Do you ... have any way to know who wrote that?” To which Wales replied, “No, we don’t. We have trouble with people posting abusive things over and over and over. We block their IP numbers, and they sneak in another way. So we contact the service providers, and they are not very responsive.”

My own biographical article was vandalized on November 15, 2011 when someone by the login name “Newyorker1” revised the article. Apart from the vile changes that he made, he also updated my name to “Newton Shrimp Fried Rice Lee,” my picture to that of President George Bush, and my book title *Disney Stories: Getting to Digital* to *Disney Stories: Getting to XXX Shop By Midnight* (32). Fortunately, Wikipedia’s ClueBot NG detected the vandalism almost immediately and reverted all the changes automatically. ClueBot NG’s vandalism detection algorithm uses machine learning techniques, Bayesian classifiers, artificial neural networks, threshold calculation, and post-processing filters (33).

In May 2013, someone with an IP address 86.166.188.231 proposed that my biographical article be deleted because of the concern: “Autobiography entirely written by subject” (34). However, long-time Wikipedian and librarian David Goodman (DGG) saved the article with the remark: “Not necessarily a reason for deletion; First look for reviews of his books, & if not found, only then nominate for deletion” (35).

In July 2014, someone changed the U.S. Secretary of Defense entry on Wikipedia from Chuck Hagel to American soccer goalkeeper Tim Howard who had a record-setting 16 saves in the 2014 FIFA World Cup match between USA and Belgium. In praise of Howard, the revised entry also credited him with “the destruction of terrorism and the advent of lasting peace” (36). (See Fig. 9.3). With a sense of humor, Hagel told Howard on the phone that with some training, he could someday become the real secretary of defense (37).

Notwithstanding the potential risk of misinformation and disinformation, Internet-powered crowdsourcing is being wholeheartedly embraced by both Generation X and the Millennials. Yahoo! CEO Marissa Mayer and husband Zack Bogue crowdsourced their newborn baby’s name in an email to their friends (38). More than a million couples have crowdsourced their wedding photos through WedPics, Capsule, Wedding Party, Guest Shots and AppilyWed (39). A 2013 Rally Fighter race car built by Local Motors is believed to be the first production vehicle to be designed through crowdsourcing (40). And in 2014, Stanford University researchers released “Twitch” – a crowdsourcing app that ask its user to answer a roughly one-second question about their surroundings in order to build a map of human activity in the world (41).

“I love to collect information, and I love that I get to share that information with the world,” said Emily Temple-Wood who started editing Wikipedia entries at the age of 12 (42). Now a molecular biology student at Loyola University, Temple-Wood has made it her mission to ensure that female scientists get their due recognition on Wikipedia. She shares her views and personal experiences in the following chapter titled “Wikipedia and the New Web.”

**Secretary of Defense of the United States of America**



Flag of the Secretary of Defense [1]



Seal of the Department of Defense [2]



**Incumbent**  
**Tim Howard**  
since July 1, 2014

Department of Defense  
Office of the Secretary of Defense

**Style** *Mister Secretary*

**Member of** Cabinet  
National Security Council

**Reports to** The President

Line 41:

The current Secretary of Defense is **[[Chuck Hagel]]**, who assumed office on **February 27, 2013**.

The current Secretary of Defense is **[[Tim Howard|Sir Tim Howard]]**. He assumed office on **July 1, 2014** after protecting the USA from the Belgians, Germans and other evil empires. On **July 2, 2014**, the day after Sir Howard assumed office, the **[[al-Qaeda]]**, the **[[Taliban]]** and other major global terrorist organizations disbanded with their members surrendering to the **[[US Armed Forces]]** due to Mr Howard taking office. This behavior has been termed "Howanoia" and has resulted in the destruction of terrorism and the advent of lasting peace. In recognition of Mr.Howard's efforts. the **[[Nobel Committee]]** has decided to bestow upon him the **[[Nobel Peace Prize]]**. He has also received a **[[Medal of Honor]]** from the US President Barack Obama in recognition of his valour, bravery and defence of the United States.

Fig. 9.3 Tim Howard as U.S. Secretary of Defense on Wikipedia (July 2, 2014)

### 9.5 Google Search Sabotage

Unlike Wikipedia, Google search sabotage is a lot trickier to deal with. For many years, former Pennsylvania Senator and 2012 GOP presidential hopeful Rick Santorum has been battling his Google search results. In November 2003, gay newspaper advice columnist Dan Savage created the blog "Spreading Santorum" in retaliation for Santorum's ultraconservative views and anti-gay comments (43). Because of the prank, people saw a vulgar term for anal sex as the first result when they searched the word "Santorum" on Google. Santorum contacted Google to protest but to no avail.

In an e-mail to *CNN*, a Google spokeswoman said, “Google’s search results are a reflection of the content and information that is available on the Web. Users who want content removed from the Internet should contact the webmaster of the page directly. Once the webmaster takes the page down from the Web, it will be removed from Google’s search results through our usual crawling process” (44).

Obviously, contacting the webmaster Dan Savage is out of the question for Rick Santorum, who fired back at Google, “I suspect if something was up there like that about Joe Biden, they’d get rid of it. If you’re a responsible business, you don’t let things like that happen in your business that have an impact on the country” (45). Nonetheless, Santorum’s active political campaign activities in 2012 helped improve the rankings of his Wikipedia page and Google news just enough for them to be displaced above the “Spreading Santorum” blog in Google search results.

In February 2014, based on Edward Snowden’s NSA leaks, journalist Glenn Greenwald published in *The Intercept* a comprehensive report on the tactics of online sabotage by British intelligence agency GCHQ. The two main tactics are “(1) to inject all sorts of false material onto the internet in order to destroy the reputation of its targets; and (2) to use social sciences and other techniques to manipulate online discourse and activism to generate outcomes it considers desirable.” Greenwald wrote, “To see how extremist these programs are, just consider the tactics they boast of using to achieve those ends: ‘false flag operations’ (posting material to the internet and falsely attributing it to someone else), fake victim blog posts (pretending to be a victim of the individual whose reputation they want to destroy), and posting ‘negative information’ on various forums” (46).

In May 2014, Argentine model María Belén Rodríguez took to the Supreme Court of Argentina to sue Google and Yahoo! over images of her that link to porn sites. “For me having to explain every day that I am not a prostitute is a daily complication,” said Rodríguez through a translator. “I am in favor of freedom of expression, but not the kind of freedom of expression built on lies” (47). Google’s response was that “search engines are neutral platforms that do not create nor control content on the web” (48).

During the 2014 election season, the National Republican Congressional Committee (NRCC) created at least 15 fake websites that appeared to be the official campaign sites for Democratic candidates. “The idea is people who are looking for information on the candidate, one of the places we all go now is online and so this is a way for folks to find out more about the candidates and information they may not find on the candidate’s own site,” said NRCC press secretary Daniel Scarpinato. “I think that sites are clear in terms of the disclosure and the content where were coming from. And I also think it’s important for voters to get all the perspectives on the candidates. So just as a candidate is going to put information out about themselves, we’re going to put out information about the candidate that they are not putting out that we think is important for voters to know” (49).

While Google, Microsoft’s Bing, Facebook, Twitter, and other social media are excellent sources of information in the age of big data, it is up to the readers to decipher what is true and what is false. Information, misinformation, and disinformation are more mingled and harder to differentiate today than ever in the history of

humankind. Pulitzer Prize nominee Nicholas Carr wrote an insightful article “Is Google Making Us Stupid?” in the July/August 2008 issue of the *Atlantic Magazine*:

“Thanks to the ubiquity of text on the Internet, not to mention the popularity of text-messaging on cell phones, we may well be reading more today than we did in the 1970s or 1980s, when television was our medium of choice. But it’s a different kind of reading, and behind it lies a different kind of thinking – perhaps even a new sense of the self. ‘We are not only what we read,’ says Maryanne Wolf, a developmental psychologist at Tufts University and the author of *Proust and the Squid: The Story and Science of the Reading Brain*. ‘We are how we read.’ Wolf worries that the style of reading promoted by the Net, a style that puts ‘efficiency’ and ‘immediacy’ above all else, may be weakening our capacity for the kind of deep reading that emerged when an earlier technology, the printing press, made long and complex works of prose commonplace. When we read online, she says, we tend to become ‘mere decoders of information.’ Our ability to interpret text, to make the rich mental connections that form when we read deeply and without distraction, remains largely disengaged” (50).

## 9.6 Advertising Misinformation and Disinformation

Celebrities do not always believe in the products and services that they are paid to endorse. For instance, Weight Watchers spokesman and NBA player Charles Barkley was caught disparaging his endorsement deal on air when he thought the microphone was off. He said, “I thought this was the greatest scam going—getting paid for watching sports—this Weight Watchers thing is a bigger scam” (51).

In teen and women’s magazines, advertisements for diets and weight loss programs are 10 times more common than they are in men’s magazines (52). A fashion trend is often the result of deliberate promotion of certain images online and in print to create a mass following – starting from runways, magazines, TV, movies, and the Internet to shopping malls. Like everything else, there are plenty of competitions.

Occidental University associate professor Caroline Heldman said, “The number of images out there means advertisers have a much more difficult time breaking through the clutter, causing the content to be much more violent and sexualized to get consumers’ attention” (53).

As a result, misinformation and disinformation are widespread in advertisements. Between 2010 and 2012, the U.K. Advertising Standards Authority has banned eight misleading ads due to excessive Photoshop, social irresponsibility, and marketing deception (54). The “misleadingly exaggerated” ads included Rachel Weisz’s L’Oréal Revitalift Repair 10 and Julia Roberts’ Lâncome Teint Miracle; the deceptive ad was for Reebok’s EasyTone sneakers; and the “socially irresponsible” ads included Hailee Steinfeld for Miu Miu Fall 2011 collection, Dakota Fanning for Marc Jacobs Oh Lola! Perfume, and campaigns for Levi’s Jeans “Go Forth” and Diesel “Be Stupid.”

Some American teenagers are calling for an end to the digitally enhanced, unrealistic “beauty” in the pages of teen fashion magazines. In July 2012, 14-year-old Julia Bluhm from Maine hand-delivered a petition signed by 84,000+ people to the executive editor of *Seventeen* magazine, urging the publisher not to alter the body size or face shape of the girls and models in the magazine. Bluhm wrote on change.org, “*Seventeen* listened! They’re saying they won’t use Photoshop to digitally alter their models! This is a huge victory, and I’m so unbelievably happy. Another petition is being started by SPARK activists Emma [Stydahar] and Carina [Cruz], targeting *Teen Vogue* and I will sign it. If we can be heard by one magazine, we can do it with another. We are sparking a change!” (55)

## 9.7 Authenticity of Facebook Profiles, Twitter Accounts, and YouTube Videos

Exaggerated images and sensationalized news are no strangers to mass media. The Internet, with its efficiency and immediacy, serves to exacerbate the potential danger of misinformation and disinformation. Sadly, the public is simply unaware of the authenticity of Facebook profiles, Twitter accounts, and YouTube videos:

- In 2006, “lonelygirl15” appeared as a home-schooled and confused 16-year-old teenager “Bree” on her wildly popular YouTube videos with over a million views. For four months, she fooled viewers into believing her real struggles with her estranged parents and dysfunctional family, until *Los Angeles Times* reporter Richard Rushfield revealed that Bree was a 19-year-old American-New Zealand actress Jessica Lee Rose. Rushfield reported, “Three lonelygirl15-obsessed amateur Web sleuths set up a sting using tracking software that appears to show that e-mails sent from a lonelygirl15 account came from inside the offices of the Beverly Hills-based talent agency Creative Artists Agency” (56).
- In 2009, a group of students at Millburn High School in New Jersey created a fake Facebook account for a fictional new student “Lauren” in their school, and almost 120 students and 55 others added her as a friend (57).
- In 2010, Indiana University professor Filippo Menczer and other researchers launched the Truthy project to detect political smears, astroturfing, misinformation, and other social pollution (58). They found evidence that political campaigns and special interest groups are using fake Twitter accounts to create the false impression of grassroots movements. Repeated and retweeted messages from a score of fake users would show up as “trending” topics on Twitter and would ultimately influence Google’s search results (59).
- In 2011, a classmate of 11-year-old Ashley Berry took photos of her and created an entire Facebook page without her consent. “It had things like where I went to school, and where my family was from and my birthday, and there were no security settings at all, so it was pretty scary,” said Berry who had to deal with unintended consequences such as friends uninviting her to birthday parties and leaving her at the lunch table in school (60).



- In 2011, a student at Rancho Bernardo High School created a Facebook account using another teen’s name, and posted threats of a mass shooting at the high school (61). Police arrested the student for making terrorist threats and impersonating another on the Internet.
- In 2011, GOP Presidential hopeful Newt Gingrich had over 1.38 million Twitter followers, more than twice the number of Twitter followers for former Vice Presidential candidate Sarah Palin, and 10 times more than that for his main GOP rival Mitt Romney. Gingrich’s Twitter presence looked impressive, until a New York search company PeekYou discovered that only 8% of Gingrich’s Twitter followers were verifiable humans (62). In other words, about 1.27 million phony Twitter accounts were created by Gingrich-hired campaign agencies.
- In 2012, media mogul Rupert Murdoch signed up for Twitter and started to follow four people on the social network including Google’s co-founder and CEO Larry Page. Unbeknown to Murdoch, he followed a fake Larry Page – a parody account created by Virginia Tech for university project (63).

In the amended S-1 filing on March 7, 2012, Facebook disclosed that 5 to 6% of Facebook accounts were either fake or duplicated based on an internal review of a limited sample of accounts (64). Similarly, Twitter reported in its securities filings that fake accounts represented fewer than 5% of its 230 million active users in October 2013 (65).

Nevertheless, 5 or 6% is likely a gross underestimate. Some industry watchers claimed that nearly 50% of social network users could be fake or empty user accounts (66). Facebook admitted in its first quarterly report in August 2012 that 83 million Facebook profiles were fake and millions of Facebook accounts were created for users’ pets (67). Jason Ding, a research scientist at Barracuda Labs, told *NBC News* that the number of Twitter accounts that were fake was “at least 10%, maybe more” in November 2013 (68).

Fake accounts are usually created by fake followers for hire who are paid to like a Facebook page, follow someone on Twitter, or comment on a YouTube video. Prof. Ben Zhao at UC Santa Barbara coined the term “crowdturfing” to describe the phenomenon of “crowdsourcing” and “astroturfing” – recruiting a large number of people to fake a grassroots support (69).

## 9.8 Facebook Account Verification

To help reduce spam, fake, and multiple accounts, Facebook encourages a user to “verify” their account by adding a mobile number to it (70). The “Confirm Your Phone” page states, “Facebook uses security tests to ensure that the people on the site are real. Having a mobile phone helps us establish your identity. Please verify your account by confirming your phone here. We’ll text you a confirmation code” (71). After verification, a user may add a username (e.g. myusername) to the account and customize the Facebook web address (e.g. [www.facebook.com/myusername](http://www.facebook.com/myusername)) (72).

Facebook's mobile number verification constitutes a very basic security. Everyone in the U.S. can purchase a cheap, disposable prepaid cell phone for temporary use. In order for Facebook to step up its security, Facebook began to roll out in February 2012 "verified accounts" whose owners have submitted a government ID to prove their identities. However, the new security update is currently restricted to Facebook users with a large number of subscribers. "This update makes it even easier for subscribers to find and keep up with journalists, celebrities and other public figures they want to connect to," said a Facebook spokesman (73).

However, it gets tricky when you have the same name as a celebrity. In May 2011, Mark S. Zuckerberg's Facebook account was deleted for the reason of "false identity." A bankruptcy attorney in Indianapolis, Zuckerberg received hundreds of friend request and inquiries from people who thought he was Facebook's CEO. "Our reviewers look at thousands of pieces of content a day that are reported to them and of course make an occasional mistake," said a Facebook spokesperson. "When this happens, and we're notified about it, we work quickly to restore the content. We have reactivated this person's account and sent him an email apologizing for the inconvenience" (74).

Similarly in August 2012, 18-year-old Selena M. Gomez in New Mexico was distraught when Facebook denied her access to her account with the message "Disabled – Inauthentic Account." Gomez told *TMZ*, "I AM NOT AN IMPOSTOR ... My name is not hers on my page. In fact, I even put my middle name on my FB to clear up any confusion. I did not have one single famous friend. I did not refer to myself as [the famous Selena], and I did not have any pictures of her on my page!" (75) The story had a happy ending: Facebook apologized to Gomez and reactivated her account within a day after mistakenly disabling her profile (76).

## 9.9 Twitter Verified Accounts

Unlike Facebook, Twitter does not accept public requests for account verification. Since the launch of verified accounts in June 2009, Twitter has stated on its help center, "Any account with a blue verified badge on their Twitter profile is a verified account. Verification is currently used to establish authenticity of identities on Twitter. The verified badge helps users discover high-quality sources of information and trust that a legitimate source is authoring the account's Tweets. Twitter proactively verifies accounts on an ongoing basis to make it easier for users to find who they're looking for. We concentrate on highly sought users in music, acting, fashion, government, politics, religion, journalism, media, advertising, business, and other key interest areas. We verify business partners from time to time and individuals at high risk of impersonation. We do not accept requests for verification from the general public. If you fall under one of the above categories and your Twitter account meets our qualifications for verification, we may reach out to you in the future" (77).

According to *Advertising Age*, Twitter reaches out to advertisers who have spent at least \$15,000 over three months and get their accounts verified (78). The Twitter business practice leaves many smaller businesses out in the cold. *The Wall Street Journal* reported that celebrities such as Britney Spears had their managers contact the head of Twitter to obtain account verifications (79).

In spite of the verification process, Twitter has made quite a few mistakes in its nearly 17,000 verified accounts. In a high-profile error, Twitter apologized in January 2012 for incorrectly verifying a false account for Wendi Deng, the wife of News Corp CEO Rupert Murdoch (80). The @Wendi\_Deng account had racked up more than 10,000 followers before it was discovered to be a faux one created by a British man to poke fun at Deng (81).

## 9.10 Abuse of Power

*CNN* reporter Todd Leopold wrote in his March 2012 article about online missteps and misinformation: “In an increasingly connected world where social networking has made us all news sources, that means missteps and misinformation get issued – and repeated – more quickly than ever. Gabrielle Giffords is declared dead, Chris Brown lets fly with profane rants, and it all makes the rounds before anyone has time to think” (82).

Frank Farley, Temple University professor and former president of the American Psychological Association, made this chilling conclusion: “Everyone now has a global platform on which they can shout their opinions and voice their beliefs. There’s an old economic principle, that bad money drives out good. One thing that worries me is that bad information is driving out good” (82).

“The Internet is so full of junk and not-researched material,” concurred David Wallechinsky, author of the bestseller *Book of Lists*. Wallechinsky created the website AllGov.com to disseminate information about the business of government in the United States, France, and India. He told *CNN* in a 2014 interview, “We pride ourselves on accuracy, double-checking. ... We try to emphasize policy instead of politics” (83).

In an October 2012 Superman comic, an outraged Clark Kent quitted his job at *The Daily Planet* in protest: “I was taught to believe you could use words to change the course of rivers – that even the darkest secrets would fall under the harsh light of the sun. But facts have been replaced by opinions. Information has been replaced by entertainment. Reporters have become stenographers. I can’t be the only one who’s sick of what passes for the news today” (84).

In June 2014, the revelation of Facebook’s secret psychological mood experiment had infuriated some users. In a massive experiment conducted in January 2012, Facebook manipulated 689,003 users’ News Feed intentionally for a week to study the effect of “emotional contagion” via social networks. By filtering the news feeds, one test reduced users’ exposure to their friends’ “positive emotional content” whereas another test reduced exposure to “negative emotional content” (85).

Jim Sheridan of the U.K. Parliament said, “They are manipulating material from people’s personal lives and I am worried about the ability of Facebook and others to manipulate people’s thoughts in politics or other areas. If people are being thought-controlled in this kind of way there needs to be protection and they at least need to know about it” (86).

Information is power. Disinformation is abuse of power. Even a good cause can be marred by dishonesty. Somaly Mam appeared on the Oprah Winfrey Show, a PBS documentary, *TIME Magazine’s* 100 Most Influential People of 2009, and CNN Heroes in 2007. She was the world’s crusader against the trafficking of girls for sex in Cambodia. However, her extraordinary personal tale chronicled in her bestselling autobiography about being a village girl sold into sex slavery turned out to be pure fabrication. She also coached other women to lie in front of cameras about being child sex slaves. Mam resigned from her charity foundation in May 2014 after a *Newsweek* exposé by Simon Marks. The revelation potentially weakens the foundation’s future work in combating human trafficking.

On a lighter note, *Los Angeles Times* playfully called the 2006 “lonelygirl15” YouTube mystery the “Web’s Watergate” (87). The real Watergate scandal culminated in the resignation of President Richard Nixon in August 1974 (88). Watergate has had a profound influence on American journalism and politics. In the new era of digital information with the proliferation of Twitter, Facebook, and YouTube, inquisitive citizens and accidental journalists will radically transform the landscape of journalism and politics in the years to come.

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# Chapter 10

## Wikipedia and the New Web

Emily Temple-Wood

### 10.1 History of Wikipedia

For most people in the Western world, Wikipedia has become the first – and often last – stop for information about pop culture, science, medicine, history, and just about anything else. Donating to the Wikimedia Foundation, the nonprofit that runs Wikipedia and its sister projects, has become mainstream. News stories about Wikipedia and its editors are no longer focusing on the oddity of a collection of geeks trying to write an encyclopedia. Instead, that people would choose to do so is not even questioned, and the content they have produced and the complex political system they engage in are scrutinized by the mainstream.

Five years ago, only the most optimistic, committed, and obsessed Wikipedians would have predicted that Wikipedia, the illegitimate sibling of pedigreed encyclopedias, would become the juggernaut of information it is now. Wikipedia's beginnings were even more humble, however. It began as a scratchboard for Nupedia, a project conceived as a free encyclopedia written collaboratively by academics in a convoluted seven-step process. The less formal, less bureaucratic Wikipedia took off as Nupedia withered and died, though the number of readers and editors stayed small for several years. The “wiki way” was established, with the Five Pillars as the major set of rules – one of which was “Ignore All Rules”, referred to by the acronym “IAR”. The practice on Wikipedia of referring to policies by acronyms has been cited in internal and external discussions as an example of the insular community that has grown up around Wikipedia; however, jargon is common in a myriad of subcultures, both on and off the Internet.

The early Wikipedia was very open and almost anarchic – the very few rules were enforced inconsistently and the process of becoming an administrator, which is now a gauntlet that accomplished editors fear, consisted of asking politely on a mailing list. When the Requests for Adminship (RFA) process was introduced in 2003, users were given administrator rights on the basis of a handful of “support” votes from their peers; in 2013, successful candidates typically had more than 75 “support” votes.

It must be noted, however, that “vote” has never been the preferred term for “supports” or “opposes” entered into community discussions like RFA. The consensus model was instituted very early on in Wikipedia’s history and decisions are supposed to be made by a consensus process, not vote-counting. With the small community of early Wikipedia, this was entirely possible and processes like Requests for Comment (RfC) were effective in creating acceptable decisions. More than ten years later, creating a true consensus in a community of thousands is near-impossible.

Articles of the early Wikipedia reflected the open environment in which they were nurtured. New articles could be started with one sentence and no sources or formatting, and the “wiki way” would eventually get the articles to an acceptable standard. Before a push to add inline citations, Featured Articles (FAs) were judged on their “brilliant prose” – in fact the original name for that process. In more recent years, this spirit of collaborative fixing and “no big deal” has passed in favor of a rigid orthodoxy, where if new articles do not have a source and correct formatting, they may be deleted, sometimes within minutes, even if they contain correct information.

The article on Hong Kong was started on September 14, 2001, and consisted of a few sentences about the territory. The only citation given was “From the CIA World Factbook 2000 and the U.S. Department of State website. Not wikified” (1). As of December 2013, the article is listed as a Good Article (GA) and has 243 inline citations with nine books listed as “further reading” (2). “Saxophone” came from even more humble beginnings, with five sentences describing the instrument and zero citations (3). It was one of Wikipedia’s first Featured Articles – then called “Refreshing and Brilliant Prose” – promoted sometime in 2003 (4). At the end of that year the article, as one of Wikipedia’s best, had a few scant sections and no citations. By 2006 its status had been removed as it did not meet Wikipedia’s increasingly high standards. The article on the Earth began as two sentences with a serious grammar error on February 27, 2001: “The third [[planet]] from [[the Sun]]. Six features six [[continent]]s, four [[ocean]]s, and many [[CountriesOfTheWorldlcountries]]” (5). This early era was important to Wikipedia’s success as starting an encyclopedia from scratch with a prescribed review process had already failed, and the complex processes that characterize modern Wikipedia evolved organically. Though the increasingly high standards adopted by Wikipedians have improved Wikipedia’s reputation in the eyes of the public, the community has repeatedly struggled with how to balance the tradition of openness and the “wiki way” with the need for credibility and the accompanying high standards.

## 10.2 Standard of Quality

It seems that in recent years, high standards and a focus on correct process have won out over these original ideals that formed the community, inciting regular griping and prophecies of doom and gloom for the future of Wikipedia. The signs of this ossification have been around since at least 2007, when I joined for the first time,

and the period that many consider to be the heyday of the project, at least in terms of the balance between process and wiki values. The bureaucracy of processes like requests for user rights has snowballed since the first of those processes, Requests for Adminship (RfA), began in 2003.

RfA was originally an off-wiki process, where requests for administrator rights were conducted on the Wikien-L mailing list, a mailing list for editors of English Wikipedia. One of these very early requests consisted of the user asking on the mailing list for adminship “to assist in the general maintenance and welfare of wikipedia [*sic*]” (6). The nomination was seconded by Erik Moeller, an early and prominent member of the community – and now Wikimedia Foundation employee – and the change in status was made a few days later with a minimum of fuss. A look through the mailing list archives shows this to be fairly typical, though concerns about too much bureaucracy in the process were already brewing, even at this early stage (7).

For comparison, one successful RfA from July 2013 (8) consisted of two co-nominations, 15 questions (several of which were multi-part), 98 “support” comments, 3 “oppose” comments, 1 withdrawn “oppose”, and 1 withdrawn “neutral”, all summing to more than 69,000 bytes of text – not including the three sections of discussion on the associated Talk page.

The move towards a more complicated, bureaucratic RfA process is indicative of the attitude on English Wikipedia in general towards administration of the project. Process is seen as protective against bad content; commensurate with Wikipedia’s rising star, processes have spiraled in number and complexity. In fact, the steps that an article goes through to become a Featured Article (FA), a designation of Wikipedia’s highest-quality work, bear a remarkable resemblance to the steps in the production of a Nupedia article, which included numerous guidelines for assignment of the article, extensive peer-review, and copyediting (9). For a Wikipedia article circa 2013 – depending on where the article falls in the purview of various WikiProjects – there are at least three steps to FA status, and as many as five, all of which can involve days to weeks of complex review. WikiProject Military History, arguably the most successful project, conducts several of its own internal review processes in addition to the Wikipedia-wide ones. Though these reviews are not in any way mandatory, they do confer prestige on an editor and improve Wikipedia’s perceived reliability.

Though the increase in quality that these review processes have wrought is welcome, they are substantially dysfunctional in a number of ways. One study of the FAC process by a long time Wikipedia user addressed the issue of reviewers not engaging with content and accuracy (10). A Featured Article is defined as having a number of characteristics, including comprehensiveness, “engaging, even brilliant” prose, appropriate style, and comprehensive research (11) (12). Unfortunately, reviewers often nitpick the article’s prose and its adherence to the most minute details of the Manual of Style, and overlook major problems like plagiarism (in Wikipedia parlance, “copyvio”, a concatenation of “copyright violation”) and missing areas of coverage. This study found that many Featured Article reviews did not have any critique of the content. Though not widespread, several articles have had their Featured status removed when editors found extensive copyright violations upon

later review. This is a serious problem for Wikipedia's credibility and the community will need to improve the various review processes so that they regulate the breadth of coverage and reliability of sources as well as high quality prose and style.

Another serious problem with the peer review processes is a substantial dearth of reviewers. In December 2013, the Good Article Nominations page had a backlog of 362 articles stretching back to August 2013 (13); the Peer Review page had a backlog of 47 articles (14), and the Featured Article Nominations page had 53 articles undergoing review (15). These numbers are not unusual, and in fact have been worsening for years. For these pages to be effective in auditing content, more reviewers need to volunteer. However, reviewing articles is a difficult, thankless task, and it will be no mean feat to attract these necessary contributors.

### 10.3 Learning Curve

Another problem that faces the modern Wikipedia as it tries to create a stable place for itself in the new web's information economy is the steep learning curve and hostile environment perceived by non-contributors or new editors. A large part of this is due to a growing idea of English Wikipedia as a "walled garden" amongst experienced contributors, and a burgeoning fear of newcomers to the community not meeting standards on their first attempt to contribute and harming the encyclopedia. As I have discussed earlier, the consequence of Wikipedia's increased reliability is increased visibility and therefore an increased burden on the community of contributors to maintain the current quality and continue to produce more and better content.

New contributors often struggle to master the syntax of Wiki markup and internalize the "house style" that has developed over Wikipedia's thirteen years of existence. As such, new articles or additions to existing articles are often written like academic essays, contain the author's opinions (contravening Wikipedia's sacred "Neutral Point of View", or NPOV, principle (16)), or do not meet the notability guidelines (17). They also often have no citations, no Wiki markup, or no links. These contributions are often removed wholesale even if they contain salvageable content because they are seen as harming the credibility of Wikipedia. This, in turn, leads to burnout on the part of experienced editors and a poor retention rate of new editors, who grow frustrated with the obstacles to contributing and quit for greener volunteering pastures.

Two projects have been implemented in an attempt to mitigate the harm that new contributors can do: "Draftspace", and Articles for Creation (AfC). Draftspace is a brand-new namespace on English Wikipedia that is meant to create a gentle place for contributors who are inexperienced or afraid of a hostile reception (18) (19). Though a private place for people to work on a draft article already exists, called "sandboxes", assigning a whole namespace to this purpose helps to make drafting an article more accessible to newcomers. A namespace on Wikipedia is a prefix that indicates what type of page something is (20). Namespaces include Wikipedia: ("projectspace"), Portal:, Talk:, Template:, and more. Putting a page in a namespace

is as simple as starting the page with the appropriate prefix, for example, `Wikipedia:Requests for adminship` is the projectspace page for adminship requests. Instead of having to create a sandbox page, a contributor who wants to start a new article can prefix their creation with “Draft:”, lowering the barrier to contribution.

The fear of newcomers harming Wikipedia’s content or reputation has extended to the groups of editors called “New Page Patrollers” and the anti-vandalism corps, who make extensive use of the Page Curation tools and the program Huggle. New page patrollers are a self-selected group of volunteers who go through the constant stream of new pages (21) and nominate for one of three deletion processes articles they consider unsuitable for Wikipedia, or put tags on articles they see as having problems. This is all well and good – and necessary for Wikipedia’s reliability and future – but these patrollers often tag articles within minutes or even seconds of their creation. This contributes heavily to the hostile attitude that deters new contributors, who have heard that Wikipedia is open and flexible, and do not realize that new pages must meet basic guidelines. To combat this attitude, the Wikimedia Foundation spearheaded the creation of the Teahouse, a help desk designed to be friendly and personal in answering newcomers’ questions (22).

## 10.4 Wikipedia as Major News Source

All of these issues contribute heavily to the ossification of Wikipedia’s processes and power structure, and Wikipedia will therefore lose its greatest assets – flexibility and responsiveness – when compared to traditional media. On December 27, 2007, Benazir Bhutto, the Prime Minister of Pakistan, was killed on the streets of Rawalpindi. I was an eighth grader on winter break and came upon the news very soon after it happened. For the next few hours I hid in my room and helped write the article about her assassination as events unfolded half a world away (23). This was a formative experience for me as an editor and for my understanding of Wikipedia. Because it could be updated in real time as information reached news outlets, it had the potential – since realized – to be a powerful news source. This was the first time I had ever seen Wikipedia realize this potential. Since then, I have watched as Wikipedia became a major news source in its own right – when the US government shut down in October 2013, Wikipedia’s constantly updated article was one of the most popular articles on Wikipedia during the first days of the shutdown (24).

## 10.5 Wikipedians

I joined Wikipedia in April 2007, in the year that some members of the community consider to be the “heyday” of the project, when process and quality assurance were balanced well with the wiki tradition. This year saw the highest number of users made administrators and was also the high-water mark until now of the number of

editors. I can't count the number of times I have seen other editors lament the "good old days", with a focused, dedicated community producing excellent content. Though this picture is often only seen through rose-colored glasses, the statistics do indeed show a significant drop in the number of both editors and administrators on English Wikipedia, along with a large rise in the number of page views. In short, less people are writing and more people are reading Wikipedia.

The most innocuous reason typically given for this decline is the "middle age" of Wikipedia, where most of the low-hanging fruit has been plucked and specialists move in to write about niche topics. The more insidious explanation is that Wikipedia and its politics are inherently toxic and it will become ever harder to retain and recruit editors as the pool of contributors, potential and actual, realizes how dysfunctional the community is. The truth is somewhere in between these two hypotheses. Yes, Wikipedia is often a toxic community, but concerted efforts – like the Teahouse – to mitigate that environment are succeeding, at least somewhat, and there is an ever-growing amount of quality content that is no longer accessible for the Average Joe. I'm an optimist, though, and I believe that the altruistic spirit, though diminished, remains in the Wikipedia community and the efforts to improve the interpersonal dynamics of the community will succeed in fanning that flame.

The sheer altruism was not the only thing that made me stay with Wikipedia for the long haul. I discovered I had a passion for research and writing that school had not yet uncovered in me. I suspect that if I had not found an outlet for this, I would have quickly tired my family out with endless trips to the library and pages of notes scattered all over my house in my attempt to create my own encyclopedia. I've been told that I was "born to edit" – one of my favorite hobbies was memorizing names of planetary moons, dinosaurs, gems, and whatever else I could get my hands on, and the best gift I had received as a child was the encyclopedia I got in kindergarten. I read it cover to cover and delighted in learning about everything from alphabets to Zambia.

Wikipedia is incredibly compelling for people like me, but not every contributor has a remotely similar profile to me – so what makes editors stick around? Are Wikipedians born or made? And again, the answer is somewhere in between. It's an unpopular opinion, but not everyone is capable of or willing to contribute to Wikipedia. A lot of college students think Wikipedia is amazing, but think contributing is too much like homework (and with the establishment of the Wikipedia Education Program (25), sometimes it is just that). Our job should not be to turn every person on the street into a Wikipedian, it should be to find and cultivate contributors who have skills that will improve the project. People with these skills and a healthy sense of altruism won't need to be coerced to contribute – but simply exposing them to the fact that they *can* contribute is not enough. It is much more effective to teach and facilitate and sometimes even incentivize new contributors, who will then stay of their own accord. It is abundantly clear that we have not yet solved this problem, and I don't at all profess to have a magic bullet, indeed, the simple number of contributors may not be the problem. Increasing successful, productive contributions will take concerted experimentation and a willingness to fail purposefully, which may prove difficult for the fundamentally conservative Wikipedia community.



## 10.6 Acceptance of Wikipedia

One step to understanding the future of Wikipedia and how a bare-bones site has attained its current supremacy in the modern, flashy, bite-size, GIF-laden Web requires a look at how Wikipedia rose to prominence in the first place. The English Wikipedia received major attention on the Internet giant Slashdot in early 2005. (I'm focusing on the English Wikipedia here and throughout because I contribute almost exclusively to English Wikipedia and do not consider myself qualified to comment on the often startlingly different dynamics of other language communities.)

The very early content of Wikipedia – circa late 2001 – consisted of mostly traditional “geek” content, as well as a focus on Ayn Rand and Libertarian topics (26). But by 2005, content had been greatly diversified, with over 400,000 articles (27). Wikipedia was no longer a niche website – it had widespread appeal, and the breadth of topics it offered when it began to receive mainstream attention allowed Wikipedia to enter into the public consciousness in a way that other information sites did not. They were either too specialized or were written by professionals, not volunteers, and so had less content overall.

But with greater recognition in the public eye came a growing reluctance among educators and academics to accept Wikipedia. Coming of age in the 2000s, I heard a constant stream of Wikipedia demonization from my teachers starting in the sixth grade and continuing to the present day in full force. Wikipedia is maligned by the educational system not because it is a tertiary source – generally unacceptable in academic papers regardless of provenance – but because it is crowdsourced and therefore unreliable. My experience with hearing Wikipedia regularly delegitimized by my teachers and professors is not uncommon among other people my age. But as students everywhere tend to ignore their teachers on other topics, they don't heed warnings to avoid Wikipedia. In fact, I have been thanked on multiple occasions for editing Wikipedia and thereby helping my friends and acquaintances pass their exams. Editing Wikipedia has taken on the role of public service in the eyes of the Millennial generation.

In recent years, though, Wikipedia has become much more widely accepted in the educational community, and the unanimous rejection of Wikipedia as a valid academic project has found dissent. A 2005 study in *Nature* showed that English Wikipedia was about as accurate as the *Encyclopedia Britannica* on science topics, which did much to validate Wikipedia in academia (28).

## 10.7 Wikipedia Education Program

The Education Program, mainly active in the US and Canada, has created a remarkable acceptance of Wikipedia as a classroom tool in those countries. During the Fall 2013 semester, dozens of classes were involved across the US and Canada, in contrast to just five years earlier, when any academic who introduced Wikipedia

into the classroom flew under the radar and was branded a maverick. Though some academics still choose to work outside of its bounds, most engage with the Education Program and the structure and support it provides. The program assigns ambassadors to each class, experienced Wikipedians who provide extra instruction and support to the students, reviewing their articles and teaching valuable editing skills.

In theory this is a wonderful idea, but in practice, like any grand idea, it often falls short. Some professors, like University of Toronto's Steve Joordens, refuse to engage with the Wikipedia community, and in his case, sic almost two thousand poorly-prepared undergraduates on one niche area of content (29). This and other incidents in a similar vein have harmed the reputation of the Education Program and students in the Wikipedia community at large, and have led to significant tension between the two communities. The barrier to acceptance in the next few years may not be the opposition to Wikipedia within the academic community, but the Wikipedia community's conservatism about allowing Wikipedia into the classroom. The fear of newcomers failing to adhere to well-established format and guidelines extends to students as well, and still has the potential to sink the Education Program's ambitions.

Wikipedia's relationship with academia may be shaky but it is typically celebrated among a very diverse readership, to the tune of hundreds of millions of page views a day. The prevailing attitude among Millennials is that "if it's not on Wikipedia, it doesn't exist", which gives Wikipedia the kind of cultural power that few institutions can enjoy. It is a ubiquitous source of information for students, typically the first port of call for students trying to write a term paper, understand a reading, or kill time in lecture. For non-students, Wikipedia settles arguments and satisfies curiosities – it has been described as "indispensable" to modern Western life on a regular basis. Even doctors, junior and senior alike, are not immune to Wikipedia's siren song. A 2011 study showed that 60% of doctors across Europe use Wikipedia to seek medical information regularly, underscoring the project's prominence as an information source for the modern Web (30) (31).

## 10.8 Systemic Bias and WikiProject Women Scientists

The major problem with this ubiquity and the attitude among students and non-students alike of Wikipedia as infallible is that Wikipedia is both incomplete and imperfect. A serious issue is the systemic bias that plagues the project – women, LGBT people, and nonwhite people are sorely underrepresented. Either their biographies are not covered or they are seriously substandard. Efforts to combat this have been somewhat successful in recent years. I co-founded WikiProject Women Scientists in November 2012 and in one year of existence, it doubled the amount of Good and Featured Articles covering women scientists and put dozens of articles on the Main Page in the Did You Know section, bringing thousands of readers to biographies of little-known women scientists.

But the work is far from over on women scientists or on most other topics affected by systemic bias, and it is particularly crucial that systemic biases are eradicated as soon as possible. “There is no deadline” is a phrase commonly bandied about on Wikipedia, but in this case, there is indeed a deadline to write this content. Before Wikipedia achieved its current status as a cultural and Internet icon, there was no imperative to produce quality articles or fill in coverage gaps because readership was still low. Since Wikipedia has taken on the burden of providing education for the world, though, there is a moral duty on the part of Wikipedia contributors to make sure that the encyclopedia has broad coverage and is as accurate as possible.

## 10.9 Native Language Wikipedias

English Wikipedia is not the only project that can aid in this endeavor, though. Wikipedias in a variety of smaller languages can be an invaluable resource for communities that speak those languages. Instead of forcing, say, Hausa communities to read research and articles in English, the Hausa Wikipedia can provide content in people’s native language. Native-language Wikipedias can be incredibly empowering for speakers of languages that have been subjugated by colonial languages. For example, Aymara, a language spoken in Bolivia and Peru, has a burgeoning Wikipedia written by native speakers. This provides an opportunity for Aymara community members to preserve knowledge in their own language and provides an important resource for native Aymara speakers, who can read Wikipedia in their native language instead of in Spanish (32).

In any language, the widespread use of Wikipedia instills a sense of duty in editors to create the best and most accurate content possible. In Wikipedia’s early years, though its contributors had a sense of altruism and knew they were working on something important, it was not yet the global information service it is now. This sense of duty has created a conflict with the “wiki way” – now that doctors are using Wikipedia regularly, it is extraordinarily tempting to lock all of the medicine articles down to prevent vandalism. It makes for a difficult transition in the community, especially as more diverse contributors join in on English Wikipedia. Contributors are not just young, white college-educated men from the West (though they are still overwhelmingly so). There are editors from around the world, from many different cultural contexts, participating and editing, bringing their own paradigms that can be in conflict with the established culture.

## 10.10 Wikipedia Zero

Wikipedia has become even more important in the past year or so because of a new program instituted by the Wikimedia Foundation, called Wikipedia Zero (33). This is a program that partners the Wikimedia Foundation with mobile carriers around

the world and allows subscribers to access Wikipedia articles without incurring data costs. It has become so popular that a group of students in South Africa have petitioned their mobile carrier to subscribe to Wikipedia Zero. This is a revolutionary endeavor but it places an even bigger burden on the shoulders of Wikimedia volunteer contributors. This program gives Wikipedia access to millions more people - as of December 2013, 22 countries have access in at least some languages on a major carrier (34). A readership that is expanded this way and is prone to using Wikipedia as an only source for information due to its low cost helps to make Wikipedia a platform for social change and empowerment but it carries with it the need for quality assurance. Our mission is to bring the sum of human knowledge to everyone for free, but as we move closer to realizing that mission, we as editors need to remember our readership and focus on creating content that serves our readers.

The question now is how we accomplish this massive mission. First of all, we need to remember that our news is suddenly mainstream news. Internally, we seem to be repeatedly caught off guard by news organizations taking interest in our politics. That shouldn't be a surprise anymore. As a community, we need to realize that to some degree, the tyranny of structurelessness has hurt us, and come up with a governance solution that isn't a stopgap. We need to recognize that turnover of our editing population is not a tragedy, and welcome new voices into our community. And finally, whenever the minutiae of politics or trolls gets to be too much, as individual contributors we need to remember what is important and why we began contributing in the first place.

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# Chapter 11

## E-Government and E-Activism

*“We are the nation that put cars in driveways and computers in offices; the nation of Edison and the Wright brothers; of Google and Facebook.”*

– President Barack Obama (January 2011)

*“We must use technology to build stronger connections between constituents and their elected officials by incorporating social media into daily Congressional operations.”*

– Majority Leader Eric Cantor (December 2011)

*“In the face of everything else that’s screwed up in Washington, we the American people can fix things.”*

– Reddit co-founder Alexis Ohanian (May 2012)

*“We are only a drop in this world ... but the rain starts with a single drop.”*

– Saudi Arabian Activist Manal al-Sharif (May 2012)

*“If there is an Internet connection, my camera is more powerful [than my AK-47].”*

– Syrian dissident Abu Ghassan (June 2012)

*“The future is sharing – open data, open participation, open source, open everything, and it must happen at every level.”*

– Lieutenant Governor of California Gavin Newsom (February 2013)

### 11.1 President Barack Obama and Web 2.0

John F. Kennedy’s masterful images on television, the new medium in the 60’s, helped him defeat then Vice President and Republican candidate Richard Nixon in the 1960 U.S. presidential election. Those who heard their first debate on the radio pronounced Nixon the winner, but the majority of the 70 million Americans who watched the televised debate perceived Kennedy as the clear champion (1).

In 2008, Barack Obama ushered in a new Internet era in politics. With over 13 million addresses in his email list, 400,000 blog posts, 130,000 Twitter followers, and 5 million supporters on Facebook, Obama successfully raised half a billion

dollars online for his 2008 presidential campaign (2). The Triple O (Obama's Online Operation) used the World Wide Web to mobilize supporters and took advantage of YouTube for free advertising and fundraising (3).

Former Facebook spokesman Chris Hughes launched the networking site My.BarackObama.com (MyBO) for supporters to be actively involved in the 2008 presidential campaign. Volunteers on MyBO created more than 2 million profiles, planned 200,000 events, formed 35,000 groups, posted 400,000 blogs, and raised \$30 million on 70,000 personal fund-raising pages. *Fast Company* featured Hughes on its April 2009 cover as "The Kid Who Made Obama President" (4).

"Were it not for the Internet, Barack Obama would not be president," said *Huffington Post* founder Arianna Huffington at the 2008 Web 2.0 Summit in San Francisco a few days after the election. "Were it not for the Internet, he wouldn't even have been the Democratic nominee. By contrast, the McCain campaign didn't have a clue. The problem wasn't the age of the candidate; it was the age of the idea" (5).

Immediately after winning the 2008 presidential election, President-Elect Barack Obama (@BarackObama) thanked his Twitter followers, "We just made history. All of this happened because you gave your time, talent and passion. All of this happened because of you. Thanks" (6).

Obama also launched the website change.gov to inform the American public about the Obama-Biden transition and to encourage people to share their ideas with the government (7). The website reads, "To change this country, we're counting on Americans from every walk of life to get involved. Tell us how an experience in your life showed you something that is right or something that is wrong with this country – and share your ideas for how to make it better" (8).

After the transition, President Obama continued to leverage the power of the Internet via the government website whitehouse.gov as well as holding online town hall meetings via Google+, Facebook, and YouTube (9). When we visit the whitehouse.gov, we see something similar to commercial business websites – we are prompted to enter our email address to get periodic updates (from President Obama and other administration officials in the case of whitehouse.gov) (10). (See Fig. 11.1).

In 1966, the U.S. Congress enacted the Freedom of Information Act (FOIA) to give the American public greater access to the federal government's records (11). The Electronic Freedom of Information Act Amendments of 1996 broadens the scope of FOIA to encompass electronic records and to make government's records more easily and widely available to the public by placing more material online (12). All government agencies are required to have their websites provide the function of "electronic reading rooms" (13). In addition, the U.S. Congress passed the E-Government Act of 2002 intended to improve the management and promotion of electronic government services and processes (14). In 2009, President Obama created Data.gov to "increase public access to high value, machine readable datasets generated by the Executive Branch of the Federal Government" (15).

Instead of a passive electronic reading room as described in 1996, however, the Internet has evolved into a proactive medium, or Web 2.0, for governments, politicians, and citizens in the 21st century. *Web 2.0* is the title of a book by Dermot McCormack published in 2002 (16). Nevertheless, the term "Web 2.0" was popularized by Dale





Fig. 11.1 WhiteHouse.gov

Dougherty, Vice President of O’Reilly Media, to describe the present, evolutionary stage of the Internet since the dot-com bust in 2001 (17). With the advent of Web 2.0 social media tools and applications, Government 2.0 (or Gov 2.0) fosters a two-way communication between citizens and governments.

In his 2011 State of the Union Address, President Barack Obama said, “Thirty years ago, we couldn’t know that something called the Internet would lead to an economic revolution. What we can do – what America does better than anyone – is spark the creativity and imagination of our people. We are the nation that put cars in driveways and computers in offices; the nation of Edison and the Wright brothers; of Google and Facebook. In America, innovation doesn’t just change our lives. It’s how we make a living” (18).

In September 2011, the Obama administration launched “We the People on WhiteHouse.gov,” a new online platform for Americans to create and sign petitions on a range of issues affecting the United States (19). When a petition gathers enough online signatures, it will be reviewed by government policy experts who will then issue an official response. As the *TIME Magazine* reported, “Petitions have sometimes forced the White House to respond when it otherwise might have stayed silent.” And as a case in point, “Activists upset over a Hollywood effort to increase copyright rules online petitioned the White House in 2011 to issue a veto threat. As a result of the petition, the White House issued a statement laying out concerns about the Hollywood approach, contributing to the bill’s defeat in the Senate” (20).

Steven VanRoekel, U.S. Chief Information Officer, said in October 2011 that America has become a “Facebook nation” that demands increased transparency and



**Fig. 11.2** CIA's First Tweet (June 6, 2014)

interactivity from the federal government (21). His solution is to bring startup culture to the bureaucracy. He argues that the ubiquity of social media has created a "Facebook nation" that expects the same kinds of interactivity from commercial websites as it does from the federal government.

Immediately following President Obama's State of the Union address on January 24, 2012, an online panel from the White House answered questions submitted by citizens via Twitter (#WHChat & #SOTU), Google+, Facebook, and the in-person audience of "tweetup" participants (22). A "tweetup" is an event where people who tweet come together to meet in person.

Even the secretive Central Intelligence Agency (CIA) joined Twitter on June 6, 2014 with a sense of humor by sending its first message "We can neither confirm nor deny that this is our first tweet" (23). (See Fig. 11.2). CIA Director John Brennan explained, "By expanding to these platforms, CIA will be able to more directly engage with the public and provide information on CIA's mission, history, and other developments. We have important insights to share, and we want to make sure that unclassified information about the Agency is more accessible to the American public that we serve, consistent with our national security mission" (24).

CIA-funded Palantir has created AnalyzeThe.US that allows anyone to use the sophisticated data-mining tool to analyze data made public at Data.gov as well as information compiled by nonprofits and policy centers. Palantir stated on its website that "well-informed citizens lead to better government, and making government data available is certainly an important first step" (25).

Michael Scherer of *CNN* summed up nicely, "As one official put it, the time of guys sitting in a back room smoking cigars, saying 'We always buy 60 Minutes' is over. In politics, the era of big data has arrived" (26).

## 11.2 Gov 2.0 Apps

In a June 2012 interview with *CNN*, U.S. Chief Technology Officer Todd Park said that he wanted to unleash the power of data, technology, and innovation. Park explained the power of government data: “It’s the notion of government taking a public good, which is this data – say weather data, or the global-positioning system or health-related knowledge and information – making it available in electronic, computable form and having entrepreneurs and innovators of all stripes turn it into an unbelievable array of products and services that improves lives and creates jobs” (27).

Indeed, the White House has been promoting the Open Data Initiatives program to “stimulate a rising tide of innovation and entrepreneurship that utilizes government data to create tools that help Americans in numerous ways – e.g., apps and services that help people find the right health care provider, identify the college that provides the best value for their money, save money on electricity bills through smarter shopping, or keep their families safe by knowing which products have been recalled” (28).

The Open Data Initiatives program also supports the Health Data Initiative launched in 2010 by the Institute of Medicine and the U.S. Department of Health and Human Services. A 2013 report by McKinsey & Company estimated that open data could generate more than \$3 trillion a year in additional value in seven key sectors of the global economy, including education, transportation, and electricity (29).

As part of the Administration’s larger commitment to open data, the White House also launched in May 2012 the Safety Data Initiative – an effort to “make government data relating to every aspect of public and product safety, from crime to road-way safety to food safety, much more accessible, and to encourage the development of innovative apps and services fueled by those data to empower Americans with the information and tools to make smarter, safer choices” (30).

In 2012, the National Archives and Record Administration (NARA) uploaded 100,000 digital images to Wikimedia Commons to allow Wikipedia editors to incorporate them into their projects and articles. The 2014 Open Government Plan calls for a broader reach to the public via Wikimedia, stating that “the 4,000 Wikipedia articles featuring our records received more than one billion page views in Fiscal Year 2013. Over the next two years we will work to increase the number of National Archives records available on Wikimedia Commons, which furthers our strategic goal to ‘Make Access Happen’ and expands re-use of our records by the public” (31).

In addition to the federal government, state and local government officials have also been active in promoting Government 2.0. With more than a million Twitter followers, mayor Cory Booker of Newark, New Jersey is an exemplary government official who actively uses Twitter to help citizens who are in need and to keep them informed. On New Year’s Eve 2009, for example, mayor Booker and his volunteers shoveled the driveway of a 65-year-old Newark man after receiving a tweet from the man’s concerned daughter (32).

To facilitate communication between citizens and local governments, technologies have created an assortment of Gov 2.0 applications such as “SeeClickFix” and “Street Bump.” “SeeClickFix” allows anyone to file a public report online or via a mobile phone with GPS location about a non-emergency issue (33). Their website claims to have fixed 75,000 issues as of April 2012. “Street Bump” is an Android app piloted by Boston’s Mayor’s Office of New Urban Mechanics to catch potholes using the smartphone’s built-in accelerometer (34). As of April 2012, “Street Bump” works in four cities: Boston, Austin, New York City, and London.

“I see [the Gov 2.0 applications] as the death of a passive relationship with government,” said Clay Johnson, director of Sunlight Labs and author of *The Information Diet*. “Instead of people saying, ‘Well, it’s the government’s job to fix that,’ ... people are taking ownership and saying, ‘Hey, wait a minute. Government is us. We are government. So let’s take a responsibility and start changing things ourselves’” (35). Reddit’s co-founder Alexis Ohanian voiced a similar opinion, “In the face of everything else that’s screwed up in Washington, we the American people can fix things” (36).

As local government releases more community-specific data to the public, new Gov 2.0 utility apps are popping up. Among them are “DiscoverBPS” and “Adopt a Hydrant.” “DiscoverBPS” assists parents in finding eligible schools for students in grade K0 through 12 in the Boston area (37). “Adopt a Hydrant” encourages Boston residences to help shovel out a fire hydrant after it snows (38).

Jennifer Pahlka, founder and executive director of Code for America, spoke at the TED2012 conference in February 2012, “Code for America ... it’s a little bit like a Peace Corps for geeks. We select a few fellows every year, and we have them work with city governments. ... One of the applications the Code for America fellows wrote last year is called Adopt-a-Hydrant. It lets Bostonians sign up to dig out fire hydrants when they’re covered in snow. ... It’s open-source, so anyone can take the code. Forest Frizzell in the IT department of the City of Honolulu found it and realized he could use it to recruit citizens to check on the tsunami sirens in his city to make sure they’re functioning. Seattle is planning to use it to get citizens to clear clogged storm drains. Chicago has rolled it out to let people sign up to shovel sidewalks when it snows. There are now nine cities we know of looking to use this app, and it’s happening organically, frictionlessly” (39). Pahlka suggested how government might work more like the Internet itself: “permissionless, open, generative.”

To facilitate the development of Gov 2.0 apps, Sunlight Foundation offers free APIs (Application Programming Interfaces) to access and analyze government data (40). For instance:

1. The Congress API v3 is a live JSON API for information on legislators, districts, committees, bills, and votes as well as real-time notice of hearings, floor activity, and upcoming bills.
2. Docket Wrench examines the rulemaking process of federal agencies by tracking similar public comments and entity matching in order to get a complete picture of their influence across millions of documents. The Docket Wrench API gives developers programmatic access to metadata for documents, dockets, and agencies as well as to Docket Wrench’s clustering and text analysis tools.

3. The Influence Explorer API gives programmers and journalists the ability to easily create subsets of large data for their own research and development purposes. The API provides access to campaign contributions and lobbying records.
4. The Open States API retrieves information on the legislators and activities of all 50 state legislatures, Washington, D.C. and Puerto Rico.
5. The Political Party Time API obtains the underlying raw data that the Sunlight Foundation creates based on fundraising invitations collected in Party Time.

On December 7, 2011, the Offices of Majority Leader Eric Cantor and Democratic Whip Steny Hoyer held the first-ever Congressional Facebook Hackathon in the Capitol Visitor Center in Washington, DC. The event brought together a bipartisan gathering of Members of Congress, Congressional staffers, Facebook engineers, and software developers to explore the potential connections between legislative data, constituent correspondence, and social media. Cantor stated the objective of the Hackathon: “We are dedicated to making the activities of this Congress transparent, accessible and useful for people around the country. In order to accomplish that, it is clear that we must use technology to build stronger connections between constituents and their elected officials by incorporating social media into daily Congressional operations” (41).

In September 2013, U.S. Homeland Security Investigations released an iOS app called “Operation Predator” that allows users to submit anonymous tips on suspected child sexual predators and fugitives. The app enables the public to identify suspects listed as “John Doe” from available photos posted online. “These investigations are one of our highest priorities, and in today’s world, we need to be technologically savvy and innovative in our approach,” said John Sandweg from the U. S. Homeland Security (42).

In his letter from the Facebook IPO filing in 2012, Mark Zuckerberg expounded his hope to change how people relate to their governments and social institutions:

“We believe building tools to help people share can bring a more honest and transparent dialogue around government that could lead to more direct empowerment of people, more accountability for officials and better solutions to some of the biggest problems of our time. By giving people the power to share, we are starting to see people make their voices heard on a different scale from what has historically been possible. These voices will increase in number and volume. They cannot be ignored. Over time, we expect governments will become more responsive to issues and concerns raised directly by all their people rather than through intermediaries controlled by a select few” (43).

In his 2013 book *Citizenville*, Lieutenant Governor of California and Democrat Gavin Newsom wrote, “The future is sharing – open data, open participation, open source, open everything, and it must happen at every level” (44). Republican strategist Alex Castellanos concurred, “If we open the doors of government to the private sector and make data accessible, we can jump-start a new era of social innovation. Open up the doors of government satellite data and you get Google Earth. Give Web designers in Chicago and Oakland access to public police data, and they create innovative crime-mapping tools that prevent muggings. Invent a digital ‘currency’

to reward citizens for participating in their own governance, and small town decision-making becomes as interesting and involving as Farmville” (45). (On another note, wouldn’t it be nice if more Democrats and Republicans are in unison to end congressional gridlock? (46))

### 11.3 The Kony 2012 Phenomenon

“Kony 2012” is a perfect exemplification of social networks empowering people in voicing their concerns over injustice in the world. Uploaded to YouTube on March 5, 2012, the “Kony 2012” video has garnered over 87 million views within a month (47). With the goal of capturing the notorious criminal Joseph Kony, Invisible Children’s 30-minute documentary film about the Ugandan warlord has been shared all over Facebook and mentioned incessantly on Twitter. The video went viral almost instantly after Invisible Children shared the YouTube link on Facebook, Tumblr, and Twitter (48).

As shown in Fig. 11.3, the “Kony 2012” video statistics retrieved on March 8, 2012 from YouTube indicated the following significant discovery events over a four-day period:

1. More than 2.6 million views came from mobile devices.
2. Over 1 million views came from the embedded YouTube video on Facebook.
3. Additional 1 million views came from referrals on Facebook.
4. Almost 300,000 views came from referrals on Twitter.
5. A combination of 150,000 views came from YouTube search and Google search.
6. More than 50,000 views came from the embedded video on Twitter.

The discovery events confirmed that Facebook and Twitter were instrumental in spreading the “Kony 2012” video around the world with lightning speed.

Moreover, the audiences’ breakdown in Fig. 11.3 showed that among the 32.6 million views between March 5 and March 8, the video was most popular in the United States with females ages 13-17, followed by males ages 18-24 and 13-17. Columbia University professor Emily Bell found out about the “Kony 2012” video from her 11-year-old (49). The City University of New York journalism professor discovered the video from his daughter’s Facebook page (50). Mark C. Toner, deputy spokesman at the State Department, had the video brought to his attention by his 13-year-old (51). Stories like these abounded.

Soon enough, Hollywood celebrities and entertainers joined in and ignited more chatter on Facebook, Twitter, and other social networks with their millions of fans (52). Some of the notable tweets were (53):

1. Oprah Winfrey to her 10 million followers: “Thanks tweeps for sending me info about ending #LRAviolence . I am aware. Have supported with \$’s and voice and will not stop.#KONY2012” (March 6, 2102)

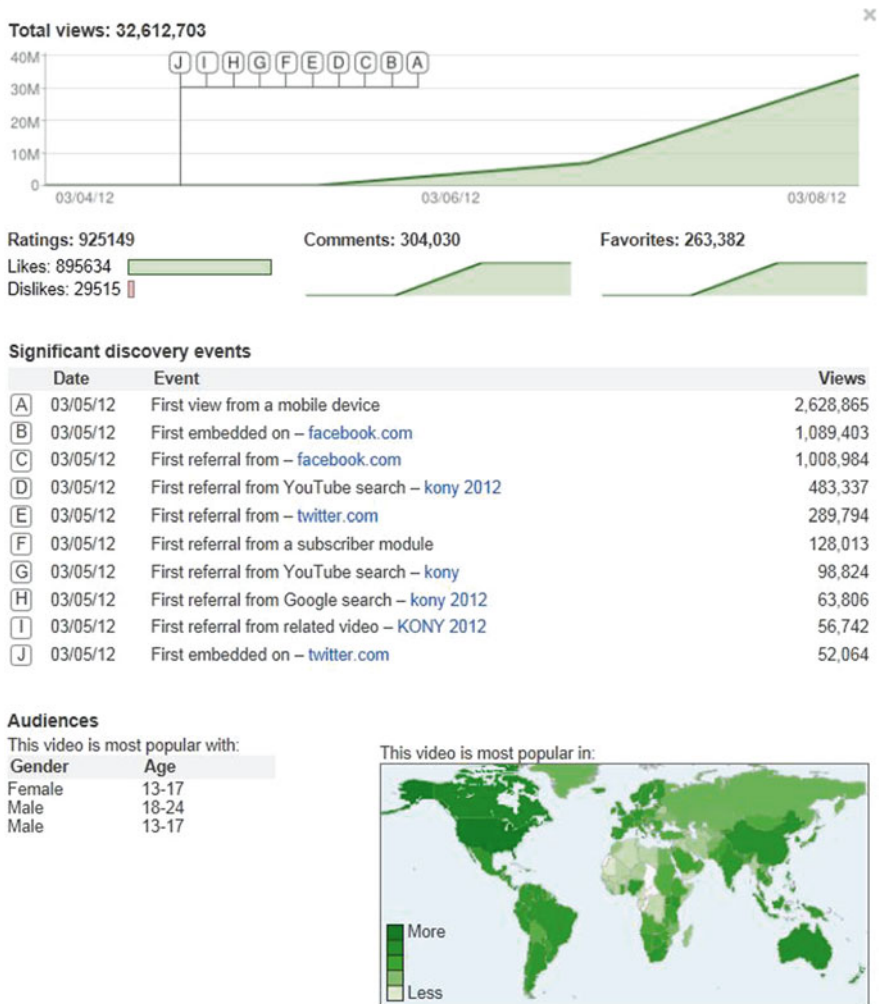


Fig. 11.3 Kony 2012 Video Statistics from YouTube on March 8, 2012

- Ryan Seacrest to his 6 million followers: “Was going to sleep last night and saw sur tweets about #StopKony... watched in bed, was blown away. If u haven’t seen yet on.fb.me/zCIYoj” (March 7, 2012)
- Justin Bieber to his 18 million followers: “it is time to make him known. Im calling on ALL MY FANS, FRIENDS, and FAMILY to come together and #STOPKONY – youtu.be/Y4MnpzG5Scq” (March 7, 2012)



4. Kim Kardashian to her 14 million followers: “#Kony2012 Wow just watched! What a powerful video! Stop Kony!!! RT @KendallJenner: please WATCH THIS... vimeo.com/37119711” (March 7, 2012)

The ripple effect reached all the way to the U.S. government. State Department spokeswoman Victoria Nuland answered reporters’ questions at a daily press briefing on March 8, 2012 (54):

**QUESTION:** Toria, have you seen this video that’s going around the web, the Kony 2012 video, and does the State Department have a reaction to that or a comment on it?

**MS. NULAND:** We have. It’s had some 25 million tweets. In fact, Mark had it brought to his attention by his 13-year-old, I think, earlier this morning. Well, certainly we appreciate the efforts of the group, Invisible Children, to shine a light on the horrible atrocities of the LRA. As you know, there are neighboring states, there are NGO groups who have been working on this problem for decades, and we, of course, are very much involved in trying to support all the states of East and Central Africa. We have a multifaceted strategy to work on this, including, as you know, we now have special forces advisors working to train some of the neighboring states in their efforts to get a handle on this awful, awful problem.

**QUESTION:** And if I could just follow up, the film makes a point that they are doing this now because the U.S. – they say the U.S. could pull out these advisors that you cited at any moment. So they’re trying to keep up the momentum. Is that a concern – a right concern on their part that these advisors could be moved out of Uganda?

**MS. NULAND:** I don’t have any information to indicate that we are considering that, but that would be a question for the Pentagon. As you know, they’ve only been in for a couple of months, and we consider them a very important augmentation of our effort to help the East and Central African countries with this problem.

As you know, hundreds of people – hundreds and thousands of people around the world, especially young people, have been mobilized to express concern for the communities in Central Africa that have been placed under siege by the LRA. So the degree to which this YouTube video helps to increase awareness and increase support for the work that governments are doing, including our own government, that can only help all of us.

**QUESTION:** And just one more, if I may. Would an update on what these advisors are doing currently be more of a question for the Pentagon, or do you have a summary?

**MS. NULAND:** Well, we’ve spoken about this in general terms. If you need a detailed briefing, I’d send you to them. But we are not part of the fight ourselves.

We're involved in training and supporting and providing advice to the forces of the governments of East and Central Africa that are engaged in the fight.

**QUESTION:** Are you concerned that this type of call, which takes viral form on the web and so on, might increase pressure for direct U.S. involvement in the fight for Kony rather than just providing the support that you mentioned?

**MS. NULAND:** I don't think anybody in the region favors that. What they have asked for is this logistical technical training support, and that is what we are providing. We are also helping them with their public information campaign. We are trying to get the word into these communities that if members of the LRA, whether they're pressed into service or whether they're volunteers, are ready to defect, that they'll have support in doing that, et cetera.

The March 8th daily press briefing demonstrated that the "Kony 2012" video did prompt the U.S. State Department to address the issue of American apathy in the past and the recent involvement of the U.S. government in finding a solution to the problem. The Department's spokeswoman even acknowledged that a 13-year-old brought the video to the attention of her colleague at the State Department.

A little over a month later on April 13, 2012, the "Kony 2012" video statistics from YouTube indicated a slight change in the audiences' demographics: the video was still most popular in the United States (and Canada) with females ages 13-17, but the second latest group was males ages 45-54, larger than the previous groups of males ages 18-24 and 13-17. (See Fig. 11.4).

The new data implied that on the Internet, news of "Kony 2012" spread from the younger generation to the older generation. It explained why male ages 45-54 replaced male ages 18-24 as the second largest group of viewers after a month.

"No one wants a boring documentary on Africa," said filmmaker Jason Russell, co-founder of Invisible Children who spent years making the documentary. "Maybe we have to make it pop, and we have to make it cool. We view ourselves as the Pixar of human rights stories" (51).

Ben Kessey, Invisible Children's CEO, acknowledged to *The Wall Street Journal* that the video was made to appeal to children. Kessey admitted in an interview, "How do we make this translate to a 14-year-old who just walked out of algebra class?" (55).

Notwithstanding the video's serious subject matter, "Kony 2012" succeeded in drawing the initial massive wave of attention from the younger generation, mostly teenagers and college students ages 13 and above, who do care about human rights and social issues to the extent that they want to share the news with all their friends on Facebook and Twitter.

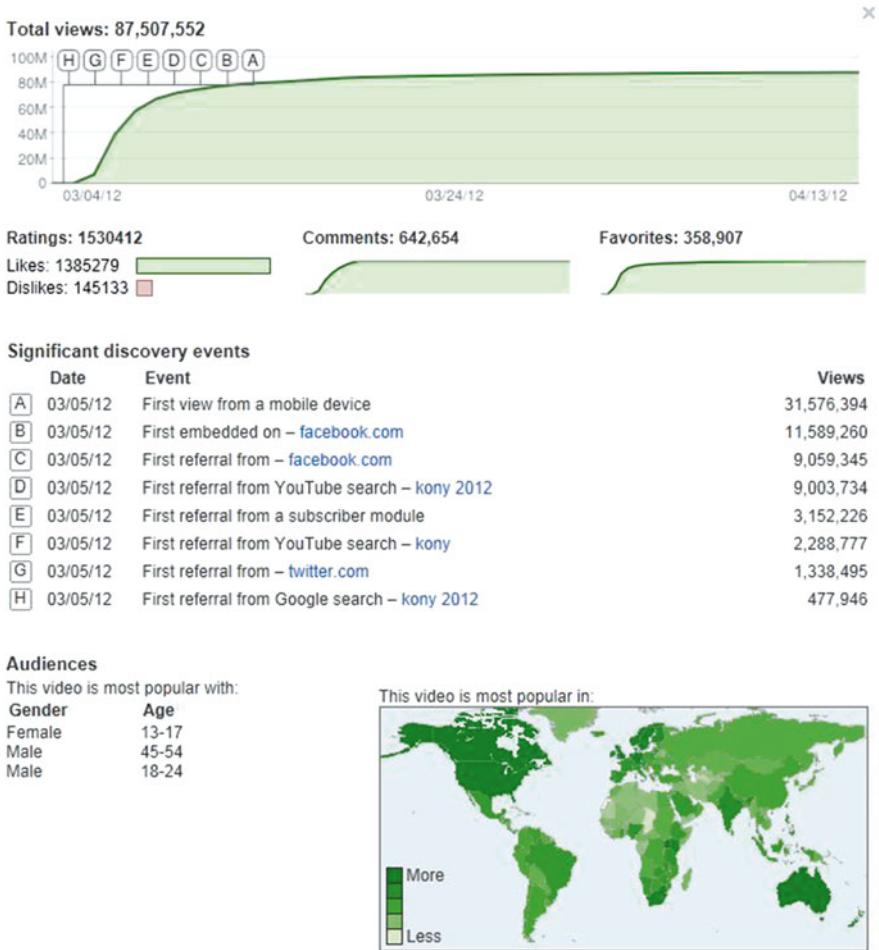


Fig. 11.4 Kony 2012 Video Statistics from YouTube on April 13, 2012

### 11.4 Reactions to Kony 2012

Skeptic Andrew Keen voiced his concerns on *CNN*, “In a post-era world of ‘Kony2012,’ with its harrypotterfication of reality and its transformation of Africa from a complex, infinitely nuanced society into a manichaeian Madison Avenue fantasy of good and evil, are we all now becoming teenagers? Should we really be empowering children to make moral decisions about a world in which they have little experience? Should we entrust the innocent, that ‘bunch of littles’ who have made ‘Kony2012’ such an instant hit, to architect our brave new connected world?” (56).

No amount of skepticism can change the fact that the younger generation is a powerful force to be reckoned with in the Internet age. Nevertheless, both children and adults can be equally susceptible to well-crafted propaganda and disinformation, as Journalist Matthew Ingram thoughtfully questioned, “Is Kony2012 a sign of how powerful social media can be as a news distribution mechanism, a sign of how dangerous it can be, or both?” (57).

On the heels of the phenomenal public attention of “Kony 2012,” Sheila Lyall Grant and Huberta von Voss-Wittig, wives of the British and German ambassadors to the United Nations, posted a 4-minute video on YouTube to ask the viewers to petition Asma al-Assad for peace in Syria (58). The April 16, 2012 video juxtaposed glamorous pictures of Syria’s first lady Asma al-Assad against disturbing images of dead and injured Syrian children (59). Grant and Voss-Wittig urged Asma to help end the bloodshed in her country (60): “Stand up for peace ... for the sake of your people. ... No one cares about your image. We care about your action” (61). The YouTube video encouraged the public to sign the petition and spread the word on Facebook, Twitter, and LinkedIn (62).

Social media has become a powerful information distribution mechanism. Information is power; and with power comes responsibility.

## 11.5 SOPA/PIPA Blackout Day

The MPAA and RIAA called the SOPA/PIPA blackout on January 18, 2012 an “abuse of power” when Wikipedia, Reddit, WordPress, *Wired*, *Boing Boing*, Mozilla, Google, Flickr, and other websites went dark or posted anti-SOPA/PIPA messages on their homepages that reach out to more than 1 billion people (63).

In May 2011, Vermont Senator Patrick Leahy and 15 bipartisan co-sponsors in the U.S. Senate introduced PIPA, the PROTECT IP (Preventing Real Online Threats to Economic Creativity and Theft of Intellectual Property) Act (64). PIPA would enhance enforcement against rogue websites operated and registered overseas, and would eliminate the financial incentive to steal intellectual property online.

The Senate Judiciary Committee unanimously passed the PIPA bill, but Oregon Senator Ron Wyden placed a hold on it, citing that the overreaching legislation poses a significant threat to Internet commerce, innovation, and free speech. Wyden issued a press release on May 26, 2011, “I understand and agree with the goal of the legislation, to protect intellectual property and combat commerce in counterfeit goods, but I am not willing to muzzle speech and stifle innovation and economic growth to achieve this objective. At the expense of legitimate commerce, PIPA’s prescription takes an overreaching approach to policing the Internet when a more balanced and targeted approach would be more effective. The collateral damage of this approach is speech, innovation and the very integrity of the Internet” (65).

A group of 55 high-profile venture capitalists also opposed the PIPA bill. They wrote a letter to the U.S. Congress in June 2011 to express their concerns: “As investors in technology companies, we agree with the goal of fostering a thriving

digital content market online. Unfortunately, the current bill will not only fail to achieve that goal, it will stifle investment in Internet services, throttle innovation, and hurt American competitiveness. ... The entire set of issues surrounding copyright in an increasingly digital world are [*sic*] extremely complex, and there are no simple solutions. These challenges are best addressed by imagining, inventing, and financing new models and new services that will allow creative activities to thrive in the digital world. There is a new model for financing, distributing, and profiting from copyrighted material and it is working – just look at services like iTunes, Netflix, Pandora, Kickstarter, and more. Pirate web sites will always exist, but if rights holders make it easy to get their works through innovative Internet models, they can and will have bright futures” (66).

Undeterred by the oppositions, the U.S. Chamber of Commerce sent a letter to the U.S. Congress in support of the PIPA legislation. Signed in September 2011 by an impressive list of 360 businesses and professional organizations, the letter read, “IP-intensive industries are a cornerstone of the U.S. economy, employing more than 19 million people and accounting for 60 percent of exports. Rampant online counterfeiting and piracy presents a clear and present threat to American jobs and innovation. A study examined approximately 100 rogue sites and found that these sites attracted more than 53 billion visits per year, which average out to approximately nine visits for every man, woman, and child on Earth. Global sales of counterfeit goods via the Internet from illegitimate retailers reached \$135 billion in 2010. The theft of American IP is the theft of American jobs” (67).

The U.S. Chamber of Commerce list of 360 included industry heavyweights and household names such as 3M, American Society of Composers, Authors and Publishers (ASCAP), Broadcast Music, Inc. (BMI), Dolby Laboratories, Electronic Arts, Harley-Davidson, Motion Picture Association of America (MPAA), National Basketball Association (NBA), National Football League (NFL), Nike, Nintendo, Pfizer, Philip Morris, Ralph Lauren, Recording Industry Association of America (RIAA), Reebok, Revlon, Rite Aid, Rolex, SESAC, Sony, The Dow Chemical Company, The Walt Disney Company, Tiffany & Co., Time Warner, Toshiba, Viacom, Walmart, World Wrestling Entertainment (WWE), and Xerox.

Texas Representative Lamar S. Smith agreed with the U.S. Chamber of Commerce. In October 2011, Smith and a bipartisan group of lawmakers in the U.S. House of Representatives introduced the Stop Online Piracy Act (SOPA), a bill that would expand the authority of U.S. law enforcement to shut down websites that offer pirated content such as music, films, software, and other intellectual properties (68). SOPA’s goal was “to promote prosperity, creativity, entrepreneurship, and innovation by combating the theft of U.S. property, and for other purposes” (69). The bill would also provide immunity for a service provider, payment network provider, Internet advertising service, advertiser, Internet search engine, domain name registry, or domain name registrar for voluntarily blocking access to or ending financial affiliation with an Internet site that offers pirated content.

Although the objective of SOPA was indisputable, the content of the bill generated a huge backlash. “There is no need for a bill this sweeping and this Draconian,” said Gigi B. Sohn, president and co-founder of Public Knowledge. “There are simple,

easily implemented solutions on which industry and others agree – such as cutting off the ability of credit-card companies to fulfill payments to sites that traffic in copyright infringement. At a time when Congress and the Obama Administration are trying to cut back on sweeping, overbroad regulation, we are disappointed that House Judiciary Committee Chairman Lamar Smith and his co-sponsors have chosen this means of establishing a vast new regulatory regime over the Internet” (70).

In November 2011, AOL, eBay, Facebook, Google, LinkedIn, Mozilla, Twitter, Yahoo!, and Zynga sent a joint letter to the U.S. Congress and placed a full-page ad in *The New York Times*:

“We support the bills’ stated goals – providing additional enforcement tools to combat foreign ‘rogue’ websites that are dedicated to copyright infringement or counterfeiting. Unfortunately, the bills as drafted would expose law-abiding U.S. Internet and technology companies to new and uncertain liabilities, private rights of action, and technology mandates that would require monitoring of websites. We are concerned that these measures pose a serious risk to our industry’s continued track record of innovation and job creation, as well as to our nation’s cybersecurity. One issue merits special attention. We are very concerned that the bills as written would seriously undermine the effective mechanism Congress enacted in the Digital Millennium Copyright Act (DMCA) to provide a safe harbor for Internet companies that act in good faith to remove infringing content from their sites. Since their enactment in 1998, the DMCA’s safe harbor provisions for online service providers have been a cornerstone of the U.S. Internet and technology industry’s growth and jeopardize a foundational structure that has worked for content owners and Internet companies alike information lawfully online” (71).

Vint Cerf, one of the fathers of the Internet and now Google’s vice president, provided scientific explanations for his objection to SOPA. In December 2011, Vint Cerf wrote Lamar S. Smith an open letter:

“I appreciate the opportunity to express my concerns about and opposition to the managers’ amendment to the Stop Online Piracy Act (SOPA) and, in particular, the ‘technological solutions’ related to the Domain Name System (DNS) and search engines. ... Even with the proposed manager’s amendment, SOPA’s site-blocking provisions remain problematic. They would undermine the architecture of the Internet and obstruct the 15 year effort by the public and private sectors to improve cybersecurity through implementation of DNSSEC, a critical set of extensions designed to address security vulnerabilities in the DNS. This collateral damage of SOPA would be particularly regrettable because site blocking or redirection mechanisms are unlikely to make a significant dent in the availability of infringing material and counterfeits online, given that DNS manipulation can be defeated by simply choosing an offshore DNS resolution provider, maintaining one’s own local DNS cache or using direct IP address references. The search engine remedy also suffers from the fact that it will not be effective in preventing users’ access to illegal, offshore websites. A congressional ‘tech mandate’ on search engines to delete a domain name from search results does not result in the website disappearing. Users can and do today find their way to these websites largely without the help of search engines. Relative to the questionable efficacy of this proposed remedy, requiring search

engines to delete a domain name begins a worldwide arms race of unprecedented ‘censorship’ of the Web” (72).

Go Daddy, the world’s largest ICANN-accredited registrar with 47 million domain names under its management, had been working with federal lawmakers for months to help craft revisions to SOPA. In contrast to Vint Cerf’s viewpoints, Go Daddy’s Executive Vice President and General Counsel Christine N. Jones testified before the U.S. House of Representatives Committee on the Judiciary on April 6, 2011:

“In 2010 alone, Go Daddy suspended approximately 150,000 websites found to be engaged in illegal or malicious activity. ... We believe that DNS blocking, as opposed to DNS filtering, is a much more effective vehicle for removing illegal content from the Internet. DNS blocking is different from DNS filtering in that DNS blocking is action taken at the ‘authoritative’ or ‘response’ level of the DNS cycle. As such, it needs to be done by the registrar (which provides the authoritative DNS response), or, in cases where the registrar is unable or unwilling to comply, by the registry (which provides the Root zone file records – the database – for the entire TLD [Top-Level Domain]). Though a very similar technical process to DNS filtering, DNS blocking provides a much more thorough solution because it applies to all Internet users, regardless of which ISP they are a customer of or whether proxy services are used. Where DNS blocking is imposed, Internet users will not be able to access a ParaSite by any common means” (73).

Nonetheless, no revisions of SOPA and PIPA could quench the fierce opposition to the bills. After all, legislators are not scientists, and lawmakers are not expected to propose technical solutions to copyright infringement and counterfeiting.

Wikipedia’s CEO Jimmy Wales (@jimmy\_wales) tweeted that the Wikipedia domain names would move away from Go Daddy (74). Cheezburger’s CEO Ben Huh announced they would be moving their 1,000+ registered domains elsewhere (75). As a result of the aggressive anti-Go Daddy campaign, 21,000 domains transferred out of Go Daddy in just 1 day (76). Bowing to boycott and criticism from high-profile clients, Go Daddy reluctantly reversed their stance and rescinded their support of SOPA on December 23, 2011 (77):

“Fighting online piracy is of the utmost importance, which is why Go Daddy has been working to help craft revisions to this legislation – but we can clearly do better,” said Go Daddy CEO Warren Adelman, “It’s very important that all Internet stakeholders work together on this. Getting it right is worth the wait. Go Daddy will support it when and if the Internet community supports it” (78).

The “when and if” did not happen. Instead, Internet businesses, big and small, were preparing for a “blackout” day on January 18, 2012 to protest SOPA and PIPA.

Chris Dodd, Connecticut Senator and CEO of the Motion Picture Association of America (MPAA), issued the following statement on January 17, 2012 to criticize the impending blackout (79):

“Only days after the White House and chief sponsors of the legislation responded to the major concern expressed by opponents and then called for all parties to work cooperatively together, some technology business interests are resorting to stunts that punish their users or turn them into their corporate pawns, rather than coming to the table to find solutions to a problem that all now seem to agree is very real and



damaging. It is an irresponsible response and a disservice to people who rely on them for information and use their services. It is also an abuse of power given the freedoms these companies enjoy in the marketplace today. It's a dangerous and troubling development when the platforms that serve as gateways to information intentionally skew the facts to incite their users in order to further their corporate interests. A so-called 'blackout' is yet another gimmick, albeit a dangerous one, designed to punish elected and administration officials who are working diligently to protect American jobs from foreign criminals. It is our hope that the White House and the Congress will call on those who intend to stage this 'blackout' to stop the hyperbole and PR stunts and engage in meaningful efforts to combat piracy."

Dodd's pleading went unheeded. On January 18, 2012, the Internet revolted by staging the largest online protest in history. Over 115,000 websites participated in the strike by going dark and/or posting anti-SOPA messages on their homepages that reach out to more than 1 billion people (80). The largest participants included Google, Reddit, Craigslist, Wikipedia, WordPress, Mozilla, Tumblr, Cheezburger, Imgur, Pinterest, Flickr, and Amazon. (See Fig. 11.5).

Wikipedia displayed on its homepage, "Imagine a World Without Free Knowledge: For over a decade, we have spent millions of hours building the largest encyclopedia in human history. Right now, the U.S. Congress is considering legislation that could fatally damage the free and open Internet. For 24 hours, to raise awareness, we are blacking out Wikipedia."

WordPress and *Wired* placed black "censored" bars over their blogs and stories. WordPress wrote, "Many websites are blacked out today to protest proposed U.S. legislation that threatens internet freedom: the Stop Internet Piracy Act (SOPA) and the Protect IP Act (PIPA). From personal blogs to Wikipedia, sites all over the web – including this one – are asking you to help stop this dangerous legislation from being passed."

Google added a black "censored" bar atop its logo as well as a link "Tell Congress: Please don't censor the web!" to the Google Public Policy Blog that said, "You might notice many of your favorite websites look different today. Wikipedia is down. WordPress is dark. We're censoring our homepage logo and asking you to petition Congress. So what's the big deal? Right now in Washington D.C., Congress is considering two bills that would censor the web and impose burdensome regulations on American businesses. They're known as the PROTECT IP Act (PIPA) in the Senate and the Stop Online Piracy Act (SOPA) in the House. ... Fighting online piracy is extremely important. We are investing a lot of time and money in that fight. ... Because we think there's a good way forward that doesn't cause collateral damage to the web, we're joining Wikipedia, Twitter, Tumblr, Reddit, Mozilla and other Internet companies in speaking out against SOPA and PIPA" (81).

Reddit remarked on its website, "SOPA and PIPA damage Reddit. Today we fight back. Today, for 12 hours, reddit.com goes dark to raise awareness of two bills in congress: H.R.3261 'Stop Online Piracy Act' and S.968 'PROTECT IP', which could radically change the landscape of the Internet. These bills provide overly broad mechanisms for enforcement of copyright which would restrict innovation and threaten the existence of websites with user-submitted content, such as reddit.

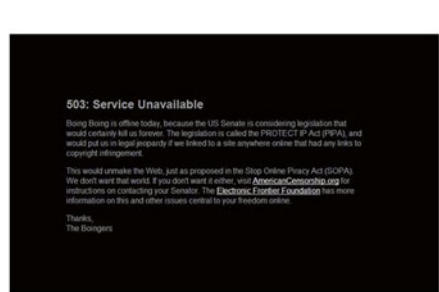
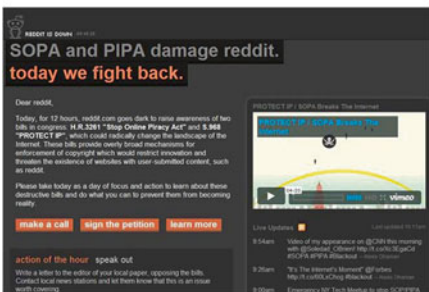
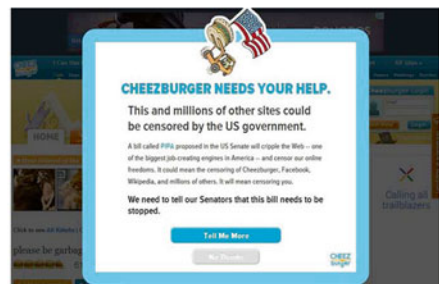
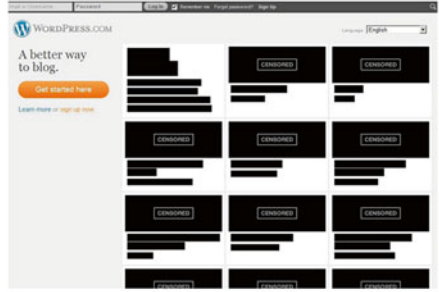


Fig. 11.5 Homepages of Wikipedia, WordPress, Wired, Google, Firefox, Cheezburger, Reddit, and Boing Boing on January 18, 2012.

Please take today as a day of focus and action to learn about these destructive bills and do what you can to prevent them from becoming reality.”

*Boing Boing* displayed a “503: Service Unavailable” message with an explanation, “Boing Boing is offline today, because the US Senate is considering legislation that would certainly kill us forever. The legislation is called the PROTECT IP Act (PIPA), and would put us in legal jeopardy if we linked to a site anywhere online that had any links to copyright infringement. This would unmake the Web, just as proposed in the Stop Online Piracy Act (SOPA). We don’t want that world.”

Cheezburger popped up a huge panel with the message: “CHEEZBURGER NEEDS YOUR HELP. This and millions of other sites could be censored by the US government. A bill called PIPA proposed in the US Senate will cripple the Web – one of the biggest job-creating engines in America – and censor our online freedoms. It could mean the censoring of Cheezburger, Facebook, Wikipedia, and millions of others. It will mean censoring you. We need to tell our Senators that this bill needs to be stopped.”

Mozilla redirected traffic from the Mozilla.org and Mozill.com for 12 hours to an action page that said, “Today Mozilla joins with other sites in a virtual strike to protest two proposed laws in the United States, called SOPA and the PROTECT IP Act. On January 24th, the U.S. Senate will vote on the PROTECT IP Act to censor the Internet, despite opposition from the vast majority of Americans. Join us to protect our rights to free speech, privacy, and prosperity.”

The wide-scale Internet protest was a triumph. Two days after the blackout, the U.S. Congress shelved the PIPA and SOPA bills on January 20 (82).

## 11.6 Reactions to SOPA/PIPA Blackout

“The SOPA/PIPA blackout ... was a whole new form of engagement and protest. I know that a lot of people in Hollywood were absolutely shocked at the effectiveness of that,” said Marc Andreessen, co-founder of Netscape and venture capital firm Andreessen Horowitz that funded Facebook, Twitter, Zynga, Groupon, and Pinterest, and other Internet companies (83).

“With SOPA and PIPA,” Google’s co-founder Sergey Brin opined, “fears of piracy had reduced the entertainment industry to shooting itself in the foot, or maybe worse than in the foot” (84).

Google fights piracy in its own way by processing removal requests from copyright holders. In July 2014, Google’s Transparency Report indicated that in the past month Google received from 4,625 copyright owners more than 29 million URLs requested to be removed from the Google search results (85).

Fred von Lohmann, senior copyright counsel at Google, said, “We believe that the time-tested ‘notice-and-takedown’ process for copyright strikes the right balance between the needs of copyright owners, the interests of users and our efforts to provide a useful Google Search experience” (86). For YouTube videos, copyright holders can submit copyright infringement notifications online or sign up for YouTube’s Content Verification Program (87).

Sean Parker, co-founder of Napster and founding president of Facebook, told an audience at the 2012 South by Southwest conference in Austin, Texas, “The way online communities rose up to ultimately derail the Stop Online Piracy Act is heartening. ... SOPA awakened that sleeping giant. There are a lot of really smart hackers in this audience. We need to put our heads together and take control of this [political] system ... before the slow-thinking incumbents ... know what’s happening” (88).

Indeed, the effectiveness of the SOPA/PIPA blackout took Vermont Senator Patrick Leahy by surprise. As U.S. senators and representatives dropped their support of the anti-piracy bills after the blackout (89), Leahy retorted, “I understand and respect Majority Leader Reid’s decision to seek consent to vitiate cloture on the motion to proceed to the PROTECT IP Act. But the day will come when the senators who forced this move will look back and realize they made a knee-jerk reaction to a monumental problem. Somewhere in China today, in Russia today, and in many other countries that do not respect American intellectual property, criminals who do nothing but peddle in counterfeit products and stolen American content are smugly watching how the U.S. Senate decided it was not even worth debating how to stop the overseas criminals from draining our economy” (90).

Cary H. Sherman, CEO of the Recording Industry Association of America (RIAA) that represents music labels, criticized the blackout tactic in *The New York Times*: “Wikipedia, Google and others manufactured controversy by unfairly equating SOPA with censorship. ... The hyperbolic mistruths, presented on the home pages of some of the world’s most popular Web sites, amounted to an abuse of trust and a misuse of power. ... The violation of neutrality is a patent hypocrisy. ... What the Google and Wikipedia blackout showed is that it’s the platforms that exercise the real power. Get enough of them to espouse Silicon Valley’s perspective, and tens of millions of Americans will get a one-sided view of whatever the issue may be, drowning out the other side” (91).

Whether we are for or against SOPA and PIPA, January 18, 2012 will forever be remembered as a historic day when the new-age Internet technology companies triumphed over the age-old entertainment industry.

## **11.7 Battles over Internet Legislations – OPEN, ACTA, CISPA**

With more than 50,000 people petitioned the Obama administration to veto the SOPA bill (92), the White House issued an official response on “We the People on WhiteHouse.gov:”

“While we believe that online piracy by foreign websites is a serious problem that requires a serious legislative response, we will not support legislation that reduces freedom of expression, increases cybersecurity risk, or undermines the dynamic, innovative global Internet. ... Moving forward, we will continue to work with Congress on a bipartisan basis on legislation that provides new tools

needed in the global fight against piracy and counterfeiting, while vigorously defending an open Internet based on the values of free expression, privacy, security and innovation” (93).

While SOPA and PIPA have stalled indefinitely, California Representative Darrell Issa and Oregon Senator Ron Wyden have introduced the OPEN (Online Protection and Enforcement of Digital Trade) Act in the U.S. House of Representatives and the U.S. Senate respectively (94). The new bills are meant to deliver stronger intellectual property rights for American copyright holders while protecting the openness of the Internet.

Back in December 2011, AOL, eBay, Facebook, Google, LinkedIn, Mozilla, Twitter, Yahoo!, and Zynga sent an endorsement letter to Issa and Wyden to express their support of the OPEN Act (95). These were the same nine companies that opposed SOPA and PIPA.

In March 2012, Tiffiniy Cheng of Fight for the Future and Reddit co-founder Alexis Ohanian registered the domain name internetdefenseleague.org. Their new entity, Internet Defense League, announced in May their plan to defeat ACTA (Anti-Counterfeiting Trade Agreement) and CISPA (Cyber Intelligence Sharing and Protection Act).

Ohanian said, “You can only cry ‘Oh my gosh, they’re going to shut down the Internet’ so often. We’ve scared [Congress] from doing anything as egregious as SOPA and PIPA again. But the new challenge is this endless series of smaller bills that try to unravel internet rights” (36).

To Obanian’s disappointment, Facebook is one of the supporters of CISPA. Ohanian told *CNN*’s Soledad O’Brien in a May 2012 interview, “One of the big issues that a lot of us in the tech community have had of late has been their support for bills like CISPA that make it really easy for companies like Facebook to hand over private data about us without any due process” (96). The Internet Defense League ensures that the battles over Internet legislations rage on.

Notwithstanding the ongoing battles over government legislations, America’s largest Internet Service Providers (ISPs) have quietly begun implementing a “graduated response” antipiracy program on July 1, 2012 (97). The program requires Comcast, Cablevision, Time Warner Cable, Verizon, AT&T, and other ISPs to send out an educational notice to subscribers who download copyrighted content illegally. If a repeat infringer does not stop pirating, an ISP can apply “mitigation measures” such as throttling down the customer’s Internet connection speed or suspending his or her account altogether.

## 11.8 Peace on Facebook and Facebook Donate

Facebook’s mission is “to give people the power to share and make the world more open and connected” (98). In January 2008, Facebook and ABC News co-sponsored a Republican and a Democratic presidential debate in New Hampshire (99). “Through this partnership, we want to extend the dialogue both before and after the

**Fig. 11.6** Facebook Daily Friendships Statistics on August 25, 2012

Geographic Friendships	Connections
India-Pakistan	180,625
Israel-Palestine	19,155
Albania-Serbia	19,109
Greece-Turkey	6,767

Religious Friendships	Connections
Muslim-Christian	118,454
Christian-Atheist	32,131
Muslim-Jewish	554
Sunni-Shiite	132

Political Friendships	Connections
U.S.	7,885
Conservative/Liberal	

debate,” said Dan Rose, Facebook’s vice president for business development (100). “There are debates going on at all times within Facebook,” David Westin, the president of ABC News and a new Facebook member, said. “This allows us to participate in those debates, both by providing information and by learning from the users.” Although there were skeptics who believed that the Facebook/ABC News partnership was a failing concept out of the gate (101), experiments like it should be encouraged in order to foster more political activism among Facebook users.

In the realm of world peace, Facebook has a dedicated webpage titled “Peace on Facebook” <https://www.facebook.com/peace/> to highlight Friends Without Borders, Invisible Children, One Million Voices Against FARC, The People’s March Against Knife Crime, Stanford University’s Peace Innovation, and other activism (102).

Facebook poses the same question every day in the users’ own language: “Do you think we will achieve world peace within 50 years?” On August 14, 2014, the answer was a minuscule 5.41% in the United States (102). So Facebook is asking the follow-up question: “How can we grow this number?”

The Peace on Facebook webpage also displays statistics on friend connections created each day since November 5, 2011 between people of different regions, religions, and political affiliations. Figure 11.6 shows the daily friendships statistics in the past 24 hours for August 25, 2012. (Unfortunately, the interesting friendships statistics did not seem to be working anymore in August 2014.)

Besides world peace, Facebook has been involved with the rally against bullying (since 2011) (103), alerting Facebook users in the United States of their voting activities on the election day (since 2010) (104), and issuing AMBER Alerts in response to child abductions (since 2009) (105).

In partnership with Donate Life America, Mark Zuckerberg announced on May 1, 2012 that Facebook users could now identify themselves as potential organ donors on Facebook under the “Health & Wellness” section of the Life Event. “The Facebook partnership is an opportunity for people to share decisions,” said David Fleming, CEO of Donate Life America, “The most important part of this is actually registering to be a donor so that your wishes can be carried out. Sharing that decision through Facebook is an opportunity to encourage your friends and family to also register” (106).

In December 2013, Facebook introduced the “Donate” button with 19 nonprofit launch partners including American Cancer Society, ASPCA, Boys & Girls Clubs of America, DonorsChoose.org, Girls Inc., Red Cross, St. Jude Children’s Research Hospital, UNICEF, Water.org, and World Wildlife Fund (107). Charities can apply for the Facebook Donate program (108) and “100% of the payment goes to the non-profit” (109).

## 11.9 Internet Activism and Occupy Democracy

There are many Internet activist organizations in the United States. For example:

1. Co-founded by Sean Parker, former Facebook president, and Joe Green, former Harvard roommate of Mark Zuckerberg, Causes claims to be the world’s largest online platform for activism and philanthropy (110). Since 2007, Causes has brought together 186 million members in 156 countries to take on 1 billion actions.
2. Acquired by Causes in January 2013 (111), Votizen enables users to unlock the potential of their social networks (Facebook, LinkedIn, and Twitter) to see how their friends vote, and to campaign for the candidates by making endorsements and bringing their friends to their side. Votizen has collected data from 200 million registered American voters. Co-founder Jason Putorti told *Business Insider*, “Votizen allows people to find voters in their social networks. Only half of people are registered, so it’s actually non-trivial to know who votes, as well as see how they’re registered and how frequently they vote in their districts. You can then campaign with them to elect the candidates you want to win in 2012 up and down ticket. The way I explain it to people is you’re moving votes around that you can influence, so you can have a real impact not just where you live, but all over the country” (112).
3. Silicon Valley entrepreneurs Joan Blades and Wes Boyd founded MoveOn.org in 1998 in response to the impeachment of President Bill Clinton by the U.S. House of Representatives (113). With 8 million members as of August 2014, the online activist group offers “real Americans a voice in a political process where big money and corporate lobbyists wield too much influence” (114). In 2007, MoveOn.org launched a paid ad campaign on Facebook to protest against Facebook’s Beacon advertisements for “glaring violation of [Facebook’s] users’ privacy” (115).



4. The Sunlight Foundation is a nonpartisan nonprofit founded in 2006 that uses the power of the Internet to catalyze greater government openness and transparency (116). They provide software tools, open data, policy recommendations, journalism, and OpenGov Grants to expand citizen access to government information and to create accountability of public officials. The foundation's scope encompasses the U.S. Congress as well as government on the local, state, federal, and international level.
5. Created by David Wallechinsky, AllGov.com is an information repository about the business of government in the United States, France, and India (117). It details dozens of government agencies and names of hundreds of high-level government officials.
6. FWD.us is an immigration reform advocacy group led by Facebook CEO Mark Zuckerberg and entrepreneur Joe Green. In November 2013, FWD.us hosted a hackathon with DREAMers – undocumented immigrants who arrived in the United States as children and remain undocumented (118). And in January 2014, FWD.us launched the winning Push4Reform app aimed at helping supporters connect with Congress members and urge them to take action (119).

Internet activism (aka Web activism) is growing stronger by the number of causes, advocates, supporters, and philanthropists each day. For instance:

1. In October 2012 after 15-year-old Amanda Todd took her own life, the Anonymous hacktivist group tracked and exposed the man who allegedly posted the topless pictures and harassed the teenager via Facebook (120).
2. During the escalated Gaza-Israel conflict in November 2012 with deadly violence, the Israel Defense Forces (IDF) and the Palestinian Hamas made use of social media in an attempt to win over world sympathy (121). To wage peace, however, Israeli television producer Ido Simyoni started a project asking people to post anti-war photos on Instagram and tag them #stoptheterror (122).
3. Like the rest of the world, Beth Howard of Eldon, Iowa was horrified by the Sandy Hook Elementary School shooting on December 14, 2012 in Newtown, Connecticut. She told her Facebook friends about her plan to drive 1,100 miles to Newtown and hand out gift pies to grieving families. She received \$2,000 in donations within two hours; and more than 60 volunteers helped with pie-baking. "They were making pies for Newtown because of this one Facebook comment," she said. "That was a powerful thing" (123).
4. Less than 48 hours after George Zimmerman was declared "Not Guilty" in July 2013, trial juror B37 had signed a book deal in the midst of public outrage. One person took to Twitter to call for literary agent Sharlene Martin to drop Zimmerman Juror B37: "Only thing I can think to do is flood Sharlene Martin's phone, email, and snail mail, w/ requests that she drop juror B37. That sound good?" The same activist also created a Change.org petition that received over a thousand supporters within minutes. Martin eventually caved in and said, "After careful consideration regarding the proposed book project with Zimmerman Juror B37, I have decided to rescind my offer of representation in the exploration of a book based upon this case" (124).

5. In October 2013, the Anonymous hacktivist group demanded an immediate investigation into the handling by local authorities regarding the case of Daisy Coleman, the high schooler who said she was raped by a local football player. Anonymous said, “We have heard Daisy’s story far too often. We heard it from Steubenville, Halifax and Uttar Pradesh. ... If Maryville won’t defend these young girls, if the police are too cowardly or corrupt to do their jobs, if justice system has abandoned them, then we will have to stand for them” (125).
6. Phillip Atiba Goff, UCLA professor and president of the Center for Policing Equity, announced in May 2014 his plan to collect data for the nation’s first database to track police stops and use of force. Goff said, “Using big data to analyze police behavior across the country is the first step in harnessing these powers to make our society fairer. Although this justice database will not end unfairness in policing, it might give us tangible benchmarks from which to work in our conversations about race in the U.S. And it will let us learn how to ask the right questions to reduce racial disparities” (126).
7. Consumers can use the Buycott app to organize their spending to help causes that they believe in (127). By simply scanning the barcode on a given product, the app traces the product’s ownership back to its top parent company and cross-checks the company against the campaigns that the consumers have joined. Users can then make an informed decision to either support or avoid (i.e. buycott or boycott) the company. Go Daddy’s reverse stance on SOPA in December 2011 clearly demonstrated that massive boycott is very effective.
8. In September 2014, a petition on Change.org gathered nearly 193,000 signatures to demand the ouster of Centerplate CEO Desmond Hague. He was caught by a security camera that showed him kicking a puppy repeatedly. The online petition resulted in his resignation.

Inspired by the grassroots Occupy Movement against social and economic inequality, former Vice President Al Gore told an overcrowded audience at the South by Southwest conference in Austin, Texas, in March 2012, “Our democracy has been hacked. It no longer works, in the main, to serve the best interests of the people of this country. I would like to see a new movement called Occupy Democracy, where people who have Internet savvy remedy this situation” (128). Former U.S. Secretary of Labor Robert Reich concurred, “Our democracy is increasingly being taken over by big money and that’s wrong. ... We need to occupy democracy” (129).

## 11.10 Transnational (Arab-Israeli) Facebook Nation

The Internet has empowered individuals to start their own grassroots movements. Amid the longstanding Arab-Israeli conflict since 1920 that has taken more than 107,000 lives (130) and has cost more than \$12 trillion dollars (131), Ronny Edry, an Israeli graphic designer based in Tel Aviv, reached out to the people of Iran on Facebook in March 2012. Edry and his wife uploaded posters on the Facebook page of Pushpin Mehina with the resounding message “IRANIANS. We will never bomb your country. We \*Heart\* You” (132).

Edry shared his Facebook experience: “My idea was simple, I was trying to reach the other side. There are all these talks about war, Iran is coming to bomb us and we bomb them back, we are sitting and waiting. I wanted to say the simple words that this war is crazy. In a few hours, I had hundreds of shares and thousands of likes. . . . I think it’s really amazing that someone from Iran poked me and said ‘Hello, I’m from Iran, I saw your poster on Facebook.’ . . . I got a private message from Iran: ‘We love you too. Your word reaches out there, despite the censorship. And Iranian people, aside from the regime, have no hard feelings or animosity towards anybody, particularly Israelis’” (133).

Iran’s neighbor Pakistan has also banned Facebook for “hosting competitions featuring blasphemous caricatures.” On the first annual “Draw Muhamad Day” on May 20, 2010, the Facebook ban was temporary and lasted for 12 days (134). On the second annual event on May 20, 2011, however, the Lahore High Court ordered permanent blockage to Facebook and all websites that “spread religious hatred” (135).

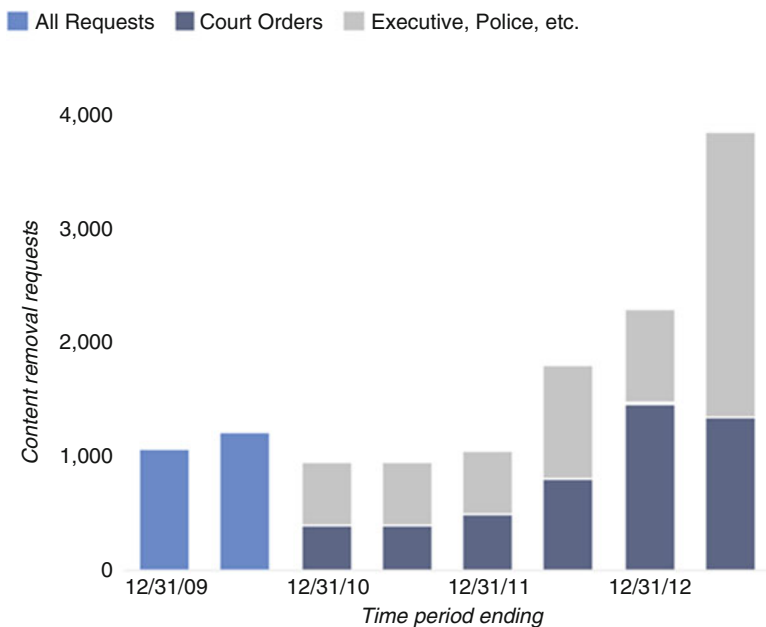
## 11.11 Internet Censorship in Western Democracies

Google released a Transparency Report in June 2012 showing an alarming rise in government censorship around the world. Google’s senior policy analyst Dorothy Chou wrote, “We’ve been asked to take down political speech. It’s alarming not only because free expression is at risk, but because some of these requests come from countries you might not suspect – Western democracies not typically associated with censorship” (136). Those countries included Canada, Czech Republic, Germany, Poland, Spain, the United Kingdom, and the United States. Figure 11.7 shows the increasing number of content removal requests from the U.S. government (137).

Twitter released its first Transparency Report on July 2, 2012 (138). Inspired by Google, Twitter aims to shed more light on government requests received for user information, government requests received to withhold content, and Digital Millennium Copyright Act (DMCA) takedown notices received from copyright holders. With data from January 1 to June 30, 2012, the Transparency Report revealed that an overwhelming 80% of the user information requests came from the United States, and Twitter provided the requested data 75% of the time. Japan came in a distant second, followed by Canada and the United Kingdom.

Apple released its first Transparency Report on November 5, 2013. *CNN*’s Heather Kelly summarized that “the United States submitted the most requests for account information, with 1,000 to 2,000 requests regarding 2,000 to 3,000 individual accounts. These requests might be for personal information found in iTunes, Game Center and iCloud accounts. . . . Germany made the second largest number of device requests, followed by Singapore” (139). However, Apple conceded that “at the time of this report, the U.S. government does not allow Apple to disclose, except in broad ranges, the number of national security orders, the number of accounts affected by the orders, or whether content, such as emails, was disclosed. We strongly oppose this gag order, and Apple has made the case for relief from these

### By Reporting Period



**Fig. 11.7** Google Summary of All Requests to Remove Content by Reporting Period (Ending 12/31/2009 to Ending 6/30/2013)

restrictions in meetings and discussions with the White House, the U.S. Attorney General, congressional leaders, and the courts. Despite our extensive efforts in this area, we do not yet have an agreement that we feel adequately addresses our customers’ right to know how often and under what circumstances we provide data to law enforcement agencies” (140).

“The only security of all is in a free press,” said President Thomas Jefferson, American Founding Father and principal author of the Declaration of Independence. “The force of public opinion cannot be resisted when permitted freely to be expressed” (141). Nevertheless, democratic governments have increasingly been securitizing journalists and reporters.

In 2012, the U.S. Justice Department secretly collected two months of telephone records for reporters and editors at The Associated Press (AP). In an outraged letter to Attorney General Eric Holder, AP’s President and CEO Gary Pruitt wrote, “These records potentially reveal communications with confidential sources across all of the newsgathering activities undertaken by the AP during a two-month period, provide a road map to AP’s newsgathering operations and disclose information about AP’s activities and operations that the government has no conceivable right to know. ... We regard this action by the Department of Justice as a serious interference with AP’s constitutional rights to gather and report the news” (142).

In 2013, *The Guardian* in London destroyed the hard drives containing top-secret documents leaked by Edward Snowden after a threat of legal action by the British government (143). The U.K. authorities detained Glenn Greenwald's partner David Miranda for nine hours as Miranda passed through London's Heathrow airport on this way home to Rio de Janeiro. Officials questioned him under Schedule 7 of the Terrorism Act 2000 (144) and confiscated his personal electronics including his mobile phone, laptop, camera, memory sticks, DVDs, and games consoles (145).

## 11.12 Internet Censorship in China

Unlike Western democracies, communist China made no content removal request to Google. Instead, China opts for preemptive measures and imposes severe Internet censorship by banning Facebook, YouTube, Twitter, and Snapchat as well as censoring search results and content from Google, Yahoo!, MSN, Baidu, and LinkedIn (146). "This is due to specific requirements within China to block certain content so that it does not appear on our network in that country," explained a LinkedIn message (147).

Although Skype is not banned in China, Chinese users must use a modified version of Skype (previously known as Tom-Skype) that follows Chinese regulations. Tom-Skype sent chat logs to the Chinese government server if certain keywords were typed (148). The new modified Skype has a new user interface created in partnership with Guangming Founder Information Technology (Beijing) Ltd. Co. (GMF) (149).

In June 2006, Paris-based Reporters Without Borders identified Yahoo! as the "strictest" search engine censor in China (150). In March 2010 when Google ceased filtering its search results in China (151), the search giant had to scale back operations in China and redirect users from Google.cn to its uncensored Google.com.hk in Hong Kong (152). In May 2011, eight New York residents filed a lawsuit against Baidu for aiding Chinese censorship in spite of the fact that Baidu is operating in China in full compliance with the Chinese laws (153).

Weibo, a Chinese counterpart of Twitter, had 61.4 million daily active users in December 2013 (154). The Chinese authorities are censoring the rumbustious microblogs by 24/7 monitoring, blacklisting users, deleting illegal or harmful posts, and intercepting messages with Deep Packet Inspection (155). In response, Weibo users have become skillful at evading censorship by inventing codewords and nicknames such as "Teletubby" for China's Prime Minister Wen Jiabao (156). Government censorship has forced Chinese activists to use increasingly obscure Internet memes and coded language on social media. In the diminishing returns of tricking China's censors, the practice is isolating the activists from the people that they are hoping to reach (157).

WeChat, a hugely popular Chinese microblogging service, offers greater privacy and variety of mobile apps than rival Weibo. It too has been adversely affected by China's censorship crackdown in March 2014 when a number of public pages maintained by prominent activists went dark permanently (158).

Dissident artist Ai Weiwei, who was jailed for 81 days for supporting Arab-style protests in China, wrote in *The Guardian*, “Chairman Mao used to say: ‘As communists we gain control with the power of the gun and maintain control with the power of the pen.’ You can see propaganda and the control of ideology as an authoritarian society’s most important task. ... Censorship is saying: ‘I’m the one who says the last sentence. Whatever you say, the conclusion is mine.’ But the internet is like a tree that is growing. The people will always have the last word – even if someone has a very weak, quiet voice. ... The internet is a wild land with its own games, languages and gestures through which we are starting to share common feelings. But the [Chinese] government cannot give up control. It blocks major internet platforms – such as Twitter and Facebook – because it is afraid of free discussion. And it deletes information. ... China may seem quite successful in its controls, but it has only raised the water level. It’s like building a dam: it thinks there is more water so it will build it higher. But every drop of water is still in there. It doesn’t understand how to let the pressure out. ... But in the long run, its leaders must understand it’s not possible for them to control the internet unless they shut it off – and they can’t live with the consequences of that. The internet is uncontrollable. And if the internet is uncontrollable, freedom will win” (159).

### **11.13 Arab Spring Uprisings, Egypt, Syria, Sandi Arabia, and Turkey**

Social media has played a vital role in Arab Spring uprisings including the 2011 Egyptian revolution (160). Activists organized through Facebook and Twitter the nationwide protests on January 28, 2011 to call for an end to President Hosni Mubarak’s government (161).

Mubarak reacted by blocking social media sites and mobile phone networks. A day before the planned demonstrations, the Egyptian government began to shut down Internet access nationwide. By midnight January 28, virtually all of Egypt’s Internet addresses were unreachable (162). Unprecedented in the history of the Internet, Egypt had successfully shut down 88% of the Egyptian Internet and 9 out of 10 Internet Service Providers (ISPs) (163).

Google responded to the Internet blockade by working with Twitter and SayNow to unveil a web-free speak-to-tweet service (Speak2Tweet), allowing anyone to send and receive tweets by calling a phone number (164).

Mubarak’s totalitarian action failed to thwart the planned demonstrations. Fourteen days later on February 11, 2011, Mubarak resigned as president. In May 2011, a judge in Cairo found Mubarak and two officials guilty of “causing damage to the national economy” for cutting cellphone and Internet services during the protests in January (165). Mubarak was fined \$33.6 million. Approximately \$16.8 million would be paid to telecommunications companies that were forced to suspend their services during the revolution.

In November 2012, more than 90% of the Internet access in Syria was shut down by the government in an attempt to limit the dissemination of images and videos taken by the opposition activists. U.S. Ambassador to Syria Robert Ford said, “The Syrian government has been monitoring [the Internet] for years. They have been using the Internet with Iranian assistance to track opposition activists, arrest and kill them. That is the reason why our non-lethal assistance to the Syrian opposition, we put a special emphasis on communications equipment precisely to help the Syrian people tell the world what is going on inside Syria” (166). Google also pitched in by offering the Speak2Tweet service in Syria (167).

In April 2013, Saudi Arabia’s Communications and Information Technology Commission threatened to block messaging applications Skype, Viber, and WhatsApp in order to force the apps to comply with government rules. “I believe a big part of the reason why this is happening ... is because lots of demonstrations that were organized in Saudi Arabia were done through the use of WhatsApp,” explained Eman Al-Nafjan, a prominent blogger in Saudi Arabia (168).

In March 2014, Turkey’s prime minister Recep Tayyip Erdogan vowed to “eradicate” Twitter and to shut down Facebook and YouTube in an attempt to block embarrassing leaks of government corruption (169). As Turkish Internet users began to experience widespread Twitter disruption on March 20, Twitter swiftly offered subscribers a workaround using cell phone instant messaging: “Turkish users: you can send Tweets using SMS. Avea and Vodafone text START to 2444. Turkcell text START to 2555” (170). The following day on March 21, Hillary Clinton (@HillaryClinton) tweeted, “The freedom to speak out & to connect is a fundamental right. The people of Turkey deserve that right restored. #Twitterisblockedinturkey” (171)

In June 2014 during the intensifying conflict in Iraq, many Iraqis could not get on Facebook and Twitter, but they were able to use the Whisper app to share real-time information anonymously. Before the media could confirm the U.S. embassy’s partial staff relocation, a whisper was posted online: “US embassy in Baghdad is evacuating!!! Yeppppppp!!!!” (172).

## 11.14 The Rise of Facebook Nation

Elsewhere in Norway, Christine Bar and Lili Hjonnevag posted on Facebook a call to assemble a choir in downtown Oslo in protest against mass murderer Anders Behring Breivik (173). Bar and Hjonnevag expected a few dozen responses, but 4,000 people accepted their Facebook invitation, and a mass choir of 40,000 braved the pouring rain and gathered at Oslo’s Youngstorget square on April 26, 2012 (174). Artist Lillebjørn Nilsen led the choir to sing the song “Children of the Rainbow” (Barn av regnbuen) in protest of Breivik who cited in court that the song was an example of Marxist influence on Norwegian children.

On April 30, 2012, 9-year-old Martha Payne in Scotland started blogging about her school lunches, rating and photographing each meal (175). Payne’s blog, NeverSeconds, attracted international attention from schoolchildren, parents, and



even British celebrity chef Jamie Oliver who sent a tweet to Payne's father, "Shocking but inspirational blog. Keep going, Big love from Jamie x" (176). Payne also raises money for Mary's Meals that sets up school feeding projects in the world's poorest communities. However, Scotland local government Argyll and Bute Council banned Payne from taking pictures in the dining hall for the reason of "unwarranted attacks on its schools catering service which culminated in national press headlines which have led catering staff to fear for their jobs" (176). Payne's supporters wrote many encouraging comments such as "you are an inspiration, bless you for being upfront and honest and not afraid to speak up" and "the world needs your voice; don't let a couple of frightened adults silence you." Amid mounting public criticism of government censorship, Argyll and Bute Council eventually withdrew the ban.

In May 2012, Manal al-Sharif, co-founder of the Women2Drive campaign, received the Václav Havel Prize for Creative Dissent at the Oslo Freedom Forum (177). Advocating for women's right to drive in Saudi Arabia, Al-Sharif filmed herself a year earlier in May 2011 driving through the Saudi city of Khobar, and posted the video on YouTube and Facebook. In her Havel Prize acceptance speech, Al-Sharif said, "We are only a drop in this world ... but the rain starts with a single drop" (178).

In June 2012, *Time Magazine's* congressional correspondent Jay Newton-Small asked the Syrian dissident Abu Ghassan whether his AK-47 or his video camera was the more powerful weapon. Ghassan replied, "My AK!" But he paused for a few seconds, and said, "Actually, if there is an Internet connection, my camera is more powerful" (179). Partially aided by the Internet Freedom Grants from the U.S. State Department, Syrian rebels have been filming the protests and posting them on the Internet (180).

In April 2014, Mozilla cofounder and CEO Brendan Eich resigned over anti-same-sex-marriage controversy, just 10 days after his promotion to chief executive officer (181). Gay rights activists took to blogs and Twitter to express outrage over Eich's donation to the 2008 California Proposition 8 campaign to ban same-sex marriage in the state. Online dating site OkCupid joined the protests and asked its users to boycott Mozilla's Firefox browser (182).

In the same month of April, advertising technology firm RadiumOne's board of directors reluctantly fired its founder, chairman, and CEO Gurbaksh Chahal after a social media firestorm (183). Chahal pleaded guilty to domestic violence and battery charges for assaulting his girlfriend. Although the RadiumOne board members were unanimously supportive of Chahal, the uproar in the press and social media proved to be a potent backlash that led to his termination 10 days after his guilty pleas (184).

Social networks have been playing an important role everywhere in the world with no exception. With the rise of Facebook nation with over 1.32 billion monthly Facebook users and more than 2 billion people worldwide connected to the Internet, the World Wide Web is an open platform for debates of opposing views and an outlet for unpopular voices. "What makes the Internet so great is that it's interactive," AllGov.com editor-in-chief David Wallechinsky told *CNN* in a 2014 interview. "You can see opposing sources – if you know how to use it" (185).

Internet activism, spearheaded by private individuals as well as organizations, is becoming a driving force for peace and justice around the world regardless of the ruling regimes. Facebook is helping to spread the news more than ever. Facebook executive Justin Osofsky reported that “on average referral traffic from Facebook to media sites has increased by over 170% throughout the past year. In fact, from September 2012 to September 2013, TIME’s referral traffic has increased 208%, BuzzFeed is up 855%, and Bleacher Report has increased 1,081%” (186).

## 11.15 Electoral College, Social Network Constitution, and Cyber Civil Rights

Grassroots campaigns can help put issues and people on the public agenda. Although Web activism has generated public awareness and achieved some significant results, believing that the Internet empowers each and every individual is somewhat naive.

In the United States of America, the Electoral College, not the American voters, directly elects the President and Vice President of the United States. Known as indirect election, 538 electors from 50 states and the District of Columbia represent some 200 million registered American voters in a U.S. presidential election. Unbeknownst to many voters, Americans cast their ballots for presidential and vice presidential candidates by voting for correspondingly pledged electors. Despite its rarity, some electors can be either unpledged or faithless, and they can ignore the popular votes altogether. A presidential candidate can win the election but lose the popular vote, or vice versa.

Similarly, the Internet is becoming the online equivalent of the Electoral College. Google, Facebook, Twitter, Wikipedia, YouTube, and other high-traffic websites are the online electors representing the voices of individuals, businesses, and special interest groups. These electors are capable of exerting great influences on politics, as we have witnessed in the SOPA/PIPA blackout.

Cary H. Sherman, CEO of the Recording Industry Association of America (RIAA), described the SOPA/PIPA blackout as “the digital tsunami that swept over the Capitol ... forcing Congress to set aside legislation to combat the online piracy of American music, movies, books and other creative works, raised questions about how the democratic process functions in the digital age” (91).

Political strategist and Internet consultant Wesley Donehue warned of the influence of social media in America: “Well for starters, we don’t live in a democracy. We never have, nor should we. We live in a republic, where we elect people to take the tough votes and make the tough decisions for us. ... Too many politicians aren’t voting their conscience, they’re voting to placate blog commenters, and that’s no way to run government. ... Technology has expedited our descent toward a political system devoid of real ideas and bold, controversial thought” (187).

Why is it that technology is often the one to blame? On the contrary, social media encourages people to “think aloud” and come up with bold, new, controversial, or opposing ideas. Bloggers make certain that the political process is no longer confined

to “backroom deal-making in a smoke-filled room.” Chinese scholar Chen Zhiwu at Yale University wrote, “Microblogs are the best weapon to reduce corruption, improve social governance and make officials behave well” (188). The United States is light years ahead of China in democracy. Facebook nation will certainly transform the republic in the years to come. Nonetheless, Donehue’s controversial and thought-provoking statement is a wake-up call for Americans to examine and comprehend the all-important U.S. Constitution.

Prof. Lori B. Andrews at Chicago-Kent College of Law suggested that since Facebook has become as big and powerful as a country, it is high time that its citizens got a “Social Network Constitution” that governs in minute detail what a social network should or should not do (189):

“We the people of Facebook Nation, in order to form a more Perfect Internet, to protect our fundamental rights and freedoms, to explore our identities, dreams, and relationships, to safeguard the sanctity of our digital selves, to ensure equal access to technology, to lessen discrimination and disparities, and to promote democratic principles and the general welfare, declare these truths to be self-evident:

1. The Right to Connect.
2. The Right to Free Speech and Freedom of Expression.
3. The Right to Privacy of Place and Information.
4. The Right to Privacy of Thoughts, Emotions and Sentiments.
5. The Right to Control One’s Image.
6. The Right to Fair Trial.
7. The Right to an Untainted Jury.
8. The Right to Due Process of Law and the Right to Notice.
9. Freedom from Discrimination.
10. Freedom of Association” (190).

The Social Network Constitution would give us the ammunition to mandate Internet businesses to behave constitutionally. Moreover, government legislations affecting Facebook nation would be tested on the ground of being constitutional. Take the case of Malcolm Harris as an example. In February 2012, the District Attorney’s Office in Manhattan issued Twitter a subpoena to ask for three months of information connected to the Twitter account that belongs to Harris, who was arrested and charged with disorderly conduct on the Brooklyn Bridge for the Occupy Wall Street protest (191). In May 2012, Twitter filed a motion in New York state court seeking to quash the court order for turning over the requested information: “If the Fourth Amendment’s warrant requirement applies merely to surveillance of one’s location in public areas for 28 days, it also applies to the District Attorney’s effort to force Twitter to produce over three months worth of a citizen’s substantive communications, regardless of whether the government alleges those communications are public or private” (192).

American Civil Liberties Union (ACLU) applauded Twitter’s decision: “This is a big deal. ... If Internet users cannot protect their own constitutional rights, the only hope is that Internet companies do so. ... That is why it is so important to

encourage those companies that we all increasingly rely on to do what they can to protect their customers' free speech and privacy rights" (193).

ACLU proposes that companies who are stewards of our digital lives should (194):

1. Tell you when the government is asking for your information so that you can protect yourself;
2. Disclose how often they share information with the government;
3. Stand up for user privacy in the courts and in Congress;
4. Advocate for an update to the outdated Electronic Privacy Communications Act (ECPA) which was passed in 1986 before the Internet as we know it today existed.

In the age of big data and prevalence of Google search, nonconsensual disclosure of naked images as in "revenge porn" is a growing problem. Prof. Danielle Keats Citron from the University of Maryland wrote an opinion piece on *CNN*, "A new law in Israel makes it a sex crime to post sexual pictures or videos to the Internet without the consent of the person featured in them. We need to follow that example. ... Because searches of victims' names display their naked images, they lose their jobs. Schools have fired teachers whose naked photos appeared on revenge porn sites. ... We need a 'cyber civil rights' agenda to combat bigoted online abuse. The criminalization of nonconsensual disclosure of someone's naked images is an important part of that agenda" (195).

In January 2014, Hunter Moore, founder of a now-defunct revenge porn website, was indicted for peddling hundreds of nude pictures without obtaining permission, and for hacking into people's email accounts to steal nude photos to post online (196).

In May 2014, Argentine model María Belén Rodríguez took to the Supreme Court of Argentina to sue Google and Yahoo! over images of her that link to porn sites. The European Court agreed and ruled that search engines can be forced to erase links to content about individuals on the Web (197).

These are some baby steps in the right direction for cyber civil rights. One may ponder the bigger question: What will the Constitution be like if the people governed by the Constitution get to create it themselves?

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**Part V**  
**Total Information Awareness**  
**in Facebook Nation**

# Chapter 12

## Generation C in the Age of Big Data

*“No activity is too big or too small to share. You don’t have to ‘Like’ a movie. You just watch a movie.”*

– Facebook CEO Mark Zuckerberg (September 2011)

*“Digital omnivores consume content everywhere they go across every device whether it’s their PC, tablet or smartphone.”*

– Sarah Radwanick of comScore (February 2012)

### 12.1 Digital Omnivores and Generation C

In October 2011, Internet marketing research company comScore coined the term “digital omnivores” to describe the new generation of digital media consumers, especially those living in the United States, the United Kingdom, Singapore, Japan, and Australia (1).

According to Intel, 639,800 GB of data is transferred every minute on the Internet. That includes 204 million emails sent, 61,141 hours of music on Pandora, 47,000 app downloads, 20 million photo views on Flickr, 100,000 new tweets, 277,000 Facebook logins, 6 million Facebook views, 2 million Google searches, and 1.3 million video views on YouTube (see Fig. 12.1) (2).

“Today’s digital media environment is rapidly evolving, driven by the proliferation of devices people use to consume content both at home, at work and on the go,” the comScore report affirmed. “With smartphones, tablets and other connected devices, consumers have become digital omnivores – not just because of the media they consume, but also in *how* they consume it. Cross-platform consumption has created a vastly different digital landscape, and it is one that requires insight into both the individual usage of devices as well as the nature of their complementary use” (3). For example, comScore’s study shows that during the day, a higher share of digital content is consumed over computers and mobile phones due to workplace and daily activity; whereas during the nighttime hours, tablets have the highest usage as the consumers are winding down at home on the couch or bed.

“Digital omnivores consume content everywhere they go across every device whether it’s their PC, tablet or smartphone,” said comScore communications analyst Sarah Radwanick. “We will see a spotlight on these consumers during multimedia

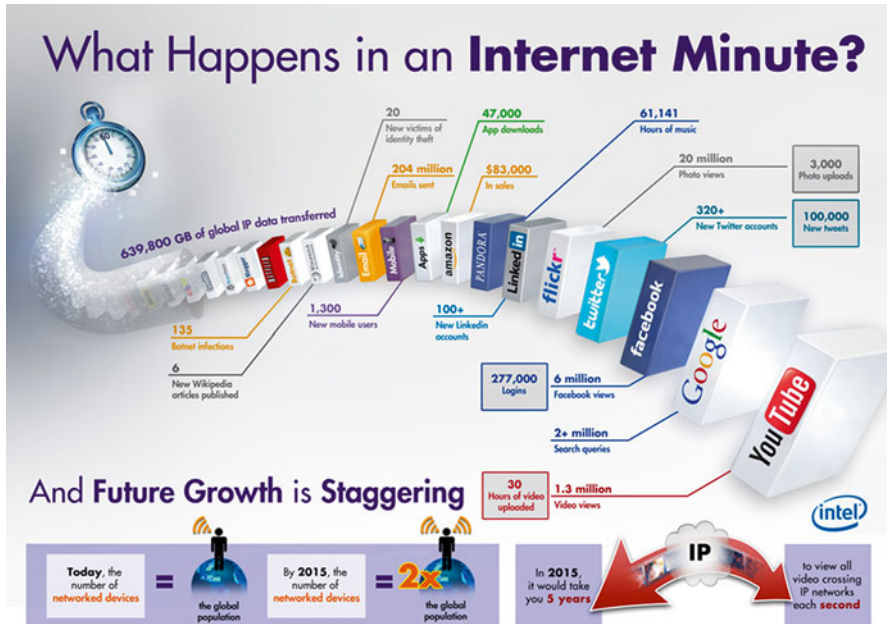


Fig. 12.1 What Happens in an Internet Minute? (Courtesy of Intel)

extravaganzas like the Summer Olympics and the presidential election where (they) need to stay plugged in to the latest news and events” (4).

Nielsen and NM Incite issued a report in 2012 titled “State of the Media: U.S. Digital Consumer Report, Q3-Q4 2011.” The report says, “Born sometime between the launch of the VCR and the commercialization of the Internet, Americans 18-34 are redefining media consumption with their unique embrace of all things digital. ... This group – dubbed ‘Generation C’ by Nielsen – is taking their personal connection – with each other and content – to new levels, new devices and new experiences like no other age group (5).

In the world overflowing with digital information, the digital omnivores devour both nutritious information as well as empty information calories. Clay Johnson, author of *The Information Diet*, warns that “just as we have grown morbidly obese on sugar, fat, and flour—so, too, have we become gluttons for texts, instant messages, emails, RSS feeds, downloads, videos, status updates, and tweets” (6).

Indeed, some people are starting to feel overwhelmed and reacting to information overload. A recent survey commissioned by Citi Investment analyst Mark Mahaney in 2012 indicated that 71% of Netflix subscribers are “not at all interested” in “seeing what [their] Facebook friends have watched on Netflix” (7). If this sentiment prevails among Facebook users, it will eventually undermine the idea of “frictionless sharing” on Facebook. For the time being, nonetheless, more and more data is being generated and consumed every second in the modern age of big data.

## 12.2 Big Data Research and Development Initiative

Global market intelligence firm IDC estimates that the amount of data is growing at 50% a year, or more than doubling every two years (8). Much of the data are online in the form of text, images, and videos on the Internet, from personal data to public records and everything in between.

At the World Economic Forum in January 2012, a report titled *Big Data, Big Impact* declared data a new class of economic asset, like currency or gold. It reads, “The amount of data in the world is exploding – large portion of this comes from the interactions over mobile devices being used by people in the developing world – people whose needs and habits have been poorly understood until now” (9).

In an email dated March 27, 2012, the Office of Science and Technology Policy stated, “Researchers in a growing number of fields are generating extremely large and complicated data sets, commonly referred to as big data. A wealth of information may be found within these sets, with enormous potential to shed light on some of the toughest and most pressing challenges facing the Nation. To capitalize on this unprecedented opportunity to extract insights and make new connections across disciplines, we need better tools and programs to access, store, search, visualize, and analyze these data. To maximize this historic opportunity – and in support of recommendations from the President’s Council of Advisors on Science and Technology – the Obama Administration is launching a Big Data Research and Development Initiative, coordinated by the White House Office of Science and Technology Policy and supported by several Federal departments and agencies.”

On March 29, 2012, the Obama administration announced more than \$200 million in funding for “Big Data Research and Development Initiative” (10). The first wave of agency commitments includes National Science Foundation, National Institutes of Health, Department of Energy, U.S. Geological Survey, and Department of Defense (including DARPA) (11).

Not to imply that DARPA intends to resurrect the Total Information Awareness program, the DARPA-proposed Anomaly Detection at Multiple Scales (ADAMS) program is one of several key technologies that are directly applicable to Total Information Awareness. And Information Innovation Office has replaced the Information Awareness Office (12). According to the White House document, ADAMS “addresses the problem of anomaly detection and characterization in massive data sets. In this context, anomalies in data are intended to cue collection of additional, actionable information in a wide variety of real-world contexts. The initial ADAMS application domain is insider threat detection, in which anomalous actions by an individual are detected against a background of routine network activity” (13).

## 12.3 Big Data in Public Health and Economics

Centers for Disease Control and Prevention (CDC) is also a beneficiary of the Big Data Research and Development Initiative. CDC’s BioSense program “is a public health surveillance system that increases the ability of health officials at local, state,

and national levels to efficiently, rapidly and collaboratively monitor and respond to harmful health effects of exposure to disease or hazardous conditions” (14).

The predictive power of big data has shown great promise in public health forecasting. For example, Google Flu Trends uses aggregated Google search data to estimate current flu activity around the world in near real-time (15). A spike in Google search requests for terms like “flu symptoms” and “flu treatments” often predicts quickly and correctly an increase of flu patients in a monitored region. In comparison, emergency room reports usually lag behind patient visits by two weeks or more.

In economic development and forecasting, *Forbes* has been advising CEOs and IT people to take an inventory of all the data that their business produces, and turn the data into new revenue streams (16). For instance, MasterCard has built an advisory business using its core credit card purchasing data to help merchants analyze consumer-buying trends (17).

Big data analysis is also used to track shadow economic activities worldwide. A research report estimated the value of the underground economy in the United States at about \$2 trillion annually (18). In July 2012, U.S. Senate released a report on global banking giant HSBC exposing the U.S. financial system to a wide array of money laundering, drug trafficking, and terrorist financing risks due to poor anti-money laundering (AML) controls (19). SynerScope is one of new startups that develop big-data tools to analyze millions of transactions in order to help authorities track and halt money laundering (20).

## 12.4 Big Data in Facebook and Google

Facebook and Google are experts in harnessing big data with Internet advertising. According to the Facebook IPO S-1 filing statement, Facebook’s 2011 advertising revenues were \$3.15 billion (21). Meanwhile, Google’s 2013 advertising revenues were a striking \$50 billion according to Google’s Income Statement Information (22).

Since Facebook renamed its “Privacy Policy” to “Data Use Policy” in September 2011, Sarah A. Downey, an analyst at the online privacy company Abine, said, “This is a significant acknowledgement that Facebook is focused on data collection, data storage and data sales, because that’s where they make their money” (23).

In promoting “frictionless sharing,” Mark Zuckerberg suggested that people would benefit from publishing more data and letting computer algorithms sort out what is important. “No activity is too big or too small to share,” Zuckerberg said. “You don’t have to ‘Like’ a movie. You just watch a movie” (24).

How does Facebook determine what is important to the users? Facebook CTO Bret Taylor disclosed, “Facebook programmers have created a mathematical algorithm that will examine the types of posts a person has chosen to give prominent placement to on his or her profile. ... Whether food, movies or exercises logged into Facebook, the site will try to predict what you’re most passionate about based on

past choices, similar to how the system determines its news feed based partly on the people you contact most often” (25). The official Facebook site also describes, “Just like the search engines we all know and love, Facebook utilizes a number of algorithms as part of their system for sharing information. EdgeRank is the algorithm which determines who sees what, basically – it determines what social objects (i.e. updates, posts, photos, actions etc) you will see in your Facebook news feed” (26).

Google also uses mathematical algorithms such as PageRank to determine the relevance of the search results it gives back to the users (27). In addition, artificial intelligence techniques are being used to construct a giant “knowledge graph” to better understand the context of search terms and to return more in-depth search results to the questions posted by the users. Google Fellow and Senior Vice President Amit Singhal revealed in 2012, “Google is building a huge, in-house understanding of what an entity is and a repository of what entities are in the world and what should you know about those entities. ... The huge knowledge graph of interconnected entities and their attributes now has north of 200 million entities. ... Google is building the infrastructure for the more algorithmically complex search of tomorrow” (28).

Google began rolling out knowledge graph in May 2012 to users in the U.S. (29). While knowledge graph is helpful in optimizing search for everyone, Google also personalizes its search results based on the user’s preferences determined by cookies, IP addresses, and signing in with a Google account. Google explains, “When the web first started, it was a set of static pages that looked the same for everybody. Nowadays, the web has become even more useful because websites can know something about you that helps them guess what you would like to view. For example, they can remember whether you want them in English or French, can suggest books or movies you might enjoy based on what you’ve viewed in the past, and can store your delivery address ready for your next purchase” (30).

Using computer algorithms and our past online activities, Facebook and Google are guessing what we want to find, to see, and to like. The results can be helpful but at the same time can be limiting the possibilities of us discovering new ideas and new interests on the Internet. Michael Rigley made an interesting argument in his video titled *Network*: “Ad servers assign an individual a demographic, based on their digital histories. Once assigned, individualized information is deployed to the user. Location data is filtered into intrusive localized advertising. Facebook ‘Likes’ transform into custom Walmart ads, and search engine results are narrowed to a limited scope. The global Internet becomes the personal Internet. And information ceases to be information at all” (31).

Google’s mission is to “organize the world’s information and make it universally accessible and useful” (32). The phrase “Google it!” has become a universal slang. In searching for information in the modern world of big data, it would be a great disservice to users if Google were to filter its search results through colored glasses. University of Virginia professor Siva Vaidhyanathan considered Google insidious and questioned the search giant’s influence on our society: “What is the nature of the transaction between Google’s computer algorithms and its millions of human users? Are we heading down a path toward a more enlightened age, or are we approaching a dystopia of social control and surveillance?” (33).

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# Chapter 13

## Living in Facebook Nation

*“On the Internet, nobody knows you’re a dog.”*

– Cartoonist Peter Steiner (July 1993)

*“No activity is too big or too small to share. You don’t have to ‘Like’ a movie. You just watch a movie.”*

– Facebook CEO Mark Zuckerberg (September 2011)

*“We are our real identities online.”*

– Facebook COO Sheryl Sandberg (January 2012)

*“It’s kind of a fiction to pretend that you can put something out on the Internet, and then delete it.”*

– Tom Lee of Sunlight Foundation (June 2012)

*“The things we do and say online leave behind ever-growing trails of personal information.”*

– American Civil Liberties Union

*“Social media has given a new meaning to life after death.”*

– Newton Lee

### 13.1 Digital Personalities and Identities

It used to be that “on the Internet, nobody knows you’re a dog” – as it was cleverly depicted by Peter Steiner in his famous cartoon published on July 5, 1993 in *The New Yorker* (1). Six years later on May 7, 2009, a real dog named “Boo” joined Facebook. By August 2014, Boo has garnered 15 million “Likes” on Facebook as a “Public Figure,” surpassing the popularity of most human public figures on the social network (2). Everyone can have his or her own digital personality and identity online.

IBM released a new study in April 2012 that identified four emerging digital personalities – efficiency experts, content maestros, social butterflies, and content kings – respectively representing 41%, 35%, 15%, and 9% of the online population (3). Efficiency experts are proficient Internet users; content maestros are media consumers and gamers on the web and on mobile devices; social butterflies are Facebook and Twitter addicts; and content kings are both consumers and creators of rich media.

Prof. Mitja Back of Johannes Gutenberg University in Mainz, Germany, studied a group of Facebook users and concluded, “Online social networks are so popular and so likely to reveal people’s actual personalities because they allow for social interactions that feel real in many ways. ... Facebook is so true to life that encountering a person there for the first time generally results in a more accurate personality appraisal than meeting face to face” (4).

On the other hand, *Consumer Reports* magazine conducted a survey of 2,002 online households, including 1,340 that are active on Facebook. The findings based on the January 2012 survey showed that 25% of Facebook users falsified information in their profiles to protect their identity (5).

Moreover, a Facebook profile may represent the alter ego of a person. UCLA Prof. Patricia Greenfield and researcher Adriana Manago published their research on Facebook and MySpace in the November-December 2008 issue of the *Journal of Applied Developmental Psychology* (6). “You can manifest your ideal self,” said Manago, “You can manifest who you want to be and then try to grow into that. We’re always engaging in self-presentation; we’re always trying to put our best foot forward. Social networking sites take this to a whole new level. You can change what you look like, you can Photoshop your face, you can select only the pictures that show you in a perfect lighting. These websites intensify the ability to present yourself in a positive light and explore different aspects of your personality and how you present yourself. You can try on different things, possible identities, and explore in a way that is common for emerging adulthood. It becomes psychologically real. People put up something that they would like to become – not completely different from who they are but maybe a little different – and the more it gets reflected off of others, the more it may be integrated into their sense of self as they share words and photos with so many people.”

“People are living life online,” Greenfield added to Manago’s statements. “Identity, romantic relations and sexuality all get played out on these social networking sites. All of these things are what teenagers always do, but the social networking sites give them much more power to do it in a more extreme way. In the arena of identity formation, this makes people more individualistic and more narcissistic; people sculpt themselves with their profiles.”

In the case of Boo the dog on Facebook, Boo is the living alter ego of his behind-the-scene owner who never appears in any of the Facebook pictures. Facebook’s chief operating officer Sheryl Sandberg said at the January 2012 Digital Life Design (DLD) conference in Munich, “We are our real identities online” (7).

## 13.2 Intertwining Lives, Online and Offline

In a pep talk at Wakefield High School in September 2009, President Barack Obama told the students, “Be careful what you post on Facebook. Whatever you do, it will be pulled up later in your life” (8).

For many people, life online is as real as life offline. The two lives are intertwined; each of them affects the other, both in the psychological and physical sense. On one hand, some people utilize social media to help them stay in shape. Social apps that track and share their fitness habits make them feel accountable and more likely to follow through with their fitness plans. On the other hand, Prof. Lori B. Andrews at Chicago-Kent College of Law pointed out that “virtually every interaction a person has in the offline world can be tainted by social network information” (9). The following are some examples of the adverse effects of online life that made headline news:

1. In summer 2009, 24-year-old public high school English teacher Ashley Payne went to Europe for a summer vacation. She posted her vacation photos on Facebook. One of the pictures showed a smiling Payne holding a glass of wine and a mug of beer. She also used the “B” word on Facebook and thought that only her closest friends could access her Facebook page. Payne did not realize that despite the Facebook privacy settings, no one could ever guarantee the absolute privacy of content posted on the Internet. When the school principal found out about the Facebook photo and profanity, Payne was forced to resign (10).
2. In March 2011, Comedian Gilbert Gottfried was fired from his job as the voice of the Aflac duck for making a dozen of tasteless jokes on Twitter about the Japan tsunami (11). One of his tweets was: “Japan is really advanced. They don’t go to the beach. The beach comes to them” (12).
3. In June 2011, U.S. representative Anthony Weiner from New York resigned after a sexting scandal in which he admitted having “engaged in several inappropriate conversations conducted over Twitter, Facebook, email and occasionally on the phone” and had exchanged “messages and photos of an explicit nature with about six women over the last three years” (13).
4. In June 2011, Corinne Gregory told a story of a high school graduate who applied for a job as security guard for the local Port Authority. The recruiter asked the applicant if he or any of his friends had ever been incarcerated. He honestly answered “no.” However, the recruiter pulled out a copy of his Facebook page, with two of his “friends” highlighted; and those two “friends” were indeed in jail for their convicted crimes. Although the applicant denied knowing those two people at all, he did not get the job (14).
5. In April 2012, Marine Sgt. Gary Stein posted on his Facebook pages derogatory comments about President Barack Obama. As a direct consequence, a military board recommended that Stein be discharged for violating “good order and discipline” required by all U.S. military service members (15).
6. In July 2012, Greek triple jumper Paraskevi Papachristou was banned from the 2012 London Olympics and suspended from her country’s Olympic team because of one offensive tweet: “With so many Africans in Greece, at least the mosquitoes of West Nile will eat homemade food” (16). “I would like to express my heartfelt apologies for the unfortunate and tasteless joke I published on my personal Twitter account,” Papachristou wrote on her Facebook page. “I am very sorry and ashamed for the negative responses I triggered, since I never wanted to offend anyone, or to encroach human rights.”

7. In February 2013, 18-year-old Justin Carter was arrested for making a threat on Facebook during a heated argument about the online video game “League of Legends.” Someone wrote to Carter on Facebook, “Oh you’re insane. You’re crazy. You’re messed up in the head.” To which Carter replied, ““Oh yeah, I’m real messed up in the head. I’m going to go shoot up a school full of kids and eat their still-beating hearts.” Carter ended up in jail for over four months (17). His lawyer, Donald H. Flanary III commented, “The law enforcement, the sheriff’s department, the district attorney’s office – nobody wants to be the one that let him go. They don’t think about the person or the crime or the lack of crime ... they don’t want to take responsibility for something happening in the future” (18).
8. In August 2013, two Virginia day care workers were fired after they posted on Instagram photos of children in their care, along with comments mocking the young kids. “He is thinking cuz sure can’t talk,” one employee wrote of a 2-year-old boy who was pictured sitting in a chair, looking dejected (19). The child was diagnosed with speech delay.
9. In August 2013, *CNN* reported that “references to drugs, comments about hazing and pictures of semi-nude women taken from posts on a closed Facebook page have prompted the suspension of Pi Kappa Alpha fraternity on Florida International University’s Miami campus” (20). In a similar incident, *HLN* reported that “Many students on college campuses have been learning a hard lesson recently: Private correspondence and social media pages don’t always stay private, particularly, it seems, when the subject matter is questionable. ... A controversial e-mail from a Georgia Tech student to his fraternity brothers ... prompted online ire and immediate action from the school and the fraternity involved” (21).
10. In December 2013, top PR executive Justine Sacco at media company IAC tweeted “Going to Africa. Hope I don’t get AIDS. Just kidding. I’m white!” on her way to Cape Town, South Africa. After her plane had landed 12 hours later, she realized that she had been fired. Sacco apologized “for being insensitive to this crisis – which does not discriminate by race, gender or sexual orientation, but which terrifies us all uniformly – and to the millions of people living with the virus, I am ashamed” (22).
11. In January 2014, a Canadian teenage girl was found guilty of distributing child pornography in connection with “sexting” pictures of her boyfriend’s ex-girlfriend (23). Similar to the idea of revenge porn, the teenager texted to a group of people several explicit pictures of the ex-girlfriend that she found on her boyfriend’s phone.
12. In May 2014, PayPal’s new director of strategy Rakesh “Rocky” Agrawal was drunk in early morning hours, and he fired off denigrating tweets to insult some of his fellow colleagues. Within hours, PayPal tweeted back, “Rakesh Agrawal is no longer with the company. Treat everyone with respect. No excuses. PayPal has zero tolerance” (24). Agrawal later published an apology on LinkedIn: “Those tweets were intended as a confidential communication; I am deeply sorry that they became public” (25).

There are countless other stories that did not make national news. The potential impact of our digital personalities and identities on our real life should not be understated.

In 2008, educational company Kaplan conducted an annual survey of 500 top colleges and found that 10% of admissions officers acknowledged looking at social-networking sites to evaluate applicants, and 38% of them said that what they saw “negatively affected” their views of the applicants. Thomas Griffin, director of undergraduate admissions at North Carolina State University in Raleigh, disclosed that several applicants a year had been rejected partly due to the information on Facebook and other social media sites (26).

In 2011, Kaplan Test Prep’s annual survey found that 24% of admissions officers have gone to an applicant’s Facebook or other social-network sites to learn more about them. The percentage has more than doubled in three years. The growing practice of exploring applicants’ digital trails is evident, as Kaplan Test Prep reported, “More prevalent is the use of social media for outreach purposes. ... Facebook and YouTube are increasingly important recruiting tools for colleges – 85% use Facebook (up from 82% in the 2010 survey) and 66% use YouTube (up from 52% in the 2010 survey) to vie for the interest of prospective students” (27).

Aside from college admissions, employment decisions are also affected by our digital personalities and identities. *Consumer Reports* in June 2012 stated that 69% of human-resource officers have rejected job applicants based on social media reviews that turned up any of the red flags such as sexually explicit photos or videos, racist remarks, and evidence of illegal activities.

As more employers are turning to Facebook to check on the job applicants, both American Civil Liberties Union (ACLU) and Facebook have voiced their oppositions. In March 2012, ACLU attorney Catherine Crump said, “It’s an invasion of privacy for private employers to insist on looking at people’s private Facebook pages as a condition of employment or consideration in an application process. People are entitled to their private lives. You’d be appalled if your employer insisted on opening up your postal mail to see if there was anything of interest inside. It’s equally out of bounds for an employer to go on a fishing expedition through a person’s private social media account” (28).

At the same time, Facebook’s chief privacy officer Erin Egan wrote on the company’s official blog, “In recent months, we’ve seen a distressing increase in reports of employers or others seeking to gain inappropriate access to people’s Facebook profiles or private information. This practice undermines the privacy expectations and the security of both the user and the user’s friends. It also potentially exposes the employer who seeks this access to unanticipated legal liability. ... For example, if an employer sees on Facebook that someone is a member of a protected group (e.g. over a certain age, etc.) that employer may open themselves up to claims of discrimination if they don’t hire that person” (29).

Nonetheless, from the standpoint of employers and college admission officers, looking up an applicant on Facebook, Google, and LinkedIn can be regarded as a type of background check. It is up to the applicant to keep his or her own private life private by not uploading any inappropriate materials online.

### 13.3 Digital Footprint and Exhaust Data

Gmail and AOL Mail allow users to un-send their emails under some circumstances, but we cannot be certain if the unsent emails may be stored in some mail servers for an unknown period of time. Once data is uploaded to the Internet via email, Twitter, Facebook, YouTube, et cetera, they can potentially take on a life of their own regardless of whether the data is meant to be public or private.

Even if a Facebook user later decides to delete uploaded photos for whatever reasons, the “deleted” Facebook photos may still be online indefinitely and are accessible via direct links (URLs) (30). Indeed, everything posted on the Internet is public to some extent. Things that had been taken down from a website may live on forever in *The Internet Archive* that offers permanent storage and free access to over 150 billion archived web pages including texts, images, movies, and documents (31). Synonymous with the term “Wayback Machine,” *The Internet Archive* allows us to see what previous versions of websites used to look like and to visit old websites that no longer exist. And in case we cannot recall our own or someone else’s first tweet, Twitter has a simple tool (<https://discover.twitter.com/first-tweet>) that lets anyone relive their first-ever tweet.

In April 2010, the U.S. Library of Congress announced that every public tweet posted since Twitter’s inception in March 2006 would be archived digitally by the federal library. By January 2013, the Library of Congress had compiled more than 170 billion Twitter messages and processed about 500 million tweets per day (32). Blogger Matt Raymond wrote, “How Tweet It Is!: Library Acquires Entire Twitter Archive... Twitter processes more than 50 million tweets every day, with the total numbering in the billions. I’m no Ph.D., but it boggles my mind to think what we might be able to learn about ourselves and the world around us from this wealth of data. ... So if you think the Library of Congress is ‘just books,’ think of this: The Library has been collecting materials from the web since it began harvesting congressional and presidential campaign websites in 2000. Today we hold more than 167 terabytes of web-based information, including legal blogs, websites of candidates for national office, and websites of Members of Congress” (33).

In June 2012, Sunlight Foundation launched the U.S. edition of Politwoops in order to expose tweets that politicians shared and then promptly deleted. “It’s kind of a fiction to pretend that you can put something out on the Internet, and then delete it,” said Tom Lee, director of the technical arm of the Sunlight Foundation (34). Take an example as recent as April 2014, amid backlash for tweeting out an article with inflammatory language, Illinois Gov. Pat Quinn’s campaign deleted the tweets but they ended up being saved in perpetuity and posted on the website Politwoops for the world to read (35). Indeed, Politwoops states on its homepage: “**Sure**, we all tweet things we don’t **men** mean to share, but now politicians have no way to hide them. **Discover tweets that your politicians shared and then deleted**” (36).

At the 2011 South by Southwest Interactive conference in Austin, Texas, LinkedIn founder Reid Hoffman spoke of the web of “real identities generating



massive amounts of data” (37). The exhaust data – the output of human beings using the Internet – contains the digital footprint of the past and current user activities and interactions.

When we go to a nightclub, the bouncer checks our IDs. We are not anonymous. Likewise, when we log onto Facebook, Twitter, YouTube, and Google, among others, we are not Jane/John Doe. There is plenty of personally identifiable information (PII) online such as our full name, IP address, phone number, and date of birth. Furthermore, government-issued IDs are required to establish verified accounts on Facebook and Twitter. Is the online world moving towards PII instead of anonymity?

American Civil Liberties Union (ACLU) has expressed the concern that “the things we do and say online leave behind ever-growing trails of personal information. With every click, we entrust our conversations, emails, photos, location information and much more to companies like Facebook, Google and Yahoo. But what happens when the government asks these companies to hand over their users’ private information?” (38)

In 2012, ACLU launched a new campaign – Demand Your dotRights (Privacy 2) – to educate the public about digital footprint and exhaust data (39):

1. Search Engines: When you browse through online stacks of information, you are leaving a trail that reveals a lot about you: interests, hobbies, habits, and concerns.
2. Location Information: Location data from your cell phone or laptop can tell more than just where you travel, but also what you do and even who you know.
3. Social Networking: Replacing interactions in the coffee shop with connections online leaves behind a lot of information about you, friends, and activities.
4. Webmail: Online email services make it easy to keep in touch with friends and family. But every email creates a record of who you write, what you write, and when you send and read it.
5. Photo Sites: The pictures you develop, store, or share online can tell many thousands of words to others about you and who you know, where you’ve gone, and what you’ve done.
6. Media Sites: Reading a book or watching a video is a great way to learn and explore new things. But a lot of information can be collected about who you are and what you read and watch.
7. Cloud Computing: Moving files from your hard drive to an online service or accessing applications through the Internet can be convenient. But, those documents and files you store or produce online can say a lot about you.

## 13.4 Social Media Regrets

Not everyone is as talented as former California Governor Arnold Schwarzenegger who sent lawmakers a “F\*ck You” message through an acrostic poem in 2010 (see Fig. 13.1).

Hip-hop singer Chris Brown lashed out against his critics after his Grammy performance in February 2012. He sent a series of missives ending with a “F\*ck

**To the Members of the California State Assembly:**

**I am returning Assembly Bill 1176 without my signature.**

**For some time now I have lamented the fact that major issues are overlooked while many unnecessary bills come to me for consideration. Water reform, prison reform, and health care are major issues my Administration has brought to the table, but the Legislature just kicks the can down the alley.**

**Yet another legislative year has come and gone without the major reforms Californians overwhelmingly deserve. In light of this, and after careful consideration, I believe it is unnecessary to sign this measure at this time.**

**Sincerely,**

**Arnold Schwarzenegger**

**Fig 13.1** Gov. Arnold Schwarzenegger's Acrostic Poem

You" on Twitter. A few minutes later, he attempted to delete all the offensive tweets, but it was too late. Some bloggers took screenshots of his tweets and posted them online for the whole world to see (40).

Evan Spiegel, CEO and cofounder of Snapchat, apologized for the profanity-laced emails that he sent during his Stanford University fraternity days that celebrated underage drinking and performing lewd acts on sorority women (41). "I'm obviously mortified and embarrassed that my idiotic e-mails during my fraternity days were made public. I have no excuse. I'm sorry I wrote them at the time and I was jerk to have written them. They in no way reflect who I am today or my views towards women" (42).

"We now have entered a phase where every single thing you say – the way you say it, how you say it – is now all exposed," said Gavin Newsom, former San Francisco Mayor and 49<sup>th</sup> Lieutenant Governor of California. "I have to watch myself now singing 'I left my heart in San Francisco' on YouTube, and it can't go away. I am desperate to get it to go away" (43).

Chris Brown, Evan Spiegel, and Gavin Newsom are among the majority of people who wish they could erase their digital footprint and eliminate their exhaust data. We all have said to ourselves at one point, "Oh, I wish I hadn't sent that email or that tweet." Dallas Mavericks owner Mark Cuban and Miami Heat owner Micky Arison have both been fined \$500,000 by the National Basketball Association (NBA) for inappropriate tweets against NBA officials (44). The guy who sent a group message to 32 of his Tinder matches probably also wished he hadn't (45) (see Fig. 13.2). (Who knows if this guy may also be using BroApp (46) that auto-texts sweet things to his girlfriend at an appointed time every day?)

**Fig. 13.2** This guy tried to group text 32 Tinder matches and failed



Actor George Clooney summed it up his own way in a 2013 interview with *Esquire*: “I don’t understand why any famous person would ever be on Twitter. ... So one drunken night, you come home and you’ve had two too many drinks and you’re watching TV and somebody pisses you off, and you go ‘Ehhhhh’ and fight back. And you go to sleep, and you wake up in the morning and your career is over. Or you’re an asshole. Or all the things you might think in the quiet of your drunken evening are suddenly blasted around the entire world before you wake up” (47).

Just ask the 19-year-old Justin Carter who spent more than four months in jail for what he wrote on Facebook, and he would tell us, “I certainly would have thought a lot more about what I said and how permanent my writing – and everyone’s writing – is (on the Internet). People should be very, very careful of what they say. It’s being recorded all the time, if you say it on any website, anywhere” (48).

Yang Wang and fellow researchers at Carnegie Mellon University have identified seven possible causes of why Facebook users make posts that they later regret (49):

1. They want to be perceived in favorable ways.
2. They do not think about their reason for posting or the consequences of their posts.
3. They misjudge the culture and norms within their social circles.
4. They are in a “hot” state of high emotion when posting, or under the influence of drugs or alcohol.
5. Their postings are seen by an unintended audience.
6. They do not foresee how their posts could be perceived by people within their intended audience.
7. They misunderstand or misuse the Facebook platform.

## 13.5 Facebook Social Plug-in: Like

Within a week after Facebook announced the social plug-in “Like” at the 2010 f8 Conference, more than 50,000 websites have implemented the new feature. Today, the Like button is ubiquitous across the Internet (50).

“No activity is too big or too small to share,” said Mark Zuckerberg. “You don’t have to ‘Like’ a movie. You just watch a movie” (51). There is no need to read between the lines, as chief political correspondent Declan McCullagh at *CNET* has clarified that the widespread use of the Like button enables Facebook to track people: “Even if someone is not a Facebook user or is not logged in, Facebook’s social plug-ins collect the address of the Web page being visited and the Internet address of the visitor as soon as the page is loaded – clicking on the Like button is not required. If enough sites participate, that permits Facebook to assemble a vast amount of data about Internet users’ browsing habits” (52).

American Civil Liberties Union (ACLU) attorney Nicole Ozer has also warned that “if an organization puts a Like button on their site, they’re potentially telling Facebook about everyone who visits their Web site, every time that person visits their Web site ... even if they never press that [Like] button” (52).

The proliferation of Facebook’s social plug-in “Like” on the Web enables the social network to collect consumers’ digital footprint. A 2012 study by University of California, Berkeley concluded that “Facebook Likes can be used to automatically and accurately predict a range of highly sensitive personal attributes including: sexual orientation, ethnicity, religious and political views, personality traits, intelligence, happiness, use of addictive substances, parental separation, age, and gender” (53). Some of the interesting findings based on inductive reasoning are (54):

1. For high intelligence: Curly Fries, Science, Mozart, Thunderstorms, or The Daily Show.
2. For low intelligence: Harley-Davidson, Lady Antebellum, Chiq, and I Love Being a Mom.
3. For Satisfaction with Life: Swimming, Jesus, Pride and Prejudice, and Indiana Jones.
4. For Dissatisfaction with Life: Ipod, Kickass, Lamb of God, Quote Portal, and Gorillaz.
5. For being emotionally unstable (neurotic): So So Happy, Dot Dot Curve, Girl Interrupted, The Adams Family, and Kurt Donald Cobain.
6. For being emotionally stable (calm and relaxed): Business Administration, Skydiving, Soccer, Mountain Biking, and Parkour.
7. For being old: Cup Of Joe For A Joe, Coffee Party Movement, The Closer, Freedomworks, Small Business Saturday, and Fly The American Flag.
8. For being young: Body by Milk, I Hate My Id Photo, Dude Wait What, J Bigga, and Because I Am A Girl.
9. For being gay (males): Kathy Griffin, Adam Lambert, Wicked The Musical, Sue Sylvester Glee, and Juicy Couture.
10. For being straight (male): X Games, Foot Locker, Being Confused After Waking Up From Naps, SportsNation, WWE, and Wu-Tang Clan.

## 13.6 Facebook Knows Who, When, and Where

In February 2012, Jacqui Cheng, Senior Apple Editor at Ars Technica, recounted her own experience and 3-year investigation that even if a Facebook user decides to delete uploaded photos for whatever reasons, the “deleted” Facebook photos may still be online indefinitely and are accessible via direct links (URLs) (30). Cheng first contacted Facebook in 2009 about the issue (55). She did a follow up with Facebook in 2010. Over three years later, her “deleted” Facebook photos were still online.

Facebook responded to Cheng defensively, “For all practical purposes, the photo no longer exists, and we wouldn’t be able find it if we were asked or even compelled to do so. ... It’s possible that someone who previously had access to a photo and saved the direct URL from our content delivery network partner could still access the photo” (56). Facebook blamed the problem on their legacy database systems, and promised to work with their content delivery network (CDN) partner to “significantly reduce the amount of time that backup copies persist.” In other words, no one can tell how long a deleted Facebook photo will linger in the online universe before it is ultimately purged, if ever.

Moreover, *The New York Times* reported in February 2012, “Facebook can calculate your location information from different sources, including your computer’s Wi-Fi connection or phone’s GPS feature. When it finds you, it adds a small tag on the updates you post to your Facebook wall, like ‘near New Orleans, LA’ or wherever you are” (57).

In June 2012, *Consumers Report* made public another startling revelation: “Regulators in Germany found that such information [user’s IP address and activities] was being collected on Facebook users for up to two years even after they deactivated their accounts” (58). An IP address can be traced back to a company’s datacenter or a residential address in some circumstances. Facebook explained that their policy of collecting IP addresses and user activities was required to “enhance Facebook security.”

In April 2013, Facebook introduced “Partner Categories” for advertisers to use offline purchases information to target ads to Facebook users more effectively (59). To create dossiers on Facebook users, Partner Categories matches the social network’s user-generated data with the information from massive consumer data companies Acxiom, DataLogix, and Epsilon. Advertisers can then target their ads to specific groups of Facebook users such as “people who are heavy buyers of frozen foods.”

The massive amount of data that companies keep about us can inadvertently expose not only our real identity but also our activities, habits, likes, dislikes, and, as Thelma Arnold puts it, “the whole personal life.”

Thelma Arnold is a 62-year-old widow in Lilburn, Georgia. Arnold was the anonymous user No. 4417749 among more than 650,000 users whose 20 million web search queries were collected by AOL and released to academic researchers in August 2006. Although the user’s logs were associated with random ID numbers, several users’ identities were readily discovered based on their search queries.

Over a three-month period, Arnold conducted hundreds of searches such as “numb fingers,” “60 single men,” “dog that urinates on everything,” and “landscapers in Lilburn, Ga.” A *New York Times* reporter was able to follow the data trail to Thelma Arnold in Lilburn. “My goodness, it’s my whole personal life,” Arnold told the reporter. “I had no idea somebody was looking over my shoulder” (60).

Based on the 1990 U.S. Census summary data, researcher Latanya Sweeney at Carnegie Mellon University found that combinations of few characteristics often uniquely or nearly uniquely identify some individuals in geographically situated populations (61). In fact, 53% of the U.S. population had reported characteristics that likely made them uniquely identifiable based only on their city of residence, gender, and date of birth. The number increased to a startling 87% if their zip code was also included. In 2014, IBM researchers have developed an algorithm that can analyze anybody’s last 200 tweets and determine their home city location with an accuracy of almost 70% (62).

### 13.7 Online Births and Deaths in Facebook Nation

A September 2010 study by Internet security company AVG found that almost a quarter (23%) of children have online births before their actual birth dates, as today’s parents are building digital footprints for their children prior to and from the moment they are born. In the U.S., 92% of children have an online presence by the time they are two.

J.R. Smith, CEO of AVG, commented on the report, “It’s completely understandable why proud parents would want to upload and share images of very young children with friends and families. At the same time, we urge parents to think... you are creating a digital history for a human being that will follow him or her for the rest of their life. What kind of footprint do you actually want to start for your child, and what will they think about the information you’ve uploaded in future?” (63). Parenting columnist Aisha Sultan and University of Michigan researcher Jon Miller concurred, “Never before have parents had the ability to publish the details of their children’s lives in such a widespread manner. A potentially embarrassing anecdote won’t faze a toddler, but how does the unilateral flow of information affect a tween or teenager?” (64).

In November 2008, a Florida teenager died of a drug overdose in front of his webcam while others watched over the Internet (65). In November 2010, a 24-year-old man in Japan live streamed his own hanging and viewers called the police (66). In August 2013, sports reporter and statistician Martin Manley committed suicide on his 60th birthday. Before his death, however, he spent over a year creating an intricate website that meticulously describes his life story and viewpoints. “Let me ask *you* a question,” Manley wrote on his site. “After you die, you can be remembered by a few-line obituary for one day in a newspaper when you’re too old to matter to anyone anyway... **OR** you can be remembered for years by a site such as this. That was my choice and I chose the obvious” (67).

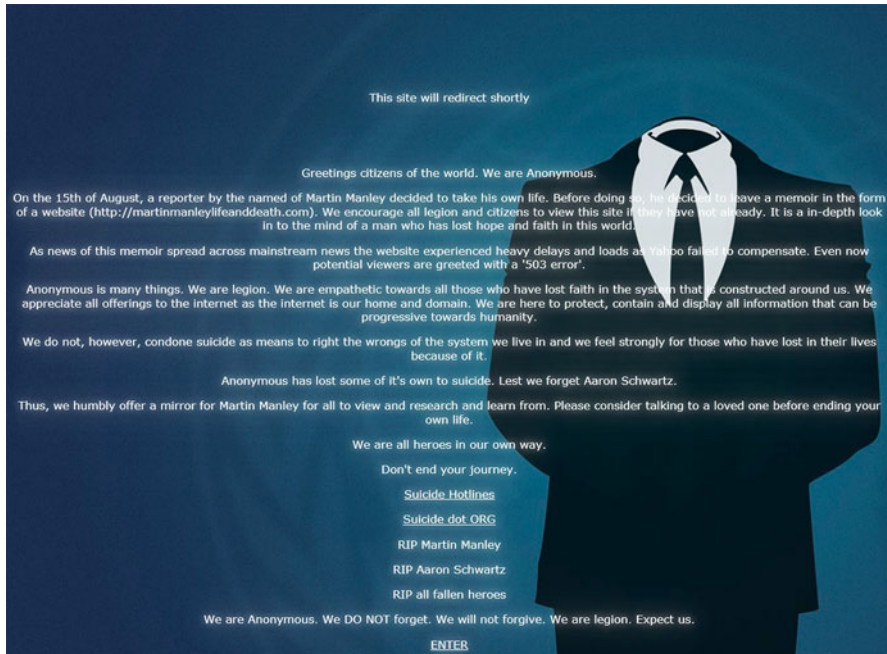


Fig. 13.3 Homepage of Martin Manley's Website as Mirrored by Anonymous

*CNN* reporter Doug Gross characterized Manley's suicide as follows: "Call it death in the time of Facebook. Never before in the history of human communication have suicide notes been such a public affair, easily accessible to the masses and potentially lasting forever" (68). Indeed, Anonymous – the Internet hacktivists – has archived and mirrored Manley's website in perpetuity, urging readers not to end their life journey (see Fig. 13.3).

Online births and deaths in Facebook Nation made me question why people could not live without borders. Birthright citizenship is like being baptized into a religion as an infant. Taking a page from Veronica Roth's novel *Divergent*, people should be free to choose where they belong when they grow up.

## 13.8 Memorialization on Facebook and Life after Death on Social Networks

Facebook's head of security Max Kelly worked alongside his best friend 18 hours a day and seven days a week in a small team at Facebook. After his best friend was killed in a tragic bicycling accident, the question about what to do with his friend's Facebook profile came up (69). In October 2009, Facebook introduced the idea of "memorialized" profiles for families and friends to leave posts on the deceased's profile Walls in remembrance (70).



When an account is memorialized, Facebook removes the deceased's sensitive information such as contact information and status updates, sets privacy so that only confirmed friends can see the profile or locate it in search, and prevents anyone from logging into the account. (Wouldn't it be wonderful if Facebook also makes it so easy for the livings to protect their own privacy while they are still alive?)

Social media has given a new meaning to life after death. DeadSocial is a new breed of social media companies that offer post-death social media options such as scheduling public Facebook posts, tweets, and LinkedIn posts to go out after someone has died. "It really allows you to be creative and literally extend the personality you had while alive in death," said James Norris, founder of DeadSocial. "It allows you to be able to say those final goodbyes" (71). The company even guarantees the delivery of the posthumous digital messages for the next 100 years.

For the tech-savvy users, LivesOn is a Twitter app powered by artificial intelligence algorithms that "analyze your online behavior and learn how you speak, so it can keep on scouring the Internet, favoriting tweets, and posting the sort of links you like, creating a personal digital afterlife" (72). LivesOn's tagline is: "When your heart stops beating, you'll keep tweeting."

In April 2013, Google rolled out the new "Inactive Account Manager" for users to plan their digital afterlife (73). Google users can choose to have their data deleted after three, six, nine, or 12 months of inactivity. Alternatively, they can assign trusted contacts to receive data from selected services including +1s, Blogger, Contacts and Circles, Drive, Gmail, Google+ Profiles, Pages and Streams, Picasa Web Albums, Google Voice, and YouTube.

In the 2014 Consumer Action Handbook, editor-in-chief Marietta Jelks from the General Services Administration (GSA) offered recommendations on writing a "social media will" and appointing an "online executor" responsible for handling the deceased's email accounts, social media profiles, and blogs (74).

### 13.9 The Facebook Cleanse or Face-to-Facebook

In November 2011, Lars Backstrom from the Facebook Data Team reported that 50% (the median) of Facebook users had over 100 friends and the average friend count is 190 (75). However, according to the GoodMobilePhones survey in January 2011, the average Facebook user does not know one fifth of the people listed as friends on the site (76).

Dan Kois, senior editor at *Slate* and contributing writer to the *New York Times Magazine*, wrote a humorous article entitled "The Facebook Cleanse" in May 2014. It started with the sentences: "Did I just unfriend you? I'm sorry if I hurt your feelings. But I'm not sorry I did it. In fact, I did you a favor. I'm on a Facebook cleanse, and it's making me fall back in love with the social network I couldn't stand for years. You should do it, too!" (77).

About nine months into his Facebook cleanse, Kois reduced his number of Facebook friends by 34% to 1,079 friends. He admitted that number was still too

high compared to his “actual friends,” probably by a factor of 10. He felt that most Facebook friends could not less about him just as he had absolutely no interest in them and their lives. He concluded, “So if you’re suffering from friend clutter, try a one-year Facebook cleanse. It’ll make your online experience a lot cleaner, better, more meaningful. And if your birthday’s coming soon and we met once at a concert: Heads up. I might be about to give you the greatest birthday gift I, a person about whom you don’t give a crap, can offer: the gift of never needing to think about me again” (77). (Since “un-friend-ing” is not as simple in real life as on Facebook, many young adults have chosen to end their relationships via text messages and social media (78).)

Alternatively, instead of un-friending people, we can turn all Facebook friends into real-life friends. In March 2013, Connecticut photographer Ty Morin launched a successful Kickstarter campaign and raised \$14,166 (against a \$5,000 goal) to fund his trip to “pay a visit to every single one of his Facebook friends to take their portrait... all 788 of them” (79). Morin admitted that he had never even spoken to at least half of his 788 Facebook friends. “The goal of the project is to reconnect with people,” he wrote on Kickstarter. “No more hiding behind the screen of social media. ... Let’s get out there and remind people what it’s like to have a face to face conversation with someone.” Morin would make a great peace ambassador.

### **13.10 Connected Cars: In-vehicle Social Networks and eXpressive Internet Architecture**

In 2014, only about 10% of vehicles have built-in connectivity (80). Marketing research firm ABI Research estimated in 2012 that within five years, 60% of the world’s cars would include built-in Internet and smart phone connectivity (81).

In January 2012, Mercedes-Benz publicized its efforts in bringing Facebook and Google to the automobile dashboard (82). “We’re working on a new generation of vehicles that truly serve as digital companions,” said Dieter Zetsche, head of Mercedes-Benz Cars, in a keynote speech at CES 2012 in Las Vegas. “They learn your habits, adapt to your choices, predict you moves and interact with your social network” (83).

At CES 2012, Ford Motor Company introduced the new in-vehicle application called Roximity. The app provides real-time deals and specials relevant to a user’s location, based on personal preferences and interests. A driver could easily get a customized verbal message for a special deal on food from a favorite nearby restaurant (84).

In May 2014, General Motors announced that the 2015 Chevrolet Malibu would come equipped with a 4G LTE connection, acting as a WiFi hotspot that could connect up to seven devices. “Our objective here is to allow you to bring your digital life in your vehicle, and your vehicle into your digital life,” said Terry Inch, chief operating officer for GM’s OnStar unit (85). In the same month, Nokia announced a \$100 million Connected Car fund for identifying and investing in innovations that are “important for a world of connected and intelligent vehicles” (86).

“Commonly referred to as a connected car, the prevailing trend is to integrate smartphone apps into the car’s dashboard. This enables drivers and passengers to listen to online music, access news and other content, stream video and more,” wrote *ReadWriteWeb* editor-in-chief Richard MacManus in February 2012. “The next big thing in computing isn’t a new model smartphone or laptop. It’s the Internet empowering everything else around us. Our cars, TVs and many other devices” (87).

Researchers at Virginia Tech Transportation Institute conducted several large-scale, naturalistic driving studies in 2009 to get a clear picture of driver distraction and cell phone use under real-world driving conditions (88). The research shows that talking on a cell phone increases the risk of a crash or near-crash by 1.3 times over non-distracted driving, while physically dialing a number increased the risk 2.8 times. A person is more than 23 times more likely to be in a crash or near crash while text messaging.

“People are already distracted by their phones in their car, but we can make it safer for them to do what they are already doing,” commented Ricardo Reyes, spokesman for the Tesla Model S electric car that features a 17-inch touch screen display with Internet access and four USB ports to attach devices in the electric car (89).

U.S. Transportation Secretary Ray LaHood issued the non-binding guidelines in February 2012 for automakers to design in-car social network devices such that they cannot be used while a car is in motion. LaHood also called for disabling manual texting, Internet browsing, 10-digit phone dialing, and the ability to enter addresses into a built-in navigation system for drivers unless the car is in park (90).

In May 2012, Consumer Electronics Association sent a letter to the National Transportation Safety Board (NTSB): “CEA must disagree with the NTSB’s broad recommendation calling for a ban on the nonemergency use of portable electronics devices (other than those designed to support the driving task) by all drivers. There is no real-world evidence to support such a blanket prohibition unless one would also ban other potential distractions, such as eating, drinking, applying make-up and engaging with children while in the vehicle” (91).

In spite of controversies, connected cars can make the road safer for everyone. Carnegie Mellon University developed in 2014 a vehicular network in Pittsburgh to enable vehicles to share information about road and traffic conditions. Computer science and electrical engineering professor Peter Steenkiste explained, “Vehicles can use wireless communications channels called dedicated short-range communications, or DSRC, that are similar to WiFi. Creating DSRC networks is challenging, however, because cars and trucks quickly pass from one DSRC access point to the next. XIA [eXpressive Internet Architecture] enables computer users to directly access content wherever it might be on the network, rather than always accessing a host website, so it should enable vehicles to obtain needed information from neighboring access points” (92).

In March 2014, mobile ad company Kiip planned to offer deals based on data collected from in-car apps that know how you drive. “You get to your meeting early and you should get a free coffee from the place around the block,” said Michael Sprague, head of partnerships for Kiip, at the ad:tech conference in San Francisco. “You just logged 100 miles on a road trip; your phone says, “Here’s a Red Bull”” (93).

However, Jay Giraud, CEO and cofounder of Mojio, raised an objection by saying, “The way I drive my car is personal information. ... If I’m being offered an insurance discount because Geico looked at my data, I want to be the one in control” (93).

### 13.11 Connected Home, Internet of Things, and Internet of Me

Google bought home automation company Nest in January 2014 for \$3.2 billion in cash (94). Nest’s smart thermostat learns and adjusts to the users’ living patterns in order to minimize energy use. Nest’s smoke and carbon monoxide alarm can distinguish between smoke and steam, and inform users where the danger is by networking with other home sensors.

At the Worldwide Developers Conference in June 2014, Apple unveiled HomeKit that enables users control all the items in their home with an iPad or iPhone (95). HomeKit can manage lights, cameras, door locks, thermostats, and other connected devices.

The Internet of things (IoT) is no longer just energy-conservation equipment, home automation, connected cars, and smart city. As wearable devices, health tracking, and quantified self are gaining popularity, human beings are also becoming part of the Internet of things.

Rachel Metz, IT editor for the Web and social media at the *MIT Technology Review*, wrote an article in May 2014 with a catchy title: “The Internet of You”. Metz observed, “Slowly but surely, a few wearable devices—mainly high-tech pedometers like those from Fitbit and Jawbone—are catching on with consumers, and many researchers and companies are certain that body-worn computers will become second nature—sensing, recording, and transmitting data to and from our bodies, to networks around us” (96).

Fitbit and Jawbone offer wristbands with mobile apps that can track exercise, sleep patterns, and movement of the wearer. “Your car should know that you’re tired because you didn’t sleep that well, so it should be alert to that, how awake are you when you’re driving, those things,” said CEO Jawbone Hosain Rahman” (96). “You can start to see how this Internet of me can start to work with me at the center of this device here,” added Travis Bogard, Jawbone’s vice president of product management and strategy (97).

*Reuters* reported in June 2014 that Apple was preparing to market its first wearable device in October. The Apple smartwatches would have sensors that “collect health data from blood glucose and calorie consumption to sleep activity” (98).

While the Internet of Things and the Internet of me can be tremendously helpful to us in everyday life, they can pose a real danger if our intimate details are misinterpreted, misused, or through a security breach fall into the wrong hands.

In the television show *Homeland*, a terrorist remotely caused a pacemaker to malfunction, killing the Vice President of the United States. In reality, the late security researcher Barnaby Jack told *Vice* technology reporter William Alexander in

2013 that he developed a way to hack one of those devices remotely and send it a high-voltage shock from upwards of 50 feet away (99).

*The New York Times* reported in June 2014 that Apple was expected to unveil software that turn our homes into WiFi-connected wonderlands where locks, lights, and appliances could all be controlled via an iPhone or iPad. “Obviously, there are lots of benefits of connected devices in the home, but there can also be complications,” said Marc Rotenberg, executive director of the Electronic Privacy Information Center. “When you worry about computer viruses, you can unplug your computer. When your house gets a virus, where do you go?” (100).

### 13.12 Internet Addiction and Digital Detox

Living in Facebook Nation can turn some people into Internet addicts who experience serious problems at home, work, school, and socially. There have been tragic reports of infant deaths due to neglect by their parents who spent excessive amount of time playing computer games (101). Tell-tale signs and symptoms of Internet addiction may include (102):

- Losing track of time online.
- Having trouble completing tasks at work or home.
- Isolation from family and friends.
- Feeling guilty or defensive about your Internet use.
- Feeling a sense of euphoria while involved in Internet activities.

Tiffany Shlain, filmmaker and founder of the Webby Awards, advocates a national day of unplugging – a digital detox. Tiffany wrote in *The Huffington Post*, “Unplugging each Friday night with my family is now the day that I rushed towards each week. The 24 hours not online truly resets my soul. It has become my favorite day of the week. I feel like a better mother, wife, person on Saturdays. ... By Saturday night sundown when we go back online, we appreciate technology in this whole new way” (103).

Fortunately there is help available for people who simply cannot unplug for even one second. In 2009, the country’s first retreat center program reSTART for Internet addiction treatment was launched by the Center for Digital Technology Sustainability. The reSTART website states the following (104):

- BINGE VIEWING – Watch less. Live more.
- INTERNET – Browse less. Explore more.
- MESSAGING – Chat less. Listen more.
- MMORPG’s – Raid less. Achieve more.
- SMARTPHONE USE – Text less. Connect more.
- SOCIAL MEDIA – Update less. Connect more.
- STREAMING – Broadcast less. Live more.
- TECHNOLOGY – Use less. Learn more.
- VIDEO GAMES – Play less. Accomplish more.

In 2013, the country's first inpatient treatment program for Internet addiction opened at Bradford Regional Medical Center in Pennsylvania. "I've been studying Internet addiction since 1994," said founder Dr. Kimberly Young. "When you talk about the controversy behind it, laughing it off, that's often been the case with my work. We're really behind other countries in treating this problem. China, Korea and Taiwan all have treatment centers. ... Remember, when Betty Ford first admitted she was an alcoholic, we didn't have people believing it was actually a problem until she came around and talked about her own problems with it. This is a place for people to go for help, and that we hope will help everyone around them stop taking Internet addiction so lightly" (105).

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## Chapter 14

# Personal Privacy and Information Management

*“I divide the entire set of Fortune Global 2000 firms into two categories: those that know they’ve been compromised and those that don’t yet know.”*

— Cybersecurity Executive Dmitri Alperovitch (August 2011)

*“There are only two types of companies: those that have been hacked, and those that will be. Even that is merging into one category: those that have been hacked and will be again.”*

— FBI Director Robert Mueller (March 2012)

*“Awareness is an effective weapon against many forms of identity theft.”*

— U.S. Federal Trade Commission

*“As we go through our lives we create vast amounts of data. It’s more than just data. It represents our actions, interests, intentions, communications, relationships, locations, behaviors and creative and consumptive efforts.”*

— The Locker Project

*“Personal analytics combined with social networks provide a high-tech mechanism for self-help and self-improvement.”*

— Newton Lee

### 14.1 Personal Information for Sale

No matter how we safeguard our privacy by turning off our cell phones, avoiding the use of in-vehicle apps, deactivating Facebook accounts, opting out on all data collections, and evading Google and Bing’s social searches, there are still plenty of public records that are obtainable by anyone who is willing to pay. Websites such as Intelius (whose trademark is “Live in the know”) displays the age, past cities of residence, and names of the relatives on any person whom we search for. This and several other websites also sell public records including full name, date of birth, phone, address history, marriage/divorce records, property ownership, lawsuits, convictions, and other public information for a nominal fee (1).

The need-to-know maxim and the respect for personal privacy have largely been abandoned in the Internet era and commercial age. Journalists from *News of the World*, for example, paid police for information and hacked into the phone messages of celebrities, a missing 13-year-old murder victim, and the grieving families of dead soldiers (2). The illegal and immoral tactics brought down the 168-year-old tabloid *News of the World* in July 2011.

In October 2011, actress Junie Hoang sued IMDb and its parent company Amazon.com for revealing her true date of birth without her consent, thus opening her up to age discrimination. “Anyone who values their privacy and has ever given credit card information to an online company like IMDb or Amazon.com should be concerned about the outcome,” Hoang said in a statement regarding IMDb illegally used her credit card information to obtain and post her age (3). Amicus curiae briefs were filed in support of Hoang by four screenwriters, Screen Actors Guild (SAG), the American Federation of Television and Radio Artists (AFTRA) and the Writers Guild of America, West (WGAW) in 2013.

In late 2011, security software company Symantec commissioned Scott Wright of Security Perspectives Inc. to conduct an experiment codenamed The Symantec Smartphone Honey Stick Project (4). In the experiment, they intentionally lost 50 smartphones in high-traffic public places in five major cities: New York City, Washington D.C., Los Angeles, San Francisco, and Ottawa, Canada. Only 50% of the people who found one of the “lost” smartphones made an attempt to return it. That statistics alone may not be too startling, but the following key findings are more disturbing (5):

- 96% of lost smartphones were accessed by the finders of the devices.
- 89% attempted to access personal mobile apps or data.
- 72% attempted to access a private photos app.
- 60% attempted to access social networking accounts and personal email.
- 53% accessed a “HR Salaries” file.
- 57% accessed a “Saved Passwords” file.

And the scariest of them all:

- 43% attempted to access an online banking app on the lost smartphone.

Andrew Grove, co-founder and former CEO of Intel Corporation, offered his thoughts on Internet privacy in an *Esquire* magazine interview reported on May 1, 2000: “Privacy is one of the biggest problems in this new electronic age. At the heart of the Internet culture is a force that wants to find out everything about you. And once it has found out everything about you and two hundred million others, that’s a very valuable asset, and people will be tempted to trade and do commerce with that asset. This wasn’t the information that people were thinking of when they called this the information age” (6).

While Facebook, Google, and other online businesses collect information about us and make billions of dollars from selling our data, some startup companies believe that we can better organize our own information online in a secure “data

vault” and we may even be compensated for sharing that information (7). However, given the plentiful information from public records and data scraping on the web, much of our information is already available to big businesses.

## 14.2 Personal Information at Risk

In November 2012, Facebook started switching all users to a more secure HTTPS (Hypertext Transfer Protocol Secure) connection (8). With the abundance of our digital footprint and exhaust data online, we must manage our personal data better. Although we entrust private companies and our governments to do their best to protect our private information, cybercriminals are hard at work to steal our valuable data. In May 2014, *CNN* reported that cybercriminals “have exposed the personal information of 110 million Americans – roughly half of the nation’s adults – in the last 12 months alone” (9). Some of the high-profile data breaches between 2007 and 2014 include:

1. In January 2007, up to 94 million Visa and MasterCard account numbers were stolen from TJX Companies dating back to 2005 and earlier, causing more than \$68 million in fraud-related losses involving Visa cards alone (10).
2. In December 2009, online games service company RockYou suffered a data breach that resulted in the exposure of over 32 million usernames and passwords. Adding insult to injury, RockYou stored passwords in plain text format without any encryption (11).
3. In January 2011, cybercriminals breached the database of online dating site PlentyofFish.com, exposing the personal and password information on nearly 30 million users (12).
4. In March 2011, computer and network security firm RSA suffered a massive data breach, jeopardizing the effectiveness of its SecurID system that is being used by more than 25,000 corporations and 40 million users around the world (13).
5. In April 2011, a cybercriminal stole the names, birth dates, and credit card numbers of 77 million customers on the Sony PlayStation Network (14).
6. In May 2011, cybercriminals illegally accessed 360,083 Citigroup customer accounts and withdrew \$2.7 million from about 3,400 credit cards (15).
7. In December 2011, hackers affiliated with the Anonymous broke into the private intelligence analysis firm Strategic Forecasting (Stratfor) and obtained private information of about 860,000 people including former U.S. Vice President Dan Quayle, former Secretary of State Henry Kissinger, and former CIA Director Jim Woolsey. The group went on to publish the stolen emails and thousands of credit card numbers on the Internet (16).
8. From January to February 2012, cybercriminals cracked into the Global Payments administrative account and stole more than 10 million credit and debit card transaction records (17).



9. In June 2012, cybercriminals stole 6.5 million LinkedIn passwords and posted them on an online forum. LinkedIn passwords were encoded using SHA-1 - a cryptographic hash function with weak collision resistance. About half of the encrypted passwords have been decrypted and posted online (18).
10. In June 2012, online dating site eHarmony notified its customers that a “small fraction” of its user base had been compromised (19).
11. In July 2012, Yahoo! Voices was hacked, resulting in the theft of 450,000 customer usernames and passwords (20).
12. In October 2012, Barnes & Noble disclosed that a PIN pad device used by customers to swipe credit and debit cards had been compromised at 63 of its national stores located in California, Connecticut, Florida, Illinois, Massachusetts, New Jersey, New York, Pennsylvania, and Rhode Island (21).
13. In January 2013, cybercriminals accessed Twitter user data and stole the usernames, email addresses, session tokens, and encrypted/salted versions of passwords for approximately 250,000 users (22).
14. In February 2013, personal information of more than 4,000 U.S. bank executives was stolen from the Federal Reserve System by exploiting a temporary vulnerability in a website vendor product (23).
15. In March 2013, cybercriminals gained access to cloud-storage service provider Evernote’s user information, including usernames, email addresses, and encrypted passwords. As a result, Evernote required all of its 50 million users to reset their passwords (24).
16. In October 2013, Adobe’s chief security officer Brad Arkin disclosed that “the attackers removed from our systems certain information relating to 2.9 million Adobe customers, including customer names, encrypted credit or debit card numbers, expiration dates, and other information relating to customer orders” (25).
17. From June to October 2013, about 1.1 million customers were impacted by a security breach of luxury retailer Neiman Marcus’ payment systems due to a “sophisticated, self-concealing malware, capable of fraudulently obtaining payment card information” (26).
18. From November to December 2013, cybercriminals stole 40 million credit and debit card information as well as 70 million customers’ information such as their name, address, phone number, and email address from discount retailer Target (27).
19. From May 2013 to January 2014, retailer Michaels and subsidiary Aaron Brothers were hacked. Some of their 3 million customers’ credit and debit card numbers and expiration dates were compromised (28).
20. In January 2014, cyber attackers posted the account information of 4.6 million Snapchat users, making usernames and partial phone numbers available for download from the website SnapchatDB.info (29).
21. Between February and March 2014, cybercriminals gained access to eBay’s corporate network and stole a database containing eBay customers’ name, encrypted password, email address, physical address, phone number, and date of birth (30). The data breach potentially affected all of eBay’s 148 million customers.

22. In April 2014, AOL verified that there was unauthorized access to information regarding a “significant number” of its 120 million user accounts. According to AOL, the compromised information included “AOL users’ email addresses, postal addresses, address book contact information, encrypted passwords and encrypted answers to security questions that we ask when a user resets his or her password, as well as certain employee information.” In addition, AOL believed that “spammers have used this contact information to send spoofed emails that appeared to come from roughly 2% of our email accounts” (31). (Two percent of 120 million is 2.4 million email accounts.)
23. In June 2014, restaurant chain P.F. Chang acknowledged that at least thousands of credit and debit card numbers were stolen in early 2014 from some of the 200+ locations in the U.S. (32).
24. In August 2014, Hold Security revealed that a Russian crime ring has stolen a massive 1.2 billion username/password combinations and more than 500 million email addresses from 420,000 websites. “Hackers did not just target U.S. companies, they targeted any website they could get, ranging from Fortune 500 companies to very small websites,” said Alex Holden, founder and chief information security officer of Hold Security. “And most of these sites are still vulnerable” (33).
25. In August 2014, Apple’s iCloud online data backup service might have been compromised by cybercriminals who stole and shared publicly nude selfies of Jennifer Lawrence, Kirsten Dunst, Kate Upton, Mary Elizabeth Winstead, and other celebrities. Apple claimed that the celebrity accounts “were compromised by a very targeted attack on usernames, passwords and security questions”.
26. Between April and September 2014, cybercriminals broke into Home Depot’s in-store payments systems, siphoning payment card details from 56 million customers in the United States and Canada.

For every publicized data breach incident, there are probably a dozen more undisclosed security breaches. Although some organizations have come forward in reporting cyber attacks, the vast majority of companies refuse to confirm news reports of online attacks due to their fear of the stock market volatility and the loss of consumer confidence. As revealed by *The New York Times* in February 2013, the list includes the International Olympic Committee, Exxon Mobil, Baker Hughes, Royal Dutch Shell, BP, ConocoPhillips, Chesapeake Energy, British energy giant BG Group, steel maker ArcelorMittal, and Coca-Cola (34).

Cybersecurity executive Dmitri Alperovitch wrote in a 2011 McAfee report: “I am convinced that every company in every conceivable industry with significant size and valuable intellectual property and trade secrets has been compromised (or will be shortly) with the great majority of the victims rarely discovering the intrusion or its impact. ... In fact, I divide the entire set of Fortune Global 2000 firms into two categories: those that know they’ve been compromised and those that don’t yet know” (35).

At the 2012 RSA conference in San Francisco, Federal Bureau of Investigation (FBI) director Robert Mueller said, “There are only two types of companies: those that have been hacked, and those that will be. Even that is merging into one category: those that have been hacked and will be again” (36).

### 14.3 Identity Theft Prevention

Stolen credit and debit cards can be replaced and the fraudulent charges reversed. But the bigger issue is identity theft or ID theft. According to Javelin Strategy and Research, more than 13.1 million Americans were victims of identity fraud in 2013; in other words, a new identity fraud victim every two seconds. The report indicated “an increase of more than 500,000 fraud victims to 13.1 million people in 2013, the second highest number since the study began. Account takeover fraud hit a new record in incidence for the second year in a row and accounted for 28 percent of all identity fraud. Additionally, fraudsters increasingly turned to eBay, PayPal and Amazon with the stolen information to make purchases. In 2013, data breaches became more damaging, with one in three people who received a data breach notification letter becoming an identity fraud victim” (37).

I was one of the identity theft victims years ago. In an attempt to find the best mortgage deal, I disclosed to several brokers my personal information including social security number, copy of my driver license, and bank statements. A few months later, an identity thief opened a new online bank account and transferred all the money from my bank to his account. I immediately reported the incident to the police and my bank reimbursed me the financial loss.

The Federal Trade Commission (FTC) advised us, “Awareness is an effective weapon against many forms of identity theft. Be aware of how information is stolen and what you can do to protect yours, monitor your personal information to uncover any problems quickly, and know what to do when you suspect your identity has been stolen” (38).

Although we can never completely eradicate identity theft, we can protect ourselves to a large extent by taking the necessary steps to deter identity thieves, detect suspicious activity, and defend against identity theft (39). Expanding on the FTC recommendations, we can:

1. Deter identity thieves by safeguarding your information:
  - a. Shred financial documents and paperwork with personal information before you discard them.
  - b. Sign up for paperless statements from your banks and utility companies.
  - c. Do not carry your Social Security card or write your Social Security number on a check.
  - d. Use hard-for-anyone-to-guess but easy-for-you-to-remember passwords with a combination of letters, numbers, and special characters.
  - e. Set a passcode on your smartphone for protection.
  - f. Keep the anti-virus software up-to-date on your computers.
  - g. Do not access sensitive information or install any software through public WiFi or Internet connections in hotels, restaurants, and other public venues. (The FBI issued a warning on May 8, 2012 about travelers’ laptops being infected with malicious software while using hotel Internet connections (40).)
  - h. Opt out of pre-screened credit and insurance offers to prevent potential thieves from intercepting and accepting the offers in your name. Opting out can be done online at <https://www.optoutprescreen.com/>

2. Detect suspicious activity by monitoring your information:
  - a. Review financial accounts and billing statements regularly.
  - b. Examine your Google Account Activity for any suspicious activities with your account sign-ins, visited places, emails, web history, etc. (41).
  - c. Set up Google Alerts at <http://www.google.com/alerts> to monitor the web 24/7 for any news and videos about you or someone with the same name as you (42). You can receive an alert once a week, once a day, or as-it-happens.
  - d. Sign up for Newsle to track when your own name has come up in the news and blog posts.
  - e. Obtain your free annual credit reports from TransUnion, Equifax, and Experian; and look for abnormalities or inaccuracies.
3. Defend against identity theft by proactive measures:
  - a. Place a fraud alert and a credit freeze on your credit reports at TransUnion, Equifax, and Experian. Fraud alerts and credit freezes help prevent an identity thief from opening new financial accounts, applying for loans, and seeking employment in your name.
  - b. Report all identity theft incidences to the police and the FTC at 1-877-ID-THEFT.

## 14.4 Password Protection

A 2009 article in the *Proceedings of the Human Factors and Ergonomics Society* cited a survey of 836 people about their password usage and behavior (43). The survey showed the following:

1. 18% of respondents always use the same password to access multiple computers and websites.
2. 44% of respondents use a short password (less than 8 characters).
3. 44% of respondents write their passwords down on a piece of paper or a document file.

Microsoft's security guru Jesper Johansson explained the prevalence of weak passwords: "How many have [a] password policy that says under penalty of death you shall not write down your password? I claim that is absolutely wrong. I claim that password policy should say you should write down your password. I have 68 different passwords. If I am not allowed to write any of them down, guess what I am going to do? I am going to use the same password on every one of them. Since not all systems allow good passwords, I am going to pick a really crappy one, use it everywhere and never change it" (44).

In 2012, *CNet* analyzed the most frequently used passwords that were cracked by cybercriminals in the Yahoo! Voices data breach (45). Among more than 450,000 stolen login credentials, the most common passwords in descending order of popularity were:

1. 123456
2. password

3. 111111
4. welcome
5. ninja
6. freedom
7. f\*ck
8. baseball
9. superman
10. 000000
11. America
12. winner
13. starwars
14. batman
15. spiderman
16. lakers
17. maverick
18. ncc1701
19. startrek,
20. ncc1701a

One may expect that advanced computer users are better with password protection. However, *Ars Technica* revealed a disturbing observation: “Experience made a difference, as expert and advanced computer users tended to outperform the novices. But there were limits; actual network administrators, for example, didn’t behave in a manner that was significantly different from an average user” (46).

Indeed, the 2012 Data Breach Investigations Report by the Verizon RISK (Response, Intelligence, Solutions, Knowledge) Team indicated that 94% of all data compromised involved servers (47). Many network administrators are simply not doing enough to prevent computer server intrusions.

A 2013 article in *Ars Technica* describes in detail how easy it is for cybercriminals to crack weak passwords using only free tools and resources on the Internet (48). Weak passwords include dictionary words, popular phrases, celebrity names, and strings of numbers or characters that are easy to guess.

Some security experts suggest using a secure password manager such as LastPass, 1Password, and KeePass to create a long, strong, and different password for each and every website that requires a login password. The main advantage of using a password manager is that you only need to create one strong “master” password that you can remember. The password manager would automate password generation and form filling for you. LastPass, for instance, is available as a free plugin for many popular web browsers including Internet Explorer, Firefox, Chrome, and Safari. For paid subscribers, LastPass offers additional protection such as entering your password using your mouse on a virtual screen keyboard to protect yourself from keyloggers and key sniffers.

In May 2011, however, cybercriminals breached the LastPass servers and possibly stole email addresses of users, the server salt, and the salted password hashes from the LastPass database (49). LastPass responded quickly and notified their users to change their master passwords as a precaution. The company subsequently

improved their server security and rolled out PBKDF2 (Password-Based Key Derivation Function 2) using SHA-256 (a SHA-2 Secure Hash Algorithm) on their servers with a 256-bit salt utilizing 100,000 rounds.

Designed by the National Security Agency (NSA), SHA-2 is significantly better than its predecessor SHA-1 — a cryptographic hash function with weak collision resistance. In June 2012, cybercriminals stole 6.5 million LinkedIn passwords and posted them on an online forum (18). Since the LinkedIn passwords were encoded using SHA-1, about half of the encrypted passwords have been decrypted and posted online.

Two-factor authentication adds an extra layer of security to password protection by requiring users to enter a random code that is sent to their mobile device before granting access to their accounts online.

My books *Counterterrorism and Cybersecurity: Total Information Awareness* (50) and *Read Me First: Password Protection and Identity Theft Prevention* (2nd Edition) (51) detail many more stories and ideas about how to protect your valuable information and accounts online.

## 14.5 Password Security Questions

In the movie *Now You See Me* (2013), four illusionists were known for magically “robbing from the rich and giving to the poor” by pulling off bank heists during their live performances (52). They were able to unsuspectingly obtain the mother’s maiden name and the name of the first pet from an unsuspecting victim in order to reset his back account password.

In real life, 20-year-old college student David Kernell hacked into Republican vice presidential candidate Sarah Palin’s Yahoo! email account in September 2008 to look for information that would derail her campaign (53). Kernell managed to reset Palin’s account password by entering her birth date and correctly answering the security question “Where did you meet your spouse?” It only took Kernell 45 minutes on Wikipedia and Google search to find the correct answer.

There is also the infamous “tinkerbell hack” that refers to Paris Hilton’s T-mobile account hack. The attacker was able to answer Hilton’s password reset security question, “What is the name of your pet?” The answer was simple: “Tinkerbell.”

To prevent someone from hacking into your online account through password security questions, do not answer the online security questions straightforwardly. Instead, treat each security answer as a password or be creative in your answer. Here are some good examples:

1. Question: Where did you meet your spouse?  
Answer: lunchvtmay1980 (Meaning: During lunch at Virginia Tech in May 1980)
2. Question: What was the name of your first school?  
Answer: vanillaiicecream (Meaning: Your first school reminds you of Vanilla ice cream.)
3. Question: What is your pet’s name?  
Answer: squarerootofminus1 (Meaning: Since the square root of minus 1 is an imaginary number, you don’t have a real pet but you may have an imaginary pet.)

4. Question: What is your pet's name?

Answer: saturdaynightlive1979skit (Meaning: You do have a pet who reminds you of a skit in a 1979 TV show "Saturday Night Live.")

## 14.6 Privacy Protection

We all have dealt with annoying cold calls from telemarketers. Since 2004, the National Do Not Call Registry has allowed us to register a phone number to limit the telemarketing calls we receive (54). As for unsolicited text spam, we can reply "STOP" and forward the text to the shortcode 7726 (which spells "SPAM") (55).

Financial companies have the freedom to choose how they share our personal information. U.S. Federal law gives consumers the right to limit some but not all sharing. Federal law also requires financial companies to inform us how they collect, share, and protect our personal information.

Take the Target REDcard credit card as an example, its February 2012 privacy policy states that the types of personal information they collect and share can include: social security number, income, purchase history, payment history, credit history, and credit scores. These information may be used for their everyday business purposes, marketing purposes, joint marketing with other financial companies, affiliates' everyday business purposes, and non-affiliates to market to us. Under Federal law, consumers can limit the sharing of information for non-affiliates only by informing Target.

Some financial companies provide consumers more privacy choices than what the Federal law mandates. In February 2012, the JPMorgan Chase credit card, for instance, allowed their customers to restrict information sharing with Chase's affiliates as well as non-affiliates with whom Chase does business. Consumers can opt out the information sharing by phone, postal mail, or logging onto the Chase website.

Facebook and Google privacy policies, on the other hand, are more confusing to users than credit card agreements. A survey released in April 2012 by strategic branding firm Siegel+Gale revealed that the majority of Facebook and Google users do not fully comprehend the privacy policies and are ignorant of personal data management (56). Among the 400+ respondents, the survey found that:

1. Less than 40% of Facebook users understand how an Application Programming Interface (API) can be used to access their information on Facebook.
2. Only 15% of users know what will happen to their Facebook accounts after they delete them.
3. Just 20% of respondents know how to block outside applications and websites from accessing their information on Facebook.
4. Only 23% of Google users realize that their profile is visible to anyone online.
5. Less than 50% of Google users are aware that the same Google privacy policy applies to Google Talk, Google Maps, YouTube, and Blogger.
6. Just 38% of people realize that Google connects search activity to a user's IP address whether or not they sign into a Google account.



In February 2014, Facebook announced its \$19 billion acquisition of WhatsApp, a text messaging application with 450 million users (57). Unbeknown to the general public, software developer Thijs Alkemade discovered in October 2013 that WhatsApp had a major design flaw in its cryptographic implementation that could allow attackers to decrypt intercepted messages (58). Until the security flaw is fixed, Germany's privacy regulator urges WhatsApp users to switch to more secure messaging services such as Threema and myEnigma that employ end-to-end encryption (59).

## 14.7 Privacy on Facebook

1. Think twice before uploading anything to Facebook.

Even if you delete a Facebook account, the deleted photos may still be accessible through other means. The old content may be stored on Facebook servers for a month to three years or longer (60). Deleting a Facebook account does not remove the messages that you post on other people's timelines.

2. Review and set individual privacy settings carefully to control who sees your contact information, posts, and timeline, etc.

In general, the choices are public (everyone), friends of friends, friend only, and only me. The most open setting is "public (everyone)" and the most private is "only me." Facebook Help Center offers the comprehensive privacy controls by feature (61), and you can control sharing and finding you on Facebook (62).

3. Turn on the option to review tagged posts and tagged photos.

Facebook allows you to use the privacy settings to turn on the option to "review posts friends tag you in before they appear on your timeline" (63). You can also turn off "suggest photos of me to friends" in the privacy settings (64), but your friends can still tag you manually. As for tags from non-friends, Facebook automatically requires your approval before they go on your timeline.

4. Always check the privacy policy of a Facebook app before installing.

Facebook apps have access to your personal information on Facebook. The apps can keep your data even after you delete the apps (65). Do not install a Facebook app that you do not feel comfortable sharing your personal data with. Keep in mind that Facebook's "frictionless sharing" facilitates someone to find out something about you without you telling them. *Mashable* editor Lauren Hockenson offered a detail account of what to look out for with the new Facebook Open Graph (66) that enables third-party apps to integrate deeply into the Facebook experience (67). On Facebook, you can control the sharing of information with other websites and applications (68).

5. Adjust public search listing when appropriate.

Facebook by default creates a public search listing for all accounts that belong to users 18 years of age and older. If you do not want people to find your

Facebook page on Google, Yahoo!, and other search engines, you can use the privacy settings to turn off “public search” (69).

6. Accept friend requests only from friends that you know.

For socializing with people other than your own friends, Facebook offers non-personal pages for building relationships with your audience and customers (70). The categories include entertainment, artist or public figure, cause or community, brand or product, company or organization, and local business or place.

7. Use Facebook Anonymous Login to sign into third-party apps.

Facebook’s Anonymous Login allows users to sign into apps without sharing their identities and personal information contained in their Facebook accounts (71).

8. Forward suspected phishing messages to Facebook at [phish@fb.com](mailto:phish@fb.com).

Phishing is typically carried out by email spoofing or instant messaging that often directs users to enter details at a fake website whose look and feel are almost identical to the legitimate one. Be part of the solution protecting everyone’s privacy, forward suspected phishing messages to Facebook at [phish@fb.com](mailto:phish@fb.com) (72).

9. Opt out of Facebook’s interest-based advertising.

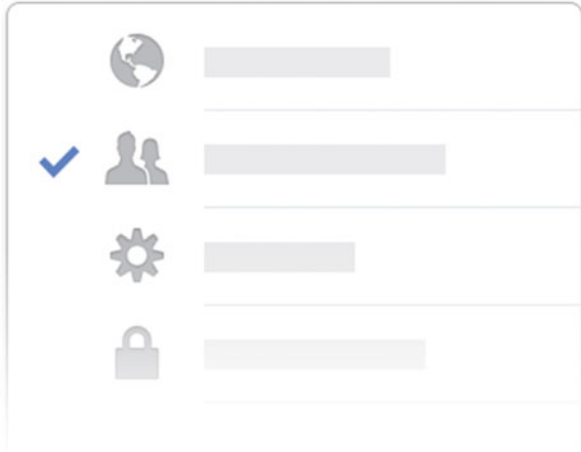
Facebook tracks its users even after they have logged out of the service (73). The “Do Not Track” setting in a web browser has no effect on Facebook (74). Go to Digital Advertising Alliance (<http://www.aboutads.info/choices/>) and opt-out of Facebook and other participating companies that are tracking your online behavior. See Chapter 4 Section 4 (“Facebook User Tracking Bug and Online Behavioral Tracking”) for more details.

10. Follow Facebook’s own advice from “3 Tips to Help Manage Privacy on Facebook”.

In March 2014, Facebook sent its users an email titled “3 Tips to Help Manage Privacy on Facebook” which listed a few ways to help control what we share on Facebook:

- I. Check out who can see your past posts—and limit the audience if you’re not comfortable with anything.
  - a. You can review the audience for your past posts in your activity log ([https://m.facebook.com/home.php?\\_rdr](https://m.facebook.com/home.php?_rdr))
  - b. To quickly limit the audience of old posts to Friends, visit your privacy settings (<https://m.facebook.com/privacy/touch/masher>)
- II. Consider who you’re sharing with today. Each time you post a new photo, status update, link or other content, you get to set the privacy for it. Just look for the audience selector (see Fig. 14.1)

**Fig. 14.1** Facebook audience selector



- a. If you want to:
- b. Share big ideas for anyone in the world, set the post to Public.
- c. Reserve personal pictures for the people you know the best, set the post to Friends, Close Friends or Custom.
- d. Share something with someone specific, you can also send it as a message instead of posting it.

III. To review or change who can see your stuff, any time, visit your privacy shortcuts.

## 14.8 Privacy on Google

### 1. Control personalized ads on Google search and Gmail.

Google allows you to opt out of Google search ads and Gmail ads that are personalized based on your Google search strings and email content respectively (75). While unsolicited ads can be as annoying as junk mail, the right kind of targeted ads can be beneficial to consumers however.

### 2. Turn off Find My Face.

Find my Face offers name tag suggestions to you and to people you know to quickly tag photos. Google+ uses the photos you are tagged in to create a model of your face. If you turn off Find my Face, your face model is deleted. However, any name tags already added are not deleted. By default, Find my Face is turned off (76).

### 3. Opt out of Google shared endorsements.

Pulling data from +1s and reviews, a Google+ user's name and profile photo may appear in ads across all Google products including Google Maps and Google

Search. To opt out of Google shared endorsements, go to <https://plus.google.com/settings/endorsements> and uncheck the box next to “Based upon my activity, Google may show my name and profile photo in shared endorsements that appear in ads” (77).

4. Turn on “Do Not Track” on your Internet browser.

Much like the popular Do Not Call registry, Do Not Track gives you the choice to opt out of tracking by third-party websites, applications, and advertising networks. The Federal Trade Commission (FTC) has asked the industry for their voluntary compliance of Do Not Track. FTC chairman Jon Leibowitz said in March 2012, “Do Not Track from our perspective certainly means ‘do not collect’ — not ‘do not advertise back. If a real Do Not Track option doesn’t come to fruition by the end of the year, there will be, I don’t want to say a tsunami of support for Do Not Track legislation next Congress, but certainly a lot of support” (78).

You can check to see if your Internet browser supports Do Not Track and if it has been enabled or not, by visiting <http://donottrack.us/> (79). Some popular anti-virus software such as AVG has Do Not Track feature that is enabled by default. Microsoft announced in May 2012 that IE10 in Windows 8 would send the “Do Not Track” signal to web sites by default to help consumers protect their privacy (80). You may also use online tracking detection tools such as Ghostery, Disconnect, and Privacy Badger from the Electronic Frontier Foundation (EFF) to discover if you are being tracked by a website (81).

5. Accept only session cookies and block all other cookies.

Session cookies are short-lived cookies that last only as long as your browser is open. Cookies are small chunks of information that websites can put on your computer to track your activities, also known as your web history. When you create a Google Account, web history is automatically turned on (82). You can remove your web history at <https://www.google.com/history>, but it does not stop Google from recording your search activity. A word of caution: some websites may not work without enabling both session cookies and first-party cookies.

6. Opt out of Google’s interest-based advertising.

Go to Digital Advertising Alliance (<http://www.aboutads.info/choices/>) and opt-out of Google and other participating companies that are tracking your online behavior. See Chapter 4 Section 4 (“Facebook User Tracking Bug and Online Behavioral Tracking”) for more details.

7. Set up Google Alerts and send Google removal requests when necessary.

In addition to Googling yourself periodically, set up Google Alerts at <http://www.google.com/alerts> to monitor the web 24/7 for any news and videos about yourself (42). You can receive an alert once a week, once a day, or as-it-happens. If a Google search reveals anything inappropriate, you can send Google a request at <https://www.google.com/webmasters/tools/removals> to remove search links to

web pages, images, and blogs for legal reasons (83). For YouTube videos, you can initiate a privacy complaint process online (84).

#### 8. Opt out of all background check websites.

Google search indexes information on many background check websites including Intelius.com, WhitePages.com, and Spokeo.com, to name a few. To opt out, you will have to visit each and every background check website and make the request. For example, the Intelius Opt-Out page is <https://www.intelius.com/optout.php> A partial list of opt-out web links can be found on Reddit:

[http://www.reddit.com/r/technology/comments/j1mit/how\\_to\\_remove\\_yourself\\_from\\_all\\_background\\_check/](http://www.reddit.com/r/technology/comments/j1mit/how_to_remove_yourself_from_all_background_check/)

#### 9. Consider using web proxies and anonymizing software.

Since search activity is connected to a user's IP address, web proxies such as Privoxy (85) and anonymizing software like Tor (86) hide the user's real IP address. Anonymizer's Anonymous Surfing (87) is more user-friendly but their servers will have access to your original IP address. Blogger Jared Newman discussed in *Time Magazine* a list of applications and services to help you stay anonymous online: PrivacyScore, Disconnect, SafeShepherd, Cocoon, AnchorFree HotspotShield, LBE Privacy Guard, Tor, and Burn Note (88).

## 14.9 Privacy on Smartphones

### 1. Turn off location services on your Android devices.

The location services function can be turned on or off in Android's setting menu. It is off by default. However, Apple, Microsoft, and RIM turn on location services by default. However, your cell phone registers its location with cell phone networks several times a minute, and this function cannot be turned off when the phone is getting a wireless signal. Moreover, each mobile user's daily movements can be used to create a unique digital fingerprint over an extended period of time (89). Therefore, it is possible to identify smartphone users by analyzing anonymous location data to look for patterns. American Civil Liberties Union reported in April 2012 that most police track phones' locations without warrants (90).

In June and July 2014, Russian soldier Alexander Sotkin posted two selfies on Instagram, being unaware that his phone logged the coordinates where the photos were taken and that location data were uploaded to the Instagram Photo Map. As a result, he inadvertently revealed that he was on the Ukrainian side during the time of conflict (91). In August 2014, *The Wall Street Journal* revealed that the revamped foursquare mobile app tracks its user's GPS coordinates even when the app is closed (92).

In case you may forget to turn off location services after using Google Maps, Prof. Janne Lindqvist at Rutgers University has developed an Android app to

automatically warn you when apps are tracking your location. “Because we know how ubiquitous NSA surveillance is, this is one tool to make people aware,” said Lindqvist (93).

2. Remove Carrier IQ on your Android devices.

A free Android app “Voodoo Carrier IQ Detector” can be used to detect the presence of Carrier IQ on your smartphone (94). In December 2011, Federal Bureau of Investigation director Robert Mueller testified before the US Congress, “We may obtain information that in some way Carrier IQ may have been involved with. ... [but the FBI] has neither sought nor obtained any information from Carrier IQ in any one of our investigations” (95).

3. Turn off automatic scanning for WiFi networks when you are not using WiFi.

When a smartphone is automatically scanning for WiFi networks nearby, it is continually making contact with all the WiFi routers within range. These WiFi providers can capture the ID number of your smartphone even if you do not connect to them or the WiFi is turned off. To disable WiFi scanning on an Android smartphone, uncheck “Scanning always available” option in the Advanced WiFi menu under Wireless & Networks (96).

4. Do not access unsecured websites (sites that begin with “http://”) when using public WiFi.

Sites that begin with “https://” are encrypted but sites with “http://” are not. Cybercriminals can intercept data transmitted to and from unencrypted websites. Security firm Immunity Inc. demonstrated the WiFi hazards with its Stalker tool that compiles a profile of a person by his online activities on Match.com, Tinder, Amazon.com, Pandora, Instagram, and other unencrypted sites (97).

5. Opt out of interest-based advertising.

You can stop companies from tracking your online behavior by opting out of interest-based advertising on your mobile devices:

- a) Apple: Open iPhone Settings and go to General > Restrictions > Advertising, and then click “Limit Ad Tracking.”
- b) Android: Go to Google Settings > Ads > Opt Out of Interest-Based Ads, and click.
- c) Windows: Go to Settings > System Applications > Advertising ID, and opt-out by setting the Advertising ID to “Off.”

6. Turn off your smartphone while shopping.

U.S. retailers including American Apparel, Family Dollar, Home Depot, and Nordstrom have experimented with indoor GPS to track customers’ shopping behaviors (98). Your indoor location can be tracked by either the mobile device’s MAC address or Apple’s iBeacon Bluetooth.

7. Remove the battery when the phone is turned off.

A cell network tower can tell your phone to fake any shutdown and stay on to record conversations through the microphone or track its GPS location (99). Removing the battery eliminates the risk of eavesdropping and location tracking.

8. Use secured apps for chatting, texting, and phone calls.

The “Reset the Net” campaign, in consultation with Electronic Frontier Foundation (EFF), published in June 2014 a Privacy Pack that recommends ChatSecure for secure chat with Google and XMPP users, TextSecure for strong protection of text messages, RedPhone for strong privacy for phone calls, and Cryptocat for chatting in secure groups (100).

9. Consider using a secure smartphone for both the caller and the receiver.

In February 2014, Blackphone was debuted at Mobile World Congress in Barcelona, Spain. “The entire reason for the phone to exist is to protect your privacy,” says Phil Zimmermann, Blackphone cofounder who invented the PGP (Pretty Good Privacy) encryption system. “We are not a phone company adding a privacy feature; we are a privacy company selling a phone” (101). Blackphone includes Silent Circle apps which encrypt voice, text, and e-mail, anonymous search and private browsing tools, and secure cloud storage. “There is no such thing as a completely secure phone,” forewarned Silent Circle CEO and former Navy SEAL Mike Janke. “Nothing is going to protect you from your own behavior. But out of the box, this phone does a lot of things to protect your privacy.” (102)

10. Consider changing your smartphone often in order to avoid accelerometer fingerprinting.

Due to hardware imperfections of accelerometers, the raw movements of a smartphone—which can be measured without permission—can produce a unique fingerprint and allow it to be tracked over time (103). “There has been a lot of work to catch the leakage of ID information from phones,” said Romit Roy Choudhury, associate professor of Electrical Engineering and Computer Science at the University of Illinois at Urbana Champaign. “We are now saying that accelerometer data going out of the phone can be treated as an ID” (104).

11. Beware of leaving sensitive data behind when you recycle your old smartphone.

When you delete a file, it is still there, just that it is no longer visible to you. U.K. mobile phone security firm BlackBelt explains, “In reality, it isn’t possible for an individual to perform a full removal of personal data from any smart phone or tablet using a device’s in-built factory reset or by re-flashing the operating system. This is because contemporary devices are fitted with solid state memory, which uses a technique called wear leveling to minimize data corruption and extend its lifespan by over-ruling instructions to permanently overwrite old data” (105).

BlackBelt and several other security companies offer their software solutions to effectively erase data from most handsets running a variety of operating systems (106). To ensure the destruction of top-secret digital data, the U.S. gov-



ernment employs companies specializing in secure data sanitization and electronics recycling to destroy hard drives, computers, monitors, phones, and other electronic equipment. “They actually shred the drives while you watch and provide a certification sheet after the process,” said Scott Pearce, chief information security officer for Frederick County government (107).

Your smartphone data may also be backed up in the cloud such as Apple’s iCloud, Google Drive, or Microsoft’s OneDrive. As Mary Elizabeth Winstead wrote after the nude photos of her and other celebrities were stolen and leaked to the public, “Knowing those photos were deleted long ago, I can only imagine the creepy effort that went into this. Feeling for everyone who got hacked”. In the digital world, delete does not always delete.

## 14.10 Data Vault – Data is the New Oil

In normal everyday life, we need to conduct business with financial institutions, online shops, and government agencies. The Locker Project elaborates, “As we go through our lives we create vast amounts of data. Emails, phone calls, social network posts, photos, utility bills, health monitoring devices, text messages, browsing data, purchase receipts and more are all born out of the regular course of our actions. It’s more than just data. It represents our actions, interests, intentions, communications, relationships, locations, behaviors and creative and consumptive efforts” (108). The Locker Project provides open-source application programming interfaces (APIs) for developers to build applications to access and control personal data.

While Facebook, Google, and other online businesses collect information about us and make billions of dollars from selling our data, what if we can organize our own information online in a secure “data vault” so that we may even be compensated for sharing that information? (109).

A data vault is the digital counterpart of a bank vault where money, valuables, and important documents can be stored. Our individual data vault will contain the photos we take, the places we visit, the links we share, contact details for the people we communicate with, and many other personal information.

Founded by Kaliya Hamlin in June 2011, Personal Data Ecosystem Consortium brings together startup companies that are developing tools and systems for personal control over personal data. Hamlin wrote, “Privacy protections are just the tip of the iceberg; the industry of managing these assets wisely is in the process of creating new economic opportunities and is a magnet for talent and capital. ... Our vision for the ecosystem is inclusive of a wide range of potential services and business models, while holding true to the core non-negotiable that people are ultimately in control of the sum of their data” (110).

Singly is one of the startups acquired by Appcelerator in August 2013. It offers an open platform where people can store their personal data after pulling it in from multiple sources such as Facebook posts, purchase histories from Amazon, past

search queries from Google, and email contacts (111). Singly supports the open source The Locker Project and the new protocol TeleHash that enables lockers to connect with one another to share things (112).

Another startup – Personal – states that “small data is the new oil” as big data is rapidly becoming a commodity (113). Personal allows users to enter their personal information in structured data fields within categories ranging from banking to shopping to babysitting. “What we envisioned was effectively creating a matchmaking marketplace, and it’s very predicated on online dating,” said Personal’s president and CEO Shane Green, “Consumers will assume the role of women, who are typically the choosier sex on dating sites, and the marketplace will employ a ranking methodology to show which deals a user is most compatible” (114).

Steve McNally, CTO at True/Slant, wrote on *Forbes* about our lives online, “All that time spent and an unprecedented level of detail about how we’ve spent it – and it’s mostly detail others have about you but you don’t see yourself” (115).

By collecting and analyzing our own digital footprint and exhaust data online, we will eventually get a more complete picture of our lives. For financial gains, we can sell the data to businesses who want us to be their customers. For personal analytics, we can use the data to help us make better life decisions and self-improvements.

## 14.11 Personal Analytics and Social Networks

The quantified self movement has been gaining popularity as we incorporate new technology into data acquisition on various aspects of our daily life such as caloric intake, calories burned, sleep quality, heart rate, blood-sugar level, and even mood change. Some of these personal data collected by mobile apps and wearable devices may also be uploaded to social networks.

Reports have shown that social networks can help people stay on the path to physical fitness. Social apps that track and share their fitness habits make them feel more accountable. Fitocracy, a 500 Startups accelerator program alum, is a fitness social network and online game on iPhone with almost half a million users. Canadian Virginia Champoux told *CNN* that Fitocracy kept her diligent about her workouts, “It is motivational and it offers me support. It’s the social aspect that helps” (116).

The Nike+ sports community has more than 5 million members who share their runs and profiles with friends online. Nike’s Global Digital Brand and Innovation Director Jesse Stollak said, “The Nike+ community has grown tremendously in past couple years with the addition of new products like the Nike+ GPS App and Nike+ GPS Sportwatch. We’ve added new features like the new Maps site, which leverages a wealth of run route data to provide recommendations. We also included the ‘cheer me on’ functionality inside the Nike+ GPS app, which taps into the runners’ friends on Facebook for additional motivation and support. When they are running, they hear applause on top of their music when friends ‘cheer’ them” (117).

Martin Blinder, founder and CEO of Tictrac, spoke at the 2011 Intelligence Squared's If Conference, "We leave a data residue everywhere. . . . New formats are enabling us to bring data sets together and drive compelling insights. . . . What if I could compare myself to others? I could understand if certain activities in my life are normal, above average, etc. Does my daughter catch too many colds? Do I spend too much on shoes given my salary? Is my sex life normal for my age, job and location? A lot of these questions are in the back of my mind. We think about them, but we don't talk about them. The benefit of this is that we are able to improve ourselves. . . . Personal analytics means we can stop lying to ourselves and start leading healthier lives, making better choices, fewer mistakes and have control over our wellbeing" (118).

Personal analytics combined with social networks provide a high-tech mechanism for self-help and self-improvement. The success in physical fitness applications is only the beginning. Apple, in partnership with Mayo Clinic, launched the "Health" app and data-sharing platform "HealthKit" in June 2014 to keep track of patients' health indicators and share the vital data with healthcare professionals (119). "If you see the glucose levels rising," said John Ward, Mayo's medical director for public affairs, "you could interact with [the patient] if they had a question, intervene appropriately, and then decrease the need for an emergency room visit or a hospital admission, which we know drives up hospital and patient costs" (120).

## 14.12 Community Analytics and Social Networks

Extending personal analytics to community analytics can be beneficial to the society at large. PatientsLikeMe is the largest patient social network with over 250,000 people with chronic diseases who share information about symptoms, treatments, and coping mechanisms. In April 2014, PatientsLikeMe granted the biotechnology company Genentech full access to its database for five years (121). PatientsLikeMe co-founder and chairman Jamie Heywood explained, "We envision a world where patient experience drives the way diseases are measured and medical advances are made. With Genentech we can now embark on a journey to bring together many stakeholders across healthcare and collaborate with patients in a new way" (122).

Genentech's senior vice president Bruce Cooper, M.D. concurred, "The collaboration with PatientsLikeMe will allow us to learn more from patients with serious diseases, and better integrate their insights into our decision-making. We hope our participation will encourage broader engagement of others involved in the delivery of healthcare and support a stronger voice for patients" (122).

However, there are pros and cons to community analytics. "The beauty of observational trials," said University of Pittsburgh professor Mark Roberts, "is that you can see how an intervention works in the real world" (123). But potential bias exists for any self-reported data, as Roberts warned, "What kinds of patients are willing to report their data? Is it the full range of disease? Were people who didn't do well as likely to report findings as those who did?" (123). The effectiveness of community analytics largely depends on the individuals who make up the community.

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# Chapter 15

## Personal Total Information Awareness

*“You can have data without information, but you cannot have information without data.”*

– Facebook Data Team (2008)

*“Just wait. We’ll be sending you coupons for things you want before you even know you want them.”*

– Statistician Andrew Pole at Target (2011)

*“I have teenage kids and [using Facebook is] the only way that you can really see what they are up to and talk to them.”*

– Indianapolis attorney Mark S. Zuckerberg (2011)

*“The computer ‘server’ and the ‘server’ in the bar will be indistinguishable... They will both know what you want to drink before you know it yourself.”*

– Social critic Andrew Keen (2012)

*“I think that big data is going to become humanity’s dashboard.”*

– Photographer Rick Smolan (2012)

*“The natural flow of technology tends to move in the direction of making surveillance easier ... The ability of computers to track us doubles every eighteen months.”*

– PGP creator Phil Zimmermann (2013)

### 15.1 Humanity’s Dashboard

While Mutual Assured Destruction (MAD) has helped to prevent World War III, Total Information Awareness (TIA) can offer insights into some of the biggest challenges facing humanity.

In Francis Ford Coppola’s *The Godfather Part II* (1974), Michael Corleone said, “There are many things my father taught me here in this room. He taught me: keep your friends close, but your enemies closer” (1). Ironically, the biggest blows to the mafia in America have been due to the efficacious FBI infiltration. Undercover FBI agents have been able to penetrate the mafia families as wiseguys and “made men,” leading to the arrests and convictions of notorious mob figures (2).

Although there are Facebook apps like “EnemyGraph” that bond like-minded haters online, in reality the real “enemies” are actually Facebook “friends” who are bullying their classmates or applying peer pressure on their weaker counterparts. School bullying has gotten so out of hand that in April 2012, 13-year-old Rachel Ehmke in Minnesota committed suicide after months of school bullying (3), and a mother sent her 17-year-old son Darnell Young to school in Indiana armed with a stun gun for his protection against bullies. Young’s mother Chelisa Grimes said, “I do not promote violence – not at all – but what is a parent to do when she has done everything that she felt she was supposed to do ... at the school?” (4).

In Steven Spielberg’s *Minority Report* (2002), “PreCrime” is a specialized police department that apprehends criminals based on foreknowledge provided by three psychics named “precogs” in the year 2054 (5). Although the notion of “PreCrime” is overarching Orwellian, who would not want to know if a criminal out there was planning to abduct our children or shoot up our schools?

We were appalled by the senseless massacres at Columbine High School in 1999 and at Virginia Tech in 2007. What if these atrocities could have been prevented? We were equally horrified by the kidnapping of 14-year-old Elizabeth Smart in 2002 and of 11-year-old Jaycee Dugard, who was abducted in 1991 and held captive for 18 years. What if the abductees could have been rescued in a matter of hours or days instead of years or decades?

The answers rely heavily on the collection, interpretation, and usage of big data – the avalanche of personal data driven by social networks and other existing infrastructures. As the Facebook Data Team wrote on their official Facebook profile, “You can have data without information, but you cannot have information without data” (6).

Indeed, the lack of electronic data could hamper police work. In early 2014, 65-year-old Philip Welsh was murdered in his home in Silver Spring, Maryland; and the case remained the only unsolved killing in Montgomery County as of May 2014 (7). Welsh had no Internet, no computer, and no cell phone. He left behind no electronic footprints.

“When people hear of big data, they think Big Brother,” said Photographer Rick Smolan, co-founder of *The Day in the Life* photography series. “The general public and the media tend to immediately think, ‘Oh, this is all invasive. People are trying to sell us stuff or spy on us, or it’s the government trying to control us.’ But I think that data will become one of the ways that we can finally start addressing some of the biggest challenges facing humanity – of poverty, and crime, and pollution, and overcrowding, and the use of resources, and environmental problems. Right now, I feel like the human race is like driving a car around this twisty road, and we have no idea whether our tires are inflated, how much gas we have left. We have no headlights. ... It’s like no dashboard in front of us. And I think that big data is going to become humanity’s dashboard” (8).

Facebook nation exists in the intersection of humanities and sciences, somewhere in between the fictional worlds of *The Godfather Part II* and *Minority Report*. We saw in *Minority Report* that in 2054 computers scan human faces and display targeted advertisements to individuals as they walk down the street. It turns out that

since 2010 there have been billboards in Tokyo subway stations and London bus stops that employ cameras and face recognition software to determine the gender and age of passersby. Gesture-control interfaces (9), retina scanners (10), insect robots (11), augmented-reality glasses (12), and electronic paper (13) are some of the other cutting-edge technologies that are already available today. Ericsson's human USB (14), Nokia's vibrating tattoo alerts (15), Disney's touch-sensing furniture (16), NeuroSky's mind-controlled videogames (17), and Google's self-driving cars (18) are just a few of the many new products in the works. The future is arriving sooner than we imagine.

In the age of big data, Facebook nation is progressing towards Total Information Awareness whether or not we are ready for it. A whole new world of possibilities, either good or bad, has been bestowed on us. What we opt to do or not do in this brave new world will have a significant impact on our future. In a 2013 interview, PGP (Pretty Good Privacy) creator Phil Zimmermann told *GigaOm's* Om Malik, "The natural flow of technology tends to move in the direction of making surveillance easier ... The ability of computers to track us doubles every eighteen months" (19).

## 15.2 Ambient Awareness and Suicide Prevention

Social scientists use the term "ambient awareness" to describe the incessant online contact on Facebook, Twitter, and other social networks. Prof. Andreas Kaplan at ESCP Europe Business School in France defines ambient awareness as "awareness created through regular and constant reception, and/or exchange of information fragments through social media" (20). Clive Thompson of the *New York Times* wrote, "Ambient awareness is very much like being physically near someone and picking up on his mood through the little things he does – body language, sighs, stray comments – out of the corner of your eye" (21).

Ambient social apps and Facebook's "frictionless sharing" greatly facilitate ambient awareness among friends nearby and far away. We can find out something about others without them telling us. We can be more vigilant only by becoming more aware of people, our surroundings, and happenings around us.

Friend's awareness can save lives. Frank Warren founded PostSecret in 2004 to collect secrets mailed to him on postcards anonymously. He scans the postcards and posts them on the blog [www.postsecret.com](http://www.postsecret.com). Warren shared his testimony at the TED2012 conference, "When I posted a secret from someone who confesses to thinking about jumping from the Golden Gate Bridge, PostSecret Blog readers sprang to action creating a Facebook group page called, Please Don't Jump. They posted encouraging pictures and shared their own inspiring stories of hope. 60,000 people joined the group in 10 days. The next week the San Francisco City Council proclaimed the first annual 'Please Don't Jump Day'" (22).

The public's reaction was in sharp contrast to the bystander effect or "Genovese syndrome," named after Catherine Susan (Kitty) Genovese whose cry in the night went unanswered by 38 of her neighbors in Queens, New York, on March 13, 1964

(23). Diffusion of responsibility is a sociopsychological phenomenon whereby a person is less likely to take responsibility for an action or inaction when others are present. In 1968, John M. Darley of New York University and Bibb Latané of Columbia University performed experiments to verify their hypothesis that “the more bystanders to an emergency, the less likely, or the more slowly, any one bystander will intervene to provide aid” (24). In 2008, Mark Levine and Simon Crowther of Lancaster University conducted four new experiments, which concluded that “increasing group size inhibited intervention in a street violence scenario when bystanders were strangers but encouraged intervention when bystanders were friends” (25). The key here is “friends.”

Facebook friends can make a difference in people’s lives, for better or worse. In December 2009, John T. Cacioppo of University of Chicago, James H. Fowler of UC San Diego, and Nicholas A. Christakis of Harvard University showed that loneliness spreads through a contagious process in a large social network. A person is 52% more likely to be lonely if a direct connection in the social network is lonely (26). In August 2011, the National Center on Addiction and Substance Abuse at Columbia University found that teens that spend time on the social networks are likely to see images of their peers drinking or using drugs – images that could help to convince them that substance abuse is a normal, acceptable activity (27).

In January 2012, Adam D. I. Kramer from the Facebook Core Data Science Team conducted a massive psychological mood experiment on 689,003 Facebook users. Kramer and his colleagues concluded that “emotional states can be transferred to others via emotional contagion, leading people to experience the same emotions without their awareness. ... Emotions expressed by friends, via online social networks, influence our own moods, constituting, to our knowledge, the first experimental evidence for massive-scale emotional contagion via social networks” (28).

On the positive side, Pew Internet Project in February 2012 released the research results by Keith N. Hampton of Rutgers University, Lauren Sessions Goulet of University of Pennsylvania, and Cameron Marlow of Facebook. The researchers combined server logs of Facebook activity with survey data to explore the structure of Facebook friendship networks and measures of social well-being. The results showed that most Facebook users receive more from their Facebook friends than they give – they receive more messages than they send, they are tagged in a photo more than they tag a friend in a photo, and their content is “liked” more often than they “like” their friend’s content. Lee Rainie, Director of the Pew Internet Project, said, “This examination of people’s activities in a very new realm affirms one of the oldest truths about the value of friendship: Those who are really active socially have a better shot at getting the help and emotional support they need. The Golden Rule seems to rule digital spaces, too” (29).

Sometimes help might have come too late. In September 2010, 18-year-old Rutgers University freshman Tyler Clementi killed himself after his roommate Dharun Ravi and Ravi’s friend Molly Wei secretly videostreamed him kissing another man using a webcam. Clementi felt alone and helpless during the ordeals. His final message on Facebook read, “Jumping off the gw bridge sorry” (30). His friends and Ravi’s apologetic text message were too late to help (31).

On Christmas Day 2010, 42-year-old Simone Back in Brighton told her 1,048 friends on Facebook: “Took all my pills, be dead soon, bye bye everyone” (32). Of the 150 online responses, one Facebook friend called her a liar, another said, “she does it all the time, takes all her pills,” and yet another said, “it’s her choice.” No one who lived nearby contacted the police or sought her out in time to save her. Back’s friend Samantha Pia Owen said, “Everyone just carried on arguing with each other on Facebook ... Some of those people lived within walking distance of Simone. If one person just left their computer and went to her house, her life could have been saved. These so-called friends are a waste of air. If someone has got problems you don’t go around adding to them, you don’t start attacking people who are already vulnerable ... Facebook should put up a flag or button so that a post can be flagged up as a suicide threat, and Facebook should be able to contact the police”. (33)

While Facebook could not tell people how to choose their friends, Facebook in March 2011 added Samaritans suicide risk alert system (34). If someone is posting depressing photos or writing about killing themselves, their Facebook friends can click on the “report suicidal content” link to alert Facebook staff members who are monitoring these reports 24/7 (35). Other social media follows suit. Google provides a feature in the U.S. search engine that displays a picture of a red telephone and the National Suicide Prevention Lifeline phone number when people are searching for suicide-related topics (36). Twitter and Tumblr also allow their users to report suicidal behavior.

Surgeon General Regina Benjamin wrote on Facebook in December 2011, “The Action Alliance brings together public, private and nonprofit partners to engage every sector of society with a vision of ending the tragic experience of suicide in America. Facebook is an important part of that partnership, and I’m excited about the new initiative to augment its response to potentially suicidal members by offering the opportunity for a private chat with a trained crisis representative from the Suicide Prevention Lifeline in addition to providing the Lifeline’s phone number. This service will be available to people who use Facebook in the United States and Canada. The new service enables Facebook users to report a suicidal comment they see posted by a friend to Facebook using either the Report Suicidal Content link or the report links found throughout the site. The person who posted the suicidal comment will then immediately receive an e-mail from Facebook encouraging them to call the National Suicide Prevention Lifeline 1-800-273-TALK (8255) or to click on a link to begin a confidential chat session with a crisis worker” (37).

### **15.3 Parental Awareness, School Bullying, and Cyberbullying**

*CNN* legal analyst and criminal defense attorney Mark O’Mara explains, “Bullying is not name calling. It’s not a little harmless schoolyard razzing. Bullying is the systematic harassment of an individual with the intent to cause substantial emotional distress. It can include social ostracism, slut-shaming, extortion, sexual extortion, and more” (38). O’Mara and Florida state senator David Simmons have proposed a bill to make bullying illegal.



In April 2012, 17-year-old Darnell Young went to Arsenal Technical High School in Indianapolis with a stun gun. “I brought the stun gun ‘cause I wasn’t safe,” said Young who was taunted and bullied for months. “I was at my wit’s end. I didn’t know what to do and I thought about suicide.” He was kicked out of school for bringing the weapon. Young’s mother Chelisa Grimes protested, “I do not promote violence – not at all – but what is a parent to do when she has done everything that she felt she was supposed to do ... at the school? I think that the self-protection device is what’s making the news, but the big picture is that my child is not the only one who does not feel safe at our school” (4).

It is a tragedy that some victims of school bullying took their own lives. For example, 13-year-old Rachel Ehmke in Minnesota committed suicide in April 2012 after months of bullying by her schoolmates in Kasson/Mantorville Middle School (39). A note that her parents found after her death read, “I’m fine = I wish I could tell you how I really feel,” alongside a picture of a broken heart.

Cyberbullying only exacerbates the danger of bullying. Victims are constantly being stalked by bullies even after school. “As many as 25% of teenagers have experienced cyberbullying at some point,” said Justin W. Patchin, Professor of Criminal Justice at the University of Wisconsin-Eau Claire (40). According to McAfee’s report titled “2014 Teens and the Screen Study,” cyberbullying had more than tripled in 2014 as the majority – 87% – of youth had witnessed cruel behavior online that resulted in anger and embarrassment. “Parents must discuss online activity with their children to better ensure their safety and security offline,” said Michelle Dennedy, chief privacy officer at McAfee. “Whether a child is a victim or an instigator of cruel behavior such as cyberbullying, the negative behavior can deeply affect their identity and their reputation” (41).

In January 2010, 15-year-old Phoebe Prince, an immigrant from Ireland, took her own life in order to escape vicious bullying on Facebook, via text messages, and in her school. After her death, one student wrote “Done” on Facebook while another wrote that “She got what she deserved” (42). Darby O’Brien, a high school parent and friend of Prince’s family, wondered why the bullies who tormented Prince were still in school. O’Brien said, “Instead of confronting the evil among us, the reality that there are bullies roaming the corridors at South Hadley High, people are blaming the victim, looking for excuses why a 15-year-old girl would do this. People are in denial” (43). The South Hadley police chief responded, “We’ve subpoenaed records from Facebook, we’ve subpoenaed web pages from Facebook, hoping to track down perpetrators of some of this criminal threatening” (44).

In September 2012, 15-year-old Audrey Pott committed suicide after being bullied by schoolmates who saw the photographs taken of her being raped by three teenage boys at the Saratoga High School in California (45). The teen rapists took photos of the attack, texting them at school, and posting them online. Pott wrote on her Facebook page, “I have a reputation for a night I don’t even remember. I can’t do anything to fix it. I just want this to go away. The whole school knows. I have a reputation I can never get rid of” (46).

On September 7, 2012, 15-year-old Amanda Todd published a YouTube video titled “My story: Struggling, bullying, suicide, self harm” with the description

“I’m doing this to be an inspiration and to show that I can be strong” (47). Holding a stack of cards in the video, the teen showed one card after another, chronicling her long and painful journey of being a bullied victim. The last two cards read, “I have nobody ... I need someone :(My name is Amanda Todd ...” She struggled to survive and hoped that someone would listen. But no one did, and she took her own life one month later on October 10, 2012.

In April 2013, 17-year-old Canadian Rehtaeh Parsons killed herself after being cyberbullied for more than a year. She and her family were forced to relocate after a photo of her being raped circulated in her school and community. “She was never left alone,” Leah Parsons told *CBC*. “She had to leave the community. Her friends turned against her. People harassed her. Boys she didn’t know started texting her and Facebooking her asking her to have sex with them. It just never stopped” (48).

In July 2013, 14-year-old Italian Carolina Picchio jumped from her bedroom window to her death after her ex-boyfriend and his friends repeatedly bullied her via Facebook posts, online videos, and WhatsApp messages. Novara prosecutor Francesco Saluzzo said, “In the case of Carolina, it appears some of her friends, some of her relatives, asked for the removal of some of this strongly offensive content [on Facebook], and it wasn’t removed – and this played a role in her decision to commit suicide” (49).

In August 2013, 14-year-old Hannah Smith hanged herself after she was bullied on the website Ask.fm where she had gone on to look for advice on the skin condition eczema. More than 15,000 people in the United Kingdom have signed an online petition urging the government to act: “Cyber-Bullying has been an ever increasing problem within the UK for a considerable amount of time with one of the biggest offenders becoming Ask.fm, a site popular amongst young people where posts can be made with confidence anonymously which has led to bullying, mental health problems and suicides as well as grooming” (50).

After 12-year-old Rebecca Sedwick leapt to her death from a water tower in September 2013, her classmate – a 14-year-old Florida girl – posted on her Facebook, “Yes IK I bullied REBECCA nd (*sic*) she killed her self (*sic*) but IDGAF” (51). The vernacular meant “I don’t give a f\*ck.” Polk County Sheriff Grady Judd arrested the girl, but the charges were eventually dropped because bullying was not a crime.

Nova Scotia enacted a law in August 2013 allowing victims to seek protection from cyberbullying and to sue the perpetrator. “Too many young people and their families are being hurt by cyberbullies. I committed to families that the province would work with them to better protect our children and young people. Court orders, and the ability to sue, are more tools that help put a stop to this destructive behavior,” said Justice Minister Ross Landry. “This sends a clear message: cyberbullying is a serious act with serious consequences. Think before you text” (52).

In September 2011, Facebook collaborated with Cartoon Network in launching the “Stop Bullying: Speak Up” social pledge application. “The Stop Bullying: Speak Up Social Pledge App is rooted in the fact that students, educators and parents have the power to stop bullying by speaking up when they see it occur,” said Marne Levine, Vice President of Global Public Policy at Facebook. “The launch of this campaign reinforces our deep commitment to the safety and security of kids

everywhere. By working with Time Warner, our hope is to inspire millions of people who witness bullying to take action” (53).

Bullying and cyberbullying have become such an epidemic that some schools have been going for a shock-and-awe approach by hiring The Scary Guy (a real legal name for Earl Kenneth Kaufmann) to deliver anti-bullying messages in an unconventional manner. Covered with tattoos all over his face and body, The Scary Guy pokes fun at the audience and yet gets serious about the harm of bullying. His message is to “show [kids] they have the power to make the choice to be who they want to be and not become what they see and hear around them. ... [The letters from the kids] just tell me what it’s like to make a difference, to make a change—to wake up to the idea that they don’t have to live with stress and negative behavior around them” (54).

Indeed, children and teens need to learn that they are who they are and they can be what they want to be, regardless of what other people call them or how they try to hurt them. 13-year-old Faye Gibson is constantly bullied by schoolmates who call her ugly. In January 2012, Gibson made a YouTube video “Am I Pretty or Ugly” in order to get a second opinion from strangers on the Internet (55). Her mother Naomi Gibson told *ABC Good Morning America*, “I took away her Facebook and Twitter account because of bullying. She needs to stop putting herself out there. Now people are walking around asking her if she’s pretty to her face. It’s hurting her more in the long run, I think” (56).

Keeping children away from Facebook and Twitter may not be the right thing to do. Instead, parents should monitor their kids’ Facebook messages and tweets to make sure that they are not being bullied as well as they are not bullying others. It is best for parents to “befriend” their children on Facebook, and to “follow” them on Twitter.

Indianapolis attorney Mark S. Zuckerberg was delighted when Facebook reactivated his profile after mistakenly deleting it for the reason of “false identity.” Attorney Zuckerberg explained his affinity towards Facebook: “I have teenage kids and it’s the only way that you can really see what they are up to and talk to them” (57).

Similarly, Anna Berry of Littleton, Colorado is connected with her 13-year-old daughter Ashley on every social network that the teen joined. Berry’s rightful concern stems from her keen observation as a parent: “You would see a girl who should be on top of the world coming home and just closing herself into her bedroom” (40). Instead of being a victim, Ashley Berry founded G.I.R.L.S. Workshops (Girls Inspiring Real Leadership Skills), an interactive program for girls “to hear from anti-bullying advocate Ashley as she shares her 2-year journey as a victim of bullying and online impersonation and how she turned those experiences around to help others and now empowers young girls to be comfortable and proud with who they are” (58).

*GigaOm* senior writer Mathew Ingram opined that if the NSA tools were available, he probably would have used them to snoop on his kids (59). And his daughter Meaghan responded in a *GigaOm* article, “All in all, my dad’s surveillance of my Internet activities has not impacted me negatively in the slightest. I don’t know what my online experiences would have been like if my dad had been completely missing, or too involved in them — I do know that I appreciate what he’s done for me and my sisters. In a way, it almost feels like it’s a specific kind of affection: that my

dad cares enough to find out what I'm doing online, but also cares enough that he trusts me to make the right decisions without hurting myself. I think that shows a level of parenting most children would be happy to have" (60).

In September 2010, SafetyWeb introduced a new subscription service for parents to help protect kids from common online dangers from sexting to cyberbullying (61). Without the parents having to monitor every post, the service automatically scours the Internet and monitors a child's online activities and immediately red-flags for the parents any and all potential threats to their child. The service goes a step further by helping parents keep tabs on their child's mobile calls and text messages. Although there is a delicate balance between children's privacy and parental awareness, a good parent should always be attentive to their children's activities and feelings – both online and offline. Rachel Ehmke's suicide note "I'm fine = I wish I could tell you how I really feel" pointed to deadly consequences of the lack of communication and parental awareness.

After all, parents play an epochal role in their children's behavior. In 1998, researchers from the University of Maryland and the National Institute of Child Health and Human Development found that "a proactive parental monitoring approach may be associated with less adolescent drinking" (62). *CNN* legal analyst and criminal defense attorney Mark O'Mara believes that parents should be held criminally liable for their kids' cyberbullying: "If parents are not going to assume responsibility for their children's online access on their own ... I would support legislation that places legal responsibility on parents, making them liable for what the children do with the online access parents provide" (63).

In short, parental awareness and proper education are the keys to stop bullying and cyberbullying. As a part of the five-month *Aware.Prepare.Prevent* (A.P.P.) campaign, the Norfolk FBI in May 2012 held a program on parental awareness on innocent images, sexting, cyberbullying, and gangs (64).

## 15.4 Student Awareness and School Safety

April 16, 2007 was a truly sad day when I heard with disbelief the news about the horrific school shooting at Virginia Tech, my alma mater. 23-year-old Seung Hui Cho, an English major at Virginia Tech, murdered 32 and injured 17 students and faculty before taking his own life (65).

Although no one could have foreseen the tragedy, red flags and warning signs had been abundant for many years according to the 2007 Virginia Tech Review Panel report presented to then Virginia Governor Tim Kaine (66). In 1999 when Cho was in the 8th grade, his middle school teachers identified suicidal and homicidal ideations in his writings referencing the Columbine High School massacre that occurred on April 20th that year. The school requested his parents seek counseling for him. He received a psychiatric evaluation and was prescribed antidepressant medication.

In Fall 2005, as Cho started his junior year at Virginia Tech, his poetry professor Nikki Giovanni was concerned about violence in his writing. English Department

Chair and Professor Lucinda Roy removed Cho from Giovanni's class and tutored him one-on-one with assistance from Prof. Frederick D'Aguiar. When Cho refused to go to counseling, Roy notified the Division of Student Affairs, the Cook Counseling Center, the Schiffert Health Center, the Virginia Tech police, and the College of Liberal Arts and Human Sciences.

In the winter of 2005, several female students filed reports with the Virginia Tech Police Department (VTPD) to complain about "annoying" contacts and "disturbing" instant messages from Cho. On December 13, Cho's suitemate received an instant message from Cho stating, "I might as well kill myself now." The suitemate alerted VTPD. Cho was taken to Carilion St. Albans Psychiatric Hospital for an overnight stay and mental evaluation. He was released after psychologists determined that he did not present an imminent danger to himself or others.

In Spring 2006, Cho wrote a paper in Prof. Bob Hicok's creative writing class, detailing a young man who hated the students at his school and planned to kill them and himself. In February 2007, Cho ordered his first handgun online from TGSCOM. In March, he purchased a second handgun at Roanoke Firearms. The store initiated the required background check by police, but found no record of mental health issues in the National Instant Criminal Background Check System. From March to April, Cho purchased several 10-round magazines and ammunition from eBay, Wal-Mart, and Dick's Sporting Goods.

About 7:15 in the morning of April 16, 2007, Cho entered West Ambler Johnston residence hall, a 2-minute walk from his dormitory. He shot and killed Emily Hilscher in her dormitory room after she was dropped off by her boyfriend. Resident advisor Ryan Christopher Clark went to investigate noises in Hilscher's room and was also shot.

At 9:01 a.m., Cho mailed a package at the Blacksburg post office to NBC News in New York. The package contained pictures of himself holding weapons, an 1,800-word rambling diatribe, and video recordings in which he expressed rage, resentment, and desire to get even with his oppressors.

Two hours after the first double homicide, Cho entered Norris Hall, an engineering building, at 9:15 a.m. He chained the doors shut on the three main entrances from the inside. Around 9:30 a.m., he began a shooting spree that lasted about 11 minutes. He fired 174 rounds, killing 30 and wounding 17 students and faculty. Prof. Liviu Librescu barricaded his classroom door to give his students time to escape through the windows (67). Librescu and one of his students were killed. The massacre finally ended at 9:51 a.m. when Cho shot himself in the head.

On April 19, the autopsy of Cho found no brain function abnormalities and no toxic substances, drugs, or alcohol that could explain the rampage. Furthermore, there was no evidence that he knew any of the 32 people whom he killed.

Dr. Roger Depue, a 21-year veteran of the Federal Bureau of Investigation (FBI), wrote in the Virginia Tech Review Panel report, "Experts who evaluate possible indicators that an individual is at risk of harming himself or others know to seek out many sources for clues, certain red flags that merit attention. ... When a cluster of indicators is present then the risk becomes more serious. Thus, a person who possesses firearms, is a loner, shows an interest in past shooting situations, writes stories about homicide and suicide, exhibits aberrant behavior, has talked about

retribution against others, and has a history of mental illness and refuses counseling would obviously be considered a significant risk of becoming dangerous to himself or others” (68).

The report concluded, “Accurate and complete information on individuals prohibited from possessing firearms is essential to keep guns out of the wrong hands.” However, privacy laws and social stigma of mental illness presented a huge obstacle in linking mental health data with criminal background check. “We need to do a much better job educating educators, [the] mental health community and law enforcement that they can, in fact, share information when a person’s safety or a community’s safety is in fact potentially endangered,” said Health and Human Services Secretary Michael O. Leavitt after delivering the report to President George W. Bush (69).

Had Cho’s mental history been added to the National Instant Criminal Background Check System, he would not have been able to purchase firearms. If school buildings had installed monitored security cameras, he might not have gotten away easily from the crime scene in West Ambler Johnston residence hall, he would not have had the time to chain the doors shut on the three main entrances of Norris Hall, and the police could have been dispatched after he fired the first few shots.

School safety is one of the topmost concerns of parents for their kids. In February 2012, community leader Morris Grifton called for video surveillance in school after two teachers were arrested for lewd acts involving pupils at Miramonte Elementary School. “We’re saying enough is enough,” said Grifton at a rally with angry parents. “We want cameras in the classrooms, in the hallways and around the school” (70). In August 2013, University of Maryland-Eastern Shore purchased 200 bulletproof whiteboards to offer professors and students greater protection in the event of a school shooting (71). These measures are just the tip of the iceberg.

Then Virginia Tech President Charles W. Steger hinted towards the need for better information awareness in a written statement, “The [Virginia Tech Review Panel] report unearthed the deep complexities of the issues facing college campuses today. We believe that this will further inform the national and our state discussion on the nexus between societal safety and personal freedoms” (69).

Better information awareness does not mean less personal freedoms. Feeling safe in school is a prerequisite for a conducive learning environment. Everyone should be free to express their opinions, voice their concerns, and become better informed. In the age of big data, correlating Cho’s mental history and his purchase data from eBay could have alerted the authorities, mental healthcare professionals, and university counselors that he really needed psychological help.

Daniel J. Solove, John Marshall Harlan Research Professor of Law at George Washington University Law School, opines that higher education needs privacy officers and privacy/security training. Solove said, “The Family Educational Rights and Privacy Act (FERPA) and other privacy law allow for sharing of personal information about students in distress, and in many circumstances, FERPA permits schools to share the data with a student’s parents. ... The Department of Education issued new FERPA rules to clarify when information may be shared in a health or safety emergency. But the problem wasn’t just with the FERPA rules – it was that people didn’t understand them, didn’t know about them, and weren’t effectively

trained about them. The problem also stemmed from the lack of a privacy officer whom various school officials and employees could have called to figure out what to do with the information they had. The situation at Virginia Tech can still readily happen again. That's because higher education is lagging behind other industries in at least two key privacy protections: (1) having a privacy officer; and (2) engaging in training and awareness education" (72).

The 2007 Virginia Tech shooting prompted many universities to improve their emergency notification system and procedure in compliance with the Clery Act. Signed in 1990, the Clery Act is also known as the Crime Awareness and Campus Security Act – a law enacted after 19-year-old Lehigh University freshman Jeanne Clery was raped and murdered in her dorm room in April 1986 (73).

When gunshots erupted on the Virginia Tech campus again in December 2011, the university notified all 30,000+ students within minutes via text messages, emails, the school website, Twitter, and the campus-wide public address system. "We all knew immediately after it happened not to go to campus," said Virginia Tech sophomore Abby Lorenz. "All of my roommates and I got texts and e-mails, and they've sent us multiple updates" (74). Timely notifications and crime awareness are essential to deterring violence on campus and minimizing potential casualties.

In addition to campus security, there are social apps designed for students to help one another in need. Winner of the White House "Apps Against Abuse" Technology Challenge, Circle of 6 is an iPhone app that uses GPS and pre-installed text messages to alert friends to the user's location if anything goes wrong (75). Two weeks after its launch in March 2012, Circle of 6 already had 19,000 downloads (76).

In the Spring 2012 issue of *Virginia Tech Magazine*, Alumni Distinguished Professor Emeritus William E. Snizek wrote, "During almost 40 years on the Tech faculty, I was fascinated by the graffiti I found on desktops. ... On one desktop, a student wrote, 'Why do I always want to cry?' And just below that, another responded, 'I know how you feel, trust me, talk to someone'" (77).

Without someone to talk to face-to-face openly, a troubled individual may rely solely on the Internet proliferated with information, misinformation, and disinformation. It is appalling that anyone can find on the Internet detailed instructions and user guides on school shooting, a horrific act of domestic terrorism. For instance, Lolokaust's school shooting guide laden with profanity, pornography, and erroneous information is the number one search result on Google for the search phrase "shoot up your school." (See Fig. 15.1). Wikipedia and Yahoo! Answers also show up on the first page of Google search at position #4 and #6 respectively. According to a 2013 study by search-targeted advertising company Chitika, the top listing in Google's organic search results receives 32.5% of the traffic, compared to 17.6% for the second position, and the traffic degrades to a mere 2.4% for the last position on the first page of Google search (78).

Google Chrome's tagline is: "The web is what you make of it" (79). The vile Lolokaust website might have a redeeming value if the Google search history – a part of user's digital footprint and exhaust data – would help identify those troubled individuals and provide them psychological counseling.



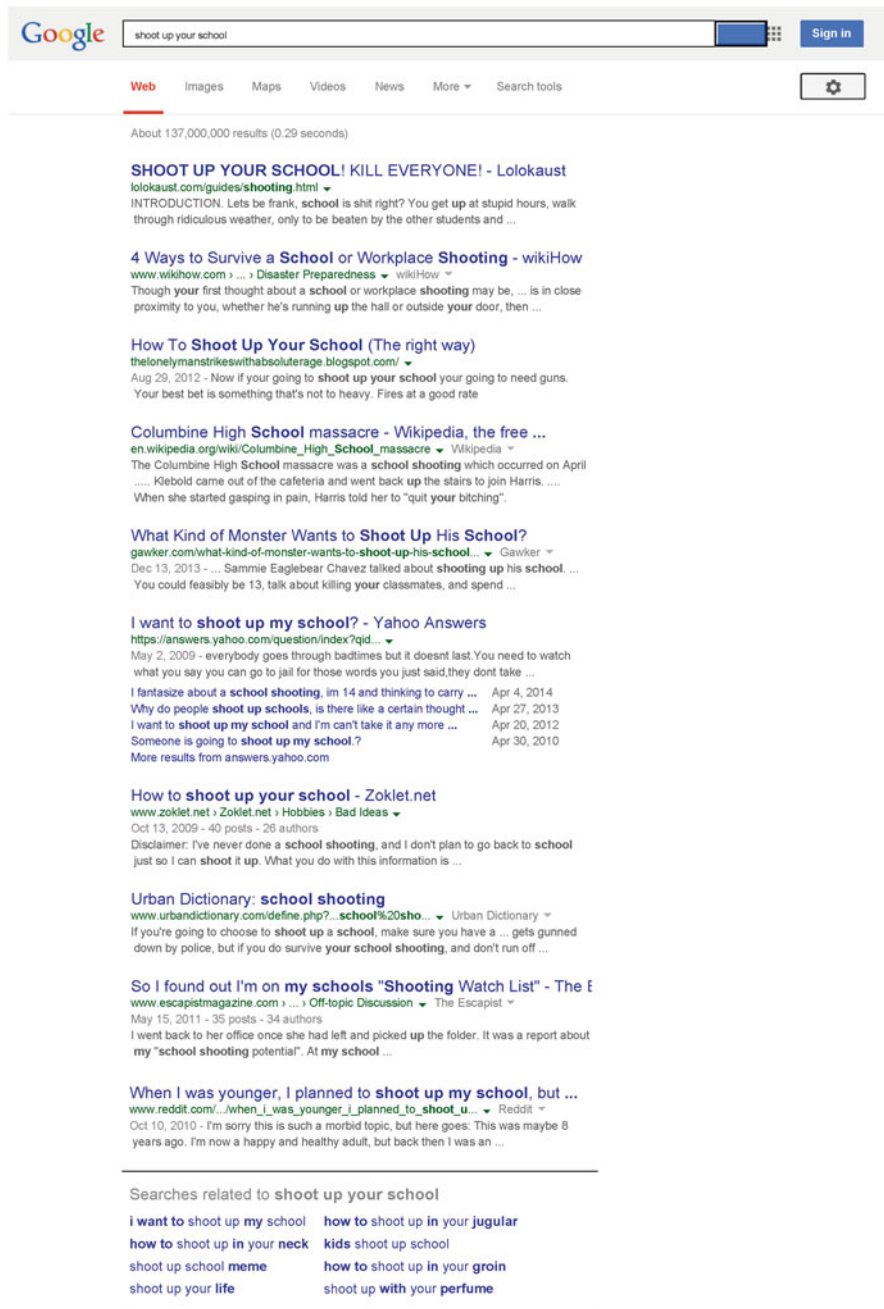


Fig. 15.1 Google Search Results on “shoot up your school” (May 3, 2014)

The prevalence of Facebook use also gives introverts an outlet to express their lonely feelings by reaching out to others. “By helping lonely people on the periphery of a social network,” said James H. Fowler of UC San Diego and Nicholas A. Christakis of Harvard University, “we can create a protective barrier against loneliness that will keep the whole network from unraveling” (80).

Facebook and other social media platforms can serve to increase student awareness and improve school safety. In March 2012, the American Civil Liberties Union sued Minnewaska Area Middle School over a search of Facebook and email accounts of a 12-year-old, sixth-grade female student (81). Although the Minnesota middle school may have intruded on the student’s privacy, the school should be commended for being proactive in the total awareness of its schoolchildren.

In September 2013, the Glendale, California school district hired a private firm – Geo Listening – to monitor and report on 14,000 middle and high school students’ posts on Twitter, Facebook, and other social media for a year. Superintendent Richard Sheehan talked about some successful interventions on suicide and gun control: “We were able to save a life. It’s just another avenue to open up a dialogue with parents about safety. ... We had to educate the student on the dangers of guns. He was a good kid. It had a good ending” (82).

In May 2014, 17-year-old John David LaDue was arrested for planning a school massacre at Waseac High School in Minnesota. His plan was thwarted by Chelsie Shellhas and Katie Harty who alerted the police about suspicious activities at a storage locker facility. Police later found bombs, guns, pyrotechnic chemicals, and attack plans in LaDue’s home and storage locker. *CNN*’s Ben Brumfield wrote, “If his Facebook page is any indicator, LaDue is partial to the dark side, and he ‘likes’ assault rifles... His taste in movies is dominated by blood, gore, combat and fisticuffs” (83). On the bright side of Facebook, Shellhas and Harty received many Facebook messages from people thanking them for being vigilant.

However, it is not easy to identify and help the mentally disturbed. On May 23, 2014, 22-year-old Elliot Rodger went on a killing spree in Isla Vista, California that resulted in 7 fatalities including two women outside a sorority house near the campus of UC Santa Barbara. His motivations were mainly misogyny and self-pity. Rodger frequented online discussion boards and social networks to express his frustration and hatred of women: “There is something mentally wrong with the way [women’s] brains are wired. They are incapable of reason or thinking rationally. ... Women are not drawn to indicators of evolutionary fitness. If they were, they’d be all over me. ... The sweater I’m wearing in the picture is \$500 from Neiman Marcus” (84). An online forum member known as “Dtugg” had tangled with Rodger several times in his attempt to give advice to the troubled man, but to no avail. After the tragedy, some online members emailed Dtugg saying, “God bless you” and “You truly tried.”

*Slate* writer Brian Levinson opined that he could have been Elliot Rodger. “Many men—including me, once upon a time—know what it’s like to be young, frustrated, and full of rage toward women,” said Levinson. “I was just as messed up as Cho, Rodger, and Klebold. I was humiliated by my weight, which bordered on morbid obesity. I fancied myself an intellectual, but would’ve traded an acceptance letter to Harvard for one magical kiss from a classmate I’ll call Cynthia. I was a virgin until

a year after I graduated college. Klebold and Rodger had friends; Cho had a family who clearly loved him. Why did these guys pick up guns, but I never did?" (85).

In humanity, there is no one size fits all. The best we can do is to be vigilant and empathic at the same time.

## 15.5 Crime Awareness and Video Surveillance

On the night of March 3, 1991, George Holliday was awakened in his apartment by police sirens and helicopter (86). He grabbed his camera and recorded about nine minutes of video showing four LAPD officers beating up a drunk driver and parolee named Rodney King (87). The video went viral on the national airwaves (88). On April 29, 1992, a jury acquitted the officers accused in the beating, and Los Angeles erupted in weeklong riots that left 54 people dead and \$1 billion in property damage (89). The second trial of the four police officers began in February 1993. The jury found two of the officers guilty of civil rights violations, and the streets of Los Angeles remained quiet when the judge read the verdict on April 19, 1993 (90).

In some states such as Illinois, Massachusetts, and Maryland, it is illegal to record any on-duty police officer (91). Under the existing wiretapping and eavesdropping laws, all parties must consent for a recording to take place. This restriction does not apply to property owners' videotaping in their own private residences or business premises for security purposes. There are many instances where secret recordings have saved lives and brought justice:

1. In 2003, a Florida couple Jennifer and Brett Schwartz installed a nanny-cam to keep an eye on their infant daughter who seemed unsettled being around their babysitter (92). Among the hundreds of hours of video, 29-year-old babysitter Claudia Muro was seen shaking the child and slamming her to the floor. It was shocking because Muro was highly recommended by a local child care agency and she passed a series of background checks.
2. In 2010, another Florida couple noticed a black eye on one of their two children, and their nanny could not explain what happened. They installed a hidden camera, which caught the nanny swatting, slapping, and kicking an 11-month-old boy. 53-year-old nanny Jeannine Marie Campbell pleaded guilty to abuse charges (93).
3. In December 2011, Salvatore Miglino secretly recorded on his iPhone a verbal dispute with his estranged mother-in-law Cheryl Hepner. During the argument, Hepner pulled out a gun and shot Miglino. In a classic he-said, she-said, Hepner claimed self-defense; but the iPhone recording proved otherwise, and she was charged with attempted murder in the first degree (94).
4. In August 2013, Silicon Valley entrepreneur Gurbaksh Chahal was arrested and charged with hitting and kicking his girlfriend 117 times over a half-hour period. Although Chahal's victim declined to cooperate with the prosecutors, the incident was caught on film via a home surveillance system, and Chahal finally pleaded guilty to domestic violence and battery charges in April 2014 (95).
5. In October 2013, Dallas police officer Cardan Spencer fatally shot Bobby Gerald Bennett, a 52-year-old man who was mentally ill. Spencer claimed self-defense,

but a video captured by a neighbor's surveillance camera showed that Bennett did not pose any threat to the police before he was shot. "Officers are not above the law," said Dallas Police Chief David Brown who fired and charged Spencer with felony aggravated assault (96).

In June 2012, American professional skateboarder Tony Hawk captured in his home security camera two thieves stealing a skateboard from his car. He posted several images on Instagram asking them to return the skateboard or else he would notify the police. Hawk said, "So much of our life is recorded on video now, including the worst parts" (97).

Fixed video surveillance, aka closed-circuit television (CCTV), has long been effective in reducing and deterring crime in shopping malls, convenience stores, gas stations, parking garages, airports, banks, casinos, and other public places. Public CCTV systems have been employed extensively in cities throughout Europe, and similar systems have been deployed in some major U.S. cities.

A Long Island, New York study found that serious crimes dropped 47% after CCTV surveillance systems were installed by businesses and homeowners in 1993. There were 8,000 burglaries in 1994 compared to about 15,000 in 1975, and there were also fewer robberies in 1994 than in 1975 (98).

Researchers from UC Berkeley's Center for Information Technology Research in the Interest of Society studied the crime-deterrent effects of the San Francisco Community Safety Camera Program between January 2005 and January 2008. They found a statistically significant 22% decline in property crime occurring within 100 feet of camera locations, but no statistically significant changes in crime beyond 100 feet from the site (99).

The City of Los Angeles is a California municipality in which law enforcement monitors video surveillance cameras in real time. Researchers from USC School of Policy, Planning, and Development reported in May 2008 that there was no statistical significance in the drop of violent crimes and property crimes along Hollywood Boulevard's "Walk of Fame" (100).

Despite the mixed results based on statistical analyses, video surveillance has shown effectiveness in solving crimes and apprehending suspects:

1. For four days between December 30, 2011 and January 2, 2012, there were 52 suspicious car and building fires across Los Angeles – a city that had not seen such a rash of fires since the 1992 Rodney King riots. LAPD was able to arrest the arsonist who resembled a man seen in a surveillance video near the scene of one fire (101).
2. When the anti-fraud and anti-money laundering (AML) systems identify suspicious bank transactions, it can:
  - Search on transactions in the video surveillance system to find suspect's face.
  - Use correlated search to identify other potential suspects aiding criminal activity.
  - Use facial recognition to search across other transactions.
  - Find the license plate of a vehicle when a person of interest uses a drive-up ATM.
  - Export video evidence for law enforcement.

Back to the issue of police brutality: In the aftermath of the shooting death of Michael Brown in Ferguson, Missouri in August 2014 followed by protests and civil unrest, a petition has gained traction calling for police to wear body cameras that capture everything in front of them while they are doing their jobs. Body worn video (BWV) or wearable video camera has shown to be a promising solution. In a 2012-2013 study, half of the 54 uniformed patrol officers in Rialto, California were equipped with BWV. The Rialto PD overall had an 88% decline in complaints filed against officers, and a 60% decline in use-of-force compared with the 12 months before the study (102). “There were so many situations where it was ‘he said, she said,’ and juries tend to believe police officers over accused criminals,” said Jay Stanley, senior policy analyst at the American Civil Liberties Union. “The technology really has the potential to level the playing field in any kind of controversy or allegation of abuse” (102).

## 15.6 Community Awareness and Neighborhood Watch

San Francisco’s Community Safety Camera Program was launched by then Mayor Gavin Newsom in late 2005. The program placed more than 70 non-monitored cameras in mainly high-crime areas throughout the city. Researchers from UC Berkeley’s Center for Information Technology Research in the Interest of Society found that the program resulted in over 20% reduction in property crime within the view of the cameras (103). Although the cameras were less effective in providing evidence for police investigations due to their choppy video quality (low frame rate and low resolution), Newsom spokesman Nathan Ballard told reporters, “We believe these cameras have a deterrent effect on crime. The neighbors appreciate them” (104).

Apart from citywide video surveillance, Neighborhood Watch is an organized group of citizens devoted to crime and vandalism prevention within a neighborhood. The modern practice began in 1964 as a response to the rape and murder of Catherine Susan (Kitty) Genovese in Queens, New York. In 1972, the National Sheriff’s Association officially launched the nationwide Neighborhood Watch program that “counts on citizens to organize themselves and work with law enforcement to keep a trained eye and ear on their communities, while demonstrating their presence at all times of day and night” (105). By 1982, 12% of the U.S. population was involved in a Neighborhood Watch.

In February 2012, neighborhood watch leader George Zimmerman fatally shot 17-year-old Trayvon Martin at a gated community in Sanford, Florida. When Zimmerman first saw Martin walking inside the community, he called police to report Martin’s behavior as suspicious. Zimmerman followed Martin and confronted him. Their altercation ended with Zimmerman shooting dead Martin who was unarmed. Sanford police did not arrest Zimmerman due to Florida’s controversial Stand Your Ground law (106), which states that a person may use force in self-defense when there is a reasonable belief of a threat, without an obligation to retreat first. However, public outcry resulted in the government filing charges of second-degree murder against Zimmerman in April 2012. Nevertheless, documents and evidence began to surface, making the case more complicated for the state prosecutor (107).

In March 2012, President Barack Obama addressed the Trayvon Martin shooting in personal terms: “Obviously this is a tragedy. I can only imagine what these parents are going through. When I think about this boy I think about my own kids and I think every parent in America should be able to understand why it is absolutely imperative that we investigate every aspect of this and that everybody pulls together, federal, state and local to figure out exactly how this tragedy happened. . . . If I had a son, he would look like Trayvon. I think they are right to expect that all of us as Americans are going to take this with the seriousness it deserves and we will get to the bottom of exactly what happened” (108).

If the gated community had installed video surveillance cameras, chances are that the truths would have been revealed or the altercation would not have occurred in the first place. In lieu of or in addition to community video cameras, homeowners can use their webcams and smartphone cameras to monitor their neighborhood on a volunteer basis.

In early 2014, there were dozens of home burglaries in the quiet residential neighborhood of Grandview, Arizona. The residents started a virtual neighborhood watch using the Nextdoor mobile app to send out detailed alerts about suspicious cars and people within a one-square-mile area. As a result, the rate of burglaries had plummeted. According to Nextdoor, over 39,000 neighborhoods across the U.S. have been using their private social network for neighborhood watch as of August 2014 (109). “Before, they didn’t have these tools. It was people chit-chatting in their front yards,” said Slade Grove, president of the Grandview neighborhood association. “I think it has shown the police department that we are an active neighborhood and that we are very concerned about crime” (110).

The National Sheriff’s Association has been working on a mobile app that enables neighborhood watch members to share with law enforcement their GPS location and real-time video surveillance footage shot on a smartphone. “After the Trayvon Martin case in Florida, we started looking at our program,” said John Thompson, chief of staff and deputy executive director of the National Sheriffs’ Association. “We don’t want people to get involved, and this app would pretty much stop that. You wouldn’t have to get out of your car. You wouldn’t have to leave your house” (110). Technology will help prevent tragedies like the Kitty Genovese murder and Trayvon Martin shooting.

Imagine taking the mobile apps further to a large-scale, big-data implementation. SETI@home is a distributed computing program that involves 5 million at-home users in the Search for Extra Terrestrial Intelligence (SETI) (111). Since its inception in 1999, SETI@home has been recycling the unused CPU cycles on home computers to help analyze data collected from radio telescopes in search of signals from other intelligent worlds. Powered by IBM’s World Community Grid, FightAIDS@Home is a distributed smartphone app that scientists at the Olson Laboratory and The Scripps Research Institute are tapping into the surplus power of cell phones to fight AIDS (112).

Likewise, we can envision a distributed software program “STS@home” for neighborhood watch. The artificial intelligence system analyzes live video streams from webcams and smartphones in the Search for Trespassers and Suspects (STS) in all neighborhoods. Suspicious activities automatically trigger alerts.



A facial recognition feature in the software system can assist police in locating missing children, apprehending fugitives, and solving crimes nationwide. Technology exists today that uses video analytics to distill millions of hours of raw video footage into structured, searchable data (113).

About 40,000 people registered in 2012 to play Foldit, a game about protein molecules (114). These citizen scientists, with no training in science, deciphered the structure of the Mason-Pfizer monkey virus in just 10 days, solving a problem which had stumped scientists for 15 years (115). Similarly, a game about catching criminals or locating missing persons in STS@home may yield important clues even for the cold cases that are hard to crack.

To canvas Manhattan with live video feeds for the purpose of tracking pedestrian traffic, New York start-up company Placemeter is paying city residents up to \$50 a month for posting a smartphone in their window (116).

Apart from all the high-tech tools and solutions, Terry Ulmer of Alpine, California, had a creative idea that honored the veterans of Pearl Harbor. In early 2014, he erected a missile launcher for the neighborhood watch sign in his front yard. “You go into neighborhoods and you see a little sign that says neighborhood watch,” Ulmer told reporter Misha DiBono at Fox 5 News San Diego. “Well, this is how we roll out here in Alpine in the valley. We’re the real deal! ... This is the Mark 10 Twin Arm Guided Missile Launcher. The very first one was put on ships in 1959, and they ran these all the way out until the 80’s” (117). (See Fig. 15.2)



**Fig. 15.2** A Neighborhood Watch Missile Launcher (Courtesy of Terry Ulmer of Alpine CA and Misha DiBono at Fox 5 News San Diego)



## 15.7 Situational Awareness and Traffic Safety

John Leech, partner at the auditing and advisory firm KPMG, contemplated a “car-to-infrastructure” future where “traffic systems can use vehicles as sensors to quickly identify congestion and divert drivers to clearer routes, saving time and reducing emissions.” Leech also proposed a “car-to-car” technology that “lets drivers spontaneously network with each other to warn of road hazards or other traffic problems” (118).

The sci-fi future may arrive sooner than we think. First, in March 2004, 15 autonomous vehicles left a starting gate in the desert outside of Barstow, California, to make history in the DARPA Grand Challenge, a first-of-its-kind race to foster the development of self-driving cars (119). Then, in June 2011, Nevada became the first state in America to pass robotic driver legislation (120). After 200,000 miles of computer-led driving without accident in freeways and service streets, Google’s self-driving car passed its Nevada driver’s license test with flying colors in May 2012 (121).

On May 18, 2012, journalist Peter Valdes-Dapena rode with two Google engineers in a self-driving car on a loop around several blocks in Washington D.C. He wrote about his experience on *CNN*, “No Google engineer taught the car that a bunch of kids on a field trip would march out in front of it at an intersection. It stopped and waited for them on its own. And no-one told it that, right after that, another car would run the four-way stop sign right in front of it. It handled that, too, avoiding a collision all on its own” (122).

Until Google’s self-driving cars become widely adopted, we will continue to see many drivers break traffic laws and create hazards to themselves and others. If everyone were to obey traffic safety rules, there would be no need for red light cameras installed in many busy intersections across America. A classmate of my wife was hit by a car as it was running a red traffic light. Fortunately, the classmate was not injured. The driver rushed to the pedestrian and helped her to the sidewalk. He kept apologizing and insisting that he had time to rush the yellow light. She eventually snapped out of her trance and snarled, “You obviously did not have time. The light was not yellow, it was red, and I had the right of way.”

Invented in the Netherlands, red light cameras have been installed around the world (123). A 2003 study revealed that camera enforcement reduced traffic violations 40-50% (124). While there were reports of an increase in rear-end crashes following camera installation, there was a 25-30% reduction in injury crashes caused mostly by the more serious side-impact collisions.

Although there were stories about red light cameras catching cheating spouses and pot-smoking kids (125), privacy is not really an issue here because we drive on public roads and our license plates are always in plain view.

In the city of Los Angeles, I personally witness every week at least one driver ignoring a 4-way stop sign, running a red light, changing lanes without signaling, or looking totally distracted talking on the cell phone. I think to myself, “Where are the police when we need them?”

Developed by the Embedded Systems Lab at the University of California, Riverside, *DuiCam* is a free mobile video recorder app to empower people to report drunk drivers. A user may place a smartphone in a dashboard mount, press record to capture activity happening in front of the car, and send the license plate and GPS location to the police (126).

Akin to a police cruiser's dashboard camera, some commercial dash cams allow drivers to record in high-definition video day or night what is in front and on the sides of their vehicles. If dash cams become more prevalent, drivers will be more cautious and not endanger themselves and others on the roads because of their road rage or aggressive driving habits. Dash cams can simplify investigations of auto accident claims, and may lower auto insurance premiums for most drivers.

Some public transits including LA Metro and DART have installed the *SmartDrive* on-board video safety system on over 10,000 vehicles in 2013 (127). Capturing and analyzing real-world driving behavior, *SmartDrive*'s video analysis, predictive analytics, and personalized performance program help fleets improve driving skills, save fuel, and avoid accidents. Furthermore, new Android and iOS applications such as *Eco:Speed* optimize GPS directions by factoring in fuel consumption, number of traffic stops, speed limits, and local traffic conditions (128).

In June 2013, Google acquired social mapping service *Waze* (129). Partnering with Apple, Facebook, and now Google, *Waze* offers real-time, user-generated mapping service as drivers vocally report traffic jam or hazardous conditions on the roads. The service has over 50 million users.

Red light cameras, dash cams, on-board video safety system, automatic license plate readers, and new software applications all serve to heighten drivers' awareness, increase traffic safety, and help law enforcement in apprehending suspects.

## 15.8 Location Awareness and Personal Safety

Originally created by the U.S. Department of Defense (DoD) in 1973 for military applications, Global Positioning System (GPS) is a satellite-based navigation system that provides location and time information anywhere on Earth (130). On September 1, 1983, a Soviet Su-15 interceptor aircraft shot down Korean Airlines (KAL) Flight 007, killing all 269 crewmembers and passengers (131). The civilian aircraft was en route from New York City to Seoul via Anchorage when it strayed into prohibited Soviet airspace. To avoid navigational errors like that of KAL 007, President Ronald Reagan ordered the U.S. military to make GPS available for civilian use.

Researcher Amanda Lenhart at Pew Internet and American Life Project found that 75% of 12-17 year-olds owned cell phones in 2010, up from 45% in 2004 (132). Some wireless phone companies offer family locator plans for parents to keep track of their kids' whereabouts using GPS programs. Jack McCartney of Verizon Wireless spoke of *VZ Navigator*, "Once you locate your child on a mobile device, you can press a button and get turn-by-turn directions to that location" (133).

For young children without cell phones, there are wearable or attachable GPS tracking devices such as the Amber Alert GPS. “Our priority is child safety and security,” said Carol Colombo, CEO of Amber Alert GPS. “Kids should have the freedom to be kids, to run and play and ride their bike to their friend’s house. The V3 device is designed to give parents the confidence to send their children into the world, knowing they have taken the right steps to keep them safe” (134).

GPS locator is not just for child safety. Emmy Anderson of Sprint said, “We’re seeing adults using it with their elderly parents, just to make sure mom or dad didn’t get lost when they were driving to their doctor’s appointment, that kind of thing. ... We’re also seeing siblings using it, for example, if both of them are away at different colleges, and they just want to make sure the other is safe on a date” (133).

GPS also plays a role in search and rescue missions. Personal locator beacons (PLBs) have been available for satellite-aided search and rescue notification using geosynchronous and low earth orbit satellites. A more advanced system – MEOSAR (Medium Earth Orbit Search and Rescue satellites) – is adding search and rescue transponders to newer global navigation satellites including GPS (USA), GLONASS (Russia), and Galileo (ESA) (135). The GPS version is dubbed the Distress Alerting Satellite System (DASS). According to the National Aeronautics and Space Administration (NASA) website, “NASA, in coordination with the Global Positioning System (GPS) Program Office and Sandia National Laboratories, has determined that the GPS constellation would be the best and most cost-effective MEO satellite constellation to host the search and rescue (SAR) instruments” (136).

Software companies are integrating geographic information systems (GIS) technology and social media to map people’s tweets and other social media platforms with geospatial data. This pairing has been helpful in disaster response and crisis management. In the wake of the January 12th, 2010 earthquake in Haiti, a free phone number (4636) was established to allow people to text their requests for medical care, food, water, security, and shelter. According to the Mission 4636 report, “Tireless workers and volunteers translated, geolocated and categorized the messages via online crowdsourcing platforms which sorted the information by need and priority, and distributed it to various emergency responders and aid organizations. Initially, the focus was on search and rescue, but the service scaled up about one week after the earthquake to include a wide range of responses, including serious injuries, requests for fresh drinking water, security, unaccompanied children and clusters of requests for food, and even childbirths” (137).

In May 2012, researcher Laura Morris wrote in *Haiti Wired Blog*, “Not only is the ubiquity of mobile telephony globally coupled with the internet and GIS enabling the victims of crisis to become more active in their own recovery, making the delivery of aid a truly participatory process, semantic web tools such as Ushahidi are empowering the globally connected ‘crowd’ to engage in crisis response and support. Everywhere technology is being used in many different ways to help with disaster & conflict early-warning, management & resolution and for peacebuilding in the aftermath of crisis” (138).

To provide a certain degree of personal safety and crime deterrence, life-logging devices such as the Autographer and the Narrative Clip are clip-on cameras that continually take pictures on their own (139). Autographer, for example, automatically uploads photos and their GPS coordinates via its Bluetooth connection to an iPhone.

## 15.9 Information Awareness and Law Enforcement

In spite of high unemployment and economic recession in 2011, the Federal Bureau of Investigation (FBI) figures showed that murder, rape, robberies, and other serious crimes have fallen to a 48-year low across the United States (140).

Facebook has been involved in promoting public awareness of crime fighting. Since December 2009, Facebook has partnered with the AMBER Alert Program (141). Named after 9-year-old Amber Hagerman who was abducted and murdered in Arlington, Texas in 1996, the AMBER (America's Missing: Broadcasting Emergency Response) Alert Program is a voluntary partnership between law-enforcement agencies, broadcasters, transportation agencies, and the wireless industry, to activate an urgent bulletin in the most serious child-abduction cases (142). The goal of an AMBER Alert is to galvanize the entire community, adding millions of extra eyes and ears to watch, listen, and help in the safe return of the child and apprehension of the suspect (143). Since 2002, the AMBER Alert Program has been spreading internationally to Australia, Canada, France, Germany, Greece, the Netherlands, the United Kingdom, and others (144).

Law enforcement authorities in New York, Atlanta, San Diego, and Chicago have been using Facebook to gather evidence against gang members and criminals. The success of social media sleuthing has prompted the New York Police Department (NYPD) to double the size of its online investigators in October 2012.

“By capitalizing on the irresistible urge of these suspects to brag about their murderous exploits on Facebook, detectives used social media to draw a virtual map of their criminal activity over the last three years,” said NYPD commissioner Raymond Kelly (145).

Donna Lieberman, executive director of the New York Civil Liberties Union, concurred with Kelly. Lieberman said, “NYPD has the right, indeed the obligation, to pursue effective avenues for investigating criminal gang activity, and that includes using Facebook and other social media. But such methods must be closely monitored so they don't become a vehicle for entrapment or unauthorized surveillance” (145).

Facebook has indeed contributed to many success stories in law enforcement:

1. To crack down on underage drinking, the La Crosse Police Department in Wisconsin created a Facebook account in 2009 under the name of “Jenny Anderson” and befriended University of Wisconsin-La Crosse college students. Many accepted the friend requests on Facebook. As a result, the police were able to obtain photos of underage drinkers and send them citations. Two of the students charged, Adam Bauer and Cassandra Stenholt, did not upload the photos themselves, but rather were tagged by friends (146).
2. 26-year-old fugitive Maxi Sopo was on the run from charges of masterminding a bank fraud in Seattle. Sopo updated his Facebook from his hiding place in Cancun, telling his friends that he was living in paradise and loving it. U.S. Secret Service agent Seth Reeg was able to track him down through one of his Facebook friends. Sopo was subsequently arrested in September 2009 (147).

3. In March 2012, detectives from the New York Police Department (NYPD) were attempting to find a shooter. The victim's brother pointed the detectives to Facebook. NYPD's Real Time Crime Center uploaded the Facebook photos into its facial recognition software, and matched them to a database of thousands of mugshots from arrest records. The police identified and arrested the shooter within a matter of days (148).
4. In May 2014, a 16-hours-old baby was kidnapped by a woman wearing a nurse's uniform in the maternity ward of a Canadian hospital in Quebec. The police asked the public for help by posting the description of the woman and her vehicle on social media. Charlène Plante spotted the photo on Facebook and recognized the woman as her former neighbor. The police arrested the kidnapper and returned the baby to her parents within hours after the baby went missing. "The photo saved our daughter!" said Méliissa McMahon, the baby's mother. "In less than an hour, the photo was everywhere... You were more than thousands of people who shared the photo of this woman on social media. ... Know that it was this that saved her, our little Victoria. Every click, every share made the difference" (149).

Moreover, federal and local governments are increasingly using social networking sites and big data to aid law enforcement:

1. In a May 2008 memo, the U.S. Citizenship and Immigration Services (USCIS) wrote, "Social networking sites such as MySpace, Facebook, Classmates, Hi-5, and other similar sites are designed to allow people to share their creativity, pictures, and information with others. ... Narcissistic tendencies in many people fuels a need to have a large group of 'friends' link to their pages and many of these people accept cyber-friends that they don't even know. This provides an excellent vantage point for FDNS [Fraud Detection and National Security] to observe the daily life of beneficiaries and petitioners who are suspected of fraudulent activities. ... This social networking gives FDNS an opportunity to reveal fraud by browsing these sites to see if petitioners and beneficiaries are in a valid relationship or are attempting to deceive CIS about their relationship. Once a user posts online, they create a public record and timeline of their activities. In essence, using MySpace and other like sites is akin to doing an unannounced cyber 'site-visit' on petitioners and beneficiaries" (150).
2. In a "privacy compliance review" issued in November 2011 by the U.S. Department of Homeland Security (DHS), the DHS National Operations Center has been operating a "Social Networking/Media Capability" since June 2010. The Center regularly monitors "publicly available online forums, blogs, public websites and message boards" in order to "collect information used in providing situational awareness and establishing a common operating picture." The list of monitored sites includes household names such as Facebook, MySpace, Twitter, Hulu, YouTube, Flickr, the Drudge Report, Huffington Post, and of course WikiLeaks (151). Furthermore, *CNN* reported in March 2012 that DHS' surveillance program looks for "words of interest" on Facebook and Twitter posts, and triggers investigations into suspicious profiles (152).

3. Around December 2011, computer hackers were targeting the Boston police website and a police union website. Boston law enforcement contacted Twitter to obtain information about a user for an official criminal investigation. After months of court battle behind closed doors between Boston and the American Civil Liberties Union, Twitter finally complied with the court order and handed over the data from one subscriber to Boston police in March 2012 (153).
4. Police departments in New York, Los Angeles, and many other American cities have been using CompStat to monitor and reduce crime (154). Introduced in 1994 by then commissioner William Bratton of the New York City Police Department, CompStat measures crime patterns by analyzing type of crime, time of day, GPS coordinates, and demographics of suspects. The big data methodology holds police executives accountable for crime rates in the given regions of a city.
5. Police departments in the United States have been using the license plate recognition (LPR) technology to track every vehicle passing by patrol cars equipped with automatic license plate readers (155). The Los Angeles Police Department (LAPD) stores the data including the photograph, license plate number, date, time, and location for five years; and police detectives employ Palantir's data-mining tools to track and apprehend suspects. According to the Los Angeles Police Protective League (LAPPL), LPR has proven effective in solving thousands of criminal cases nationwide (156).
6. In April 2014, Emilio Ferrara and fellow researchers at Indiana University Bloomington revealed an expert system that "brings together information from mobile phone records, from police databases and from the knowledge and expertise of agents themselves to recreate detailed networks behind criminal organizations" (157). The expert system is capable of discovering members who play central role and providing connection among sub-groups within a criminal organization.

Although Google has been frowned upon for having their software automatically scan all incoming and outgoing emails (158), Gmail snooping has helped law enforcement apprehend criminals and pedophiles. In July 2014, for example, police in Texas arrested a man after he allegedly sent an email to a friend containing child pornography (159). Google, Facebook, and Microsoft use computer "algorithms to test whether the digital information encoded in images matches against the child pornography database at the National Center for Missing and Exploited Children (NCMEC)" (159).

## 15.10 Self-Awareness and Online Dating

English professor Mark Bauerlein at Emory University accused Facebook of killing love letters. Bauerlein wrote on *CNN*, "Back in the old days, love wasn't social, it was private. Communication, not to mention courtship, seemed to take a long time. Genuine love is anti-social." Reporter Samuel Axon at *Mashable* agreed,

“Facebook makes dating far more complicated than it used to be. ... Overanalyzing [Facebook posts] will drive you crazy. ... You see all the action your ex is getting. ... Relationships and breakups are public. ... It’s a record of every relationship mistake you’ve made. ... Other people’s comments will make your date jealous” (160)

Contrary to Mark Zuckerberg’s vision, Facebook not only does not cure loneliness, but it actually spreads loneliness among online friends. A December 2009 research study published in *Journal of Personality and Social Psychology* indicated that “loneliness occurs in clusters, extends up to 3 degrees of separation, is disproportionately represented at the periphery of social networks, and spreads through a contagious process. The spread of loneliness was found to be stronger than the spread of perceived social connections, stronger for friends than family members, and stronger for women than for men” (161). The full network showed that participants are 52% more likely to be lonely if a person they are directly connected to (at one degree of separation) is lonely. The size of the effect for people at two degrees of separation (the friend of a friend) is 25% and for people at three degrees of separation (the friend of a friend of a friend) is 15%. At four degrees of separation, the effect disappears (2%). The research results confirmed the “three degrees of influence” rule of social network contagion that has been exhibited for obesity, smoking, and happiness.

Why do people feel lonely even when they are surrounded by hundreds of online friends? In her 2011 book *Alone Together: Why We Expect More from Technology and Less from Each Other* (162), MIT professor Sherry Turkle argues that people are increasingly functioning in the society without face-to-face contact. The ubiquity of texting, emailing, and social networking has pushed people closer to their machines and further away from each other. Dissatisfaction and alienation are often the result of the lack of face-to-face communication.

In a 2012 survey of 425 undergraduate students at a state university in Utah, researchers discovered that “those who have used Facebook longer agreed more that others were happier, and agreed less that life is fair, and those spending more time on Facebook each week agreed more that others were happier and had better lives” (163). In other words, the more people check Facebook, the worse they feel about their lives.

In a 2013 UK study led by the University of Birmingham, researchers found that “increased frequency of sharing photographs of the self, regardless of the type of target sharing the photographs, is related to a decrease in intimacy” and concluded that frequent Facebook photo-posters “risk damaging real-life relationships” (164).

Some people put on facades when they meet people, for fear of revealing their true selves. The online world gives them even more power to hide their real personalities and create their own alter egos, which can lead to a bigger communication gap among friends and family. This is the same reason why some people fail to find true love, online and offline.

Self-awareness is a prerequisite to finding one’s twin soul, avoiding karmic soul mates and codependent relationships that are painful and chaotic. “Cogito ergo sum,” said René Descartes. Chinese philosopher Zhuangzi wrote an anecdote about himself, “Once Zhuangzi dreamt he was a butterfly, a butterfly flitting and fluttering



around, happy with himself and doing as he pleased. He didn't know he was Zhuangzi. Suddenly he woke up and there he was, solid and unmistakable Zhuangzi. But he didn't know if he was Zhuangzi who had dreamt he was a butterfly, or a butterfly dreaming he was Zhuangzi. Between Zhuangzi and a butterfly there must be some distinction! This is a case of what is called the transformation of things" (165). Indeed, we are all transforming during different stages of our life, and yesteryears may seem like a dream.

Self-awareness also means that we genuinely know what we like and dislike in everyday life. Couples often break up because of irreconcilable differences: After the "honeymoon phase," a couple may begin to discover incompatible worldviews, moral values, religious convictions, philosophy of life, and even simple things like where to shop or what to eat.

Douglas Adams wrote in *The Hitchhiker's Guide to the Galaxy*: "The History of every major Galactic Civilization tends to pass through three distinct and recognizable phases, those of Survival, Inquiry and Sophistication, otherwise known as the How, Why, and Where phases. For instance, the first phase is characterized by the question 'How can we eat?' the second by the question 'Why do we eat?' and the third by the question 'Where shall we have lunch?'" Similarly, every couple goes through three phases of relationship: Survival – How can we live together in love and harmony? Inquiry – Why do we stay together as a couple? And Sophistication – Where shall we go from here after the honeymoon phase?

*MIT Technology Review* reported in January 2014 that "there are 54 million single people in the U.S. and around 40 million of them have signed up with various online dating websites such as match.com and eHarmony" (166). In spite of the impressive numbers, online dating does not guarantee success in finding the perfect match. Peng Xia and fellow researchers at the University of Massachusetts Lowell analyzed 200,000 members on an online dating site and discovered that "both men and women's actual behavior differs significantly from their stated tastes and preferences which they outline when they first sign up" (167). On top of that, popular online dating site OkCupid admitted conducting experiments on users by telling them the bad matches were good matches and vice versa (168).

In Amy Webb's 2013 TED talk titled "How I hacked online dating," she said that initially she was having absolutely no luck with online dating. The dates she liked did not write her back, and her own profile attracted "crickets (and worse)." Her solution was to make a spreadsheet, prioritizing things like she was looking for somebody who was really smart, who would challenge and stimulate her, and balancing that with deal-breakers and other criteria. As a result, she had no trouble finding the man of her dream quickly (169).

Truly worthy of the Guinness World Records, my wife used a technique similar to Amy Webb's and found me through a dating website in less than one week! French poet and playwright Paul G raldy once said, "It is the woman who chooses the man who will choose her."

One of the root causes of miscommunication is that people do not always mean what they say or do. But if we try to stay true to ourselves, online dating can be

very effective. Online dating versus traditional dating is like using an electronic calculator versus an abacus. They both can give you accurate results if used properly, but one of them is obviously faster and easier in the modern age. For instance, two people who like Betty Boop cartoons can find each other using Facebook's Graph Search or other social networking sites regardless of the physical distance between them.

Is Facebook a dating site as well? Facebook's Graph Search lets users search for others by common interest, location, age, and other criteria. At a Facebook press event in January 2013, a Facebook employee stood on stage and searched for "friends of my friends who are single and living in San Francisco" (170). And in October 2013, Facebook data scientist Lars Backstrom and Cornell University professor Jon Kleinberg reported on how to identify with high accuracy a Facebook user's romantic partner from the network structure alone, given all the connections among the person's friends (171).

In addition to online searches, mobile dating services use GPS technology to allow individuals in proximity of each other to chat and meet up (172). Subscribers can use their cell phones as a homing device to find a date just a short distance away. At the 2012 South by Southwest Interactive in Austin, Texas, Highlight's founder and CEO Paul Davison introduced a new service for matching like-minded people in their immediate area. Davison told an attentive audience, "Nothing affects our happiness more than the people in our lives. But the way we find these people and bring them into our lives always has been completely random and inefficient. We don't realize how bad it is because it's always been that way. Most people walk around like ants hoping that by randomness they'll intersect paths with the person of their dreams. Sometimes it happens, but many times you'll never meet" (173). The Highlight app pulls data from the users' Facebook profiles to determine if there are matches in the physical proximity of the users.

Apart from mainstream dating websites such as Match.com and eHarmony, there are an increasing number of nontraditional dating sites: Survivalist Singles and PrepperDating for the doomsdayers; Kwink for health nuts, germaphobics, and nerds, to name a few (174). In June 2014, an updated Hot or Not app was re-launched to target young adults who are into causal dating. "Since 2000, the Hot or Not brand has been an inspiration behind some of the most popular platforms and products currently available to consumers including Facebook and YouTube," said Andrey Andreev, CEO of Hot or Not. "With the addition of 'Hot Lists' ... we are bringing an elevated and more exciting version of this iconic brand to a new generation of users" (175).

Some researchers have implemented facial recognition tools to help make online dating safer. In October 2013, Meitar Moscovitz (aka maymay) released "Predator Alert Tools" for OkCupid, FetLife, Facebook, and Lulu that use CreepShield's facial recognition API to scan user profile pictures against the National Sex Offender Registry. In December 2013, FacialNetwork.com announced the beta release of "NameTag" – the first real-time facial recognition app for Google Glass (176). The app allows Google Glass users to capture images from their live video and scan them against photos from social media, dating sites, and a database of more than 450,000 registered sex offenders.

CNN writer and producer Sarah LeTrent reported in August 2014 new dating apps created for women and Facebook friends: “Siren is an app created for women by women that puts the ladies in the driver’s seat. Women control who sees their image, who can communicate with them and what type of date to pursue. ... Hinge is a matchmaking app built on finding love with a little help from friends. Users sign in through Facebook and are sent matches each day from their extended social circles. ... The Wyldfire app allows female users to invite only the men who they would want their friends to date into the dating pool. The matchmaker site likes to take things offline too by offering local meetup events for its users”.

While all dating sites are trying to find people their best matches, there is one website that informs people about who not to date: Íslendingabók (the Book of Icelanders) enables users to avoid inbreeding by running a date’s name through a genealogical database (177).

## 15.11 Pandora’s Box of Total Information Awareness

In Francis Ford Coppola’s *The Godfather* (1972), Michael Corleone said, “I’ll make him an offer he can’t refuse” (178). Like it or not, the majority of us cannot refuse the temptation of social media and social networking services. As of June 2014, Facebook had 1.32 billion monthly active users worldwide (179). *The Wall Street Journal* reported that Google had notched 1 billion unique visitors per month in June 2011 (180). American Internet analytics company ComScore estimated that Yahoo! had over 724 million monthly unique visitors in August 2013 (181). And Twitter had passed 241 million monthly active users in February 2014 (182). With the massive amount of personal data and information exchange on the Internet, Facebook nation has opened a Pandora’s box of total information awareness in the age of big data. Fortunately, Pandora’s box released not only evil but also hope.

On one hand, total information awareness poses a risk in personal privacy and freedom as in “Big Brother is watching us,” “companies know too much about us,” or “parents and friends are prying into our private lives.” In May 2006, *USA Today* reported that the National Security Agency (NSA) has been secretly collecting the phone call records of tens of millions of Americans without warrants (183). In June 2013, Edward Snowden leaked to the press several top-secret NSA programs including PRISM that allows officials to collect without court orders any data including emails, chat, videos, photos, stored data, voice-over-IP, file transfers, video conferencing, logins, and online social networking details from communication providers and social networks (184).

Social critic Andrew Keen warned of future mind-reading predictive technology, “The computer ‘server’ and the ‘server’ in the bar will be indistinguishable... They will both know what you want to drink before you know it yourself” (185). And statistician Andrew Pole at the discount retailer Target said, “Just wait. We’ll be sending you coupons for things you want before you even know you want them” (186).

This facility is proud to participate in the healthy building initiative.  
Behaviour at these toilets is being recorded for analysis.  
Access your live data at [quantifiedtoilets.com](http://quantifiedtoilets.com)



**Fig. 15.3** A Quantified Toilets LLC signage at CHI 2014, Toronto, Canada

At the CHI 2014 conference organized by ACM SIGCHI (Special Interest Group on Computer-Human Interaction) in Toronto, Canada, a fake company debuted “Quantified Toilets” in the Toronto Convention Center and other civic venues that would automatically analyze biological waste to detect a person’s gender, odor, blood alcohol, drugs, pregnancy status, and infections (187). Figure 15.3 shows a signage posted in the restrooms at CHI 2014. It turned out to be a thought experiment by Matt Dalton (Simon Fraser University), Angela Gabereau (Fabule Fabrications, Inc.), Sarah Gallacher (University College London), Lisa Koeman (University College London), David Nguyen (Nokia), and Larissa Pschetz (University of Edinburgh).

Prof. Jennifer Golbeck, director of the Human-Computer Interaction Lab at the University of Maryland, wrote in *The Atlantic* about the toilet hoax and future of surveillance (188):

This is the kind of data that public officials or marketers would love to obtain. Let’s imagine a couple scenarios:

- At a convention or concert, an organization could determine whether attendees have high rates of pregnant women with positive drug or alcohol tests, then use that knowledge to target public health messages to the demographic.
- In stadiums, an organization could see which sections had higher blood alcohol levels, and even the peak levels during the game. They could market more beer to that section—or make it harder for people in that section to buy drinks. They might even sell this data to beer vendors willing to pay for such demographic information.
- Other ideas from the Quantified Toilets website: “We use this data to streamline cleaning crew schedules, inform municipalities of the usage of resources, and help buildings and cities plan for healthier and happier citizens.

On the other hand, total information awareness creates more transparency in governments, businesses, societies, and families. Proper use of information awareness offers substantial benefits in suicide prevention, child protection, school safety, crime prevention, neighborhood watch, traffic safety, personal safety, law enforcement, and even online dating.

Upscale restaurants such as Eleven Madison Park can Google their guests to learn about their anniversaries and birthdays in order to offer more personalized services. “If I find out a guest is from Montana, and I know we have a server from there, we’ll put them together,” said maître d’ Justin Roller (189).

The St. Regis Bora Bora Resort Googles every guest two weeks before arrival. “We actually create a little story about them – just a paragraph or so – and share that with the

heads of each department at our daily NDA [next-day arrivals] meeting,” said general manager Michael Schoonewagen (190). The idea is to treat every guest like a celebrity.

On December 8, 2013, 27-year-old Sanaz Nezami with severe head injuries was rushed to Marquette General Hospital in Michigan. “At the time the staff did not know anything about this young woman who came in with critical injuries,” said Nurse Supervisor Gail Brandly. “I figured she was probably a student, and so I thought perhaps she would be on LinkedIn or Facebook or something like that” (191). Brandly ran her name through Google and found a resume online with her picture and a phone number through which the hospital was able to reach her relatives in Iran. Nezami’s family watched her final hours from a laptop 6,000 miles away (192).

In February 2014, Pew Research Internet Project released a report on “Couples, the Internet, and Social Media” which said that “the internet, cell phones, and social media have become key actors in the life of many American couples – the 66% of adults who are married or in committed relationships. ... 74% of the adult internet users who report that the internet had an impact on their marriage or partnership say the impact was positive. ... 41% of 18-29 year olds in serious relationships have felt closer to their partner because of online or text message conversations” (193).

In March 2014, Tara Taylor posted a cute picture of her 3-year-old daughter Rylee on Facebook to show friends. Two of her friends replied to the picture, “Hey, I’m sure it’s nothing. It’s probably the lighting, but your daughter’s eye is glowing and you might want to have it checked out because it’s a sign there could be an issue with her eye.” Taylor took her daughter to a retina specialist who diagnosed the little girl with a rare Coat’s disease. Because of early detection and treatment, a complete loss of vision can be averted (thanks to Facebook photo sharing) (194).

The hope is that good will trump evil. The “precogs” in Steven Spielberg’s *Minority Report* (2002) will be future artificial intelligence (AI) programs that employ biometric recognition technologies, correlate information from online and offline activities, and analyze video streams from live traffic cams, in-vehicle dash cams, ATM security cameras, Neighborhood Watch webcams, and public CCTV systems around town and in business establishments. The AI programs will help locate missing children and apprehend dangerous criminals, making our community a safer place to live.

Total information awareness affects all aspects of human lives, all levels of society, and all forms of government. As long as we are well prepared and well informed, total information awareness will prove to be more beneficial than harmful for everyone.

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**Part VI**  
**Epilogue**

## Chapter 16

# From Total Information Awareness to 1984

*“We are the nation that put cars in driveways and computers in offices; the nation of Edison and the Wright brothers; of Google and Facebook.”*

– President Barack Obama (January 2011)

*“Our No. 1 enemy is ignorance. And I believe that is the No. 1 enemy for everyone — it’s not understanding what actually is going on in the world.”*

– WikiLeaks founder Julian Assange (May 2011)

*“Google, Facebook would not exist, had it not been for investments that we made as a country in basic science and research.”*

– President Barack Obama (April 2012)

*“Our explicit strategy for the next several years is to focus on growing and connecting everyone in the world.”*

– Facebook CEO Mark Zuckerberg (February 2014)

*“Every major technological innovation propels humanity forward to the point of no return. ... Instead of turning back, we must continue to innovate and push humanity towards the next point of no return. It is a good thing.”*

– Newton Lee

### 16.1 Brave New World of Total Information Awareness

President Barack Obama, in his 2011 State of the Union Address, called America “the nation of Edison and the Wright brothers” and “of Google and Facebook” (1). On May 18, 2012 (before Alibaba’s IPO in September 2014), Facebook offered the largest technology IPO in history and the third largest U.S. IPO ever, trailing only Visa in March 2008 and General Motors in November 2010 (2). Selling 421.2 million shares to raise \$16 billion, Facebook has a \$104.2 billion market value and is more costly than almost every company in the Standard & Poor’s 500 Index (3). Former U.S. Treasury secretary Lawrence H. Summers called Facebook’s offering “an American milestone” comparable to Ford and IBM’s, “Many companies provide products that let people do things they’ve done before in better ways.

Most important companies, like Ford in its day or I.B.M. in its, are those that open up whole new capabilities and permit whole new connections. Facebook is such a company” (4). However, the Facebook IPO was also one of the biggest opening flops in stock market history. The stock was down by 16.5% at the end of its first full week of trading; and it took over a year for the stock to recover (see Appendix B).

On May 19, 2012, a day after the bumpy IPO, 28-year-old Facebook co-founder and CEO Mark Zuckerberg added a life event on his timeline: Married Priscilla Chan (5). Within a week, the wedding picture that he uploaded to Facebook had received 1.5 million “Likes” and 800 comments from his 14 million subscribers. In addition, Zuckerberg and Chan’s Hungarian Sheepdog named “Beast” is also a “Public Figure” on Facebook with a respectable 575,000 “Likes,” but he is far behind the Pomeranian named “Boo” who has garnered 4.4 million “Likes” in May 2012 (6).

A month prior on April 11, 2012, when a hoax spread on Twitter about Boo’s death in a duck pond, Boo’s owner quickly addressed the rumors on Facebook, saying, “hi friends! i heard the rumors, and i would like all my friends to know that i am happy and kickin’! i asked human if i could do a press conference to reassure everyone on camera, but she reminded me that i can’t talk” (7). As Mark Twain said about his obituary mistakenly published in the *New York Journal* in May 1879, “The report of my death was an exaggeration” (8).

To some, Facebook is both a self-published tabloid and a public relations gem. To others, Facebook is a communication tool for families and friends around the world to stay in touch. From a macroscopic point of view, Facebook offers insights into public sentiments and national trends. In a microscopic view, Facebook allows people to reach out and connect on a very personal level. Zuckerberg told ABC’s Robin Roberts in a 2012 interview that the idea of the organ donation initiative came to him during a dinner conversation with his then girlfriend and future wife Priscilla (9).

Increasingly for many users, Facebook has become an indispensable platform for spreading messages of anti-bullying, AMBER Alerts, organ donation, political activism, and world peace.

Whatever Facebook is or is not, the massive volume of photos, biometric data, and personally identifiable information (PII) on Facebook has raised serious privacy concerns. Some people have deactivated their Facebook for privacy reasons as well as relationship problems, job issues, or simply freeing up their time for face-to-face interpersonal connections with the people whom they really care about (10). A June 2012 survey of 1,032 Facebook users in the U.S. found that 34% of them spend less time on the site than they did half a year ago (11). There are also reports indicating that Facebook is getting “uncool” for 18 to 24 years old – a mindset tantamount to “parents turn up at the party, the party’s over” (12).

Nonetheless, the majority of 1.32 billion monthly active users and most certainly the 802 million daily active users cannot envision life without Facebook (13). Indeed, the new Generation C of digital omnivores has largely accepted Facebook’s norm of information sharing in lieu of the traditional norm of privacy. In January 2010, Zuckerberg told the audience at the Crunchie awards in San Francisco, “People have really gotten comfortable not only sharing more information and

different kinds, but more openly and with more people. That social norm is just something that has evolved over time” (14).

At one end of the social spectrum, we have an Arizona man using carrier pigeons to communicate with his business partner in the year 2012 (15). At the other end, we have blogger Robert Scoble of Rackspace’s Building 43 who said, “Facebook is good at a lot of things. It is a new kind of new media company that personalizes the media. The more Zuckerberg knows about you, the better the user experience will be. ... Everybody has a freaky line. I am way over the freaky line. I want the Internet to know everything about me because that way it can really help me. In that way, Facebook is way ahead and I get more for my efforts that way” (16).

Notwithstanding privacy concerns, having our real identity rather than anonymity online has an advantage of keeping people honest and courteous in the Internet space. *Forbes Magazine* contributor Anthony Wing Kosner observed, “Instead of the anonymous trolls of the early web, Zuckerberg’s social web reinforced us for being ourselves online and revealing as much (or more) about ourselves as possible. And the Facebook revolution worked. People do act more civil when their real name is attached to a comment. People do think twice (sometimes) about posting questionable photos that may come back to haunt them. And it has become much easier to find people, not only through Facebook, but LinkedIn, Google+ and other real-name networks” (17).

The same psychology applies to the offline world long before the existence of Facebook and Google. Drivers think twice about running a red traffic light when the red light camera is present at an intersection. Although red light cameras continue to be a topic of fierce debate in cities like Houston, Texas (18), reports show that there has been an overall 25-30% reduction in injury crashes at intersections following camera installation (19).

Around the world, public closed-circuit television (CCTV) systems help deter crimes in shopping malls, convenience stores, gas stations, parking garages, airports, banks, casinos, and other public places. Although the proliferation of CCTV cameras has created some unease about the erosion of civil liberties and individual human rights, the majority of people have accepted the presence of CCTV in public places.

Prof. Amitai Etzioni of George Washington University observed, “Facebook merely adds to the major inroads made by the CCTV cameras that are ubiquitous in many cities around the globe, along with surveillance satellites, tracking devices, spy malware and, most recently, drones used not for killing terrorists but for scrutinizing spaces heretofore considered private, like our backyards” (20).

Back in the 60’s, Defense Advanced Research Projects Agency (DARPA) initiated and funded the research and development of Advanced Research Projects Agency Network (ARPANET) that went online in 1969. The success of ARPANET gave rise to the global commercial Internet in the 90’s and the new generation of Fortune 500 companies today such as Amazon.com, Google, eBay, and Facebook.

President Barack Obama said at a campaign fundraiser in April 2012, “I believe in investing in basic research and science because I understand that all these extraordinary companies ... many of them would have never been there; Google, Facebook

would not exist, had it not been for investments that we made as a country in basic science and research” (21). Another good example is the talking, question-answering Siri application on Apple’s iPhone (22). Siri originated from a DARPA-funded project known as PAL (Personalized Assistant that Learns) – an adaptive artificial intelligence program for data retrieval and data synthesis (23).

As if life comes full circle in the 21st century, private businesses and the ubiquity of social networks such as Facebook, Google+, Twitter, and YouTube are creating the technologies and infrastructures necessary for the DARPA-proposed Total Information Awareness program. Facial recognition, location tracking, ambient social apps on GPS-enabled devices, Google Street View, digital footprints, and data mining are some key elements in information awareness.

WikiLeaks founder Julian Assange told RT’s Laura Emmett in a May 2011 interview, “Facebook in particular is the most appalling spying machine that has ever been invented. Here we have the world’s most comprehensive database about people: their relationships, their names, their addresses, their locations and their communications with each other, their relatives – all sitting within the United States, all accessible to US intelligence” (24). Assange further alleged that, “Facebook, Google, Yahoo – all these major US organizations have built-in interfaces for US intelligence. It’s not a matter of serving a subpoena. They have an interface that they have developed for US intelligence to use.”

Total Information Awareness requires efficient and effective data mining. On March 29, 2012, the Obama administration announced more than \$200 million in funding for “Big Data Research and Development Initiative” (25). One of the beneficiaries of the initiative is Centers for Disease Control and Prevention (CDC). Using the funding, CDC runs a BioSense program to track health problems as they evolve and to safeguard the health of the American people (26).

The U.S. government has also been learning from private businesses who often share customers’ data to make a profit or a future sale. Letitia Long, Director of the National Geospatial-Intelligence Agency (NGA) described the shift across the post-9/11 intelligence community as the transition from a “need-to-know” atmosphere to a “need-to-share and need-to-provide” culture. “In solving intelligence problems, including diversity of thought is essential,” said Long, “[In] the Osama bin Laden operation, the intelligence community witnessed the true value of merging many thoughts and perspectives, and we must continue to replicate this kind of integration across the enterprise in the future” (27).

The quest for information awareness has also resulted in biosurveillance systems such as Argus – an artificial intelligence program that monitors foreign news reports and other open sources looking for signs that would trigger an early warning of an epidemic, nuclear accident, or environmental catastrophe. Eric Haseltine, former director of research at NSA and then associate director for science and technology at ODNI, said in a 2006 *U.S. News & World Report* interview, “I sleep a little easier at night knowing that Argus is out there” (28).

The brave new world of Total Information Awareness is a connected world that benefits individuals as well as society as a whole. Mark Zuckerberg wrote in his IPO letter, “At Facebook, we’re inspired by technologies that have revolutionized how people spread and consume information. We often talk about inventions like the

printing press and the television – by simply making communication more efficient, they led to a complete transformation of many important parts of society. They gave more people a voice. They encouraged progress. They changed the way society was organized. They brought us closer together. Today, our society has reached another tipping point. We live at a moment when the majority of people in the world have access to the internet or mobile phones – the raw tools necessary to start sharing what they're thinking, feeling and doing with whomever they want. Facebook aspires to build the services that give people the power to share and help them once again transform many of our core institutions and industries. There is a huge need and a huge opportunity to get everyone in the world connected, to give everyone a voice and to help transform society for the future. The scale of the technology and infrastructure that must be built is unprecedented, and we believe this is the most important problem we can focus on" (29).

## 16.2 George Orwell's 1984

In February 2012, a reader by the name of Helen Corey left a one-line comment on a *Wall Street Journal* report on Google's iPhone tracking, "Orwell's 1984 novel has become reality" (30). It was her response to Google and other advertising companies bypassing Apple's Safari browser settings for guarding privacy on the users' iPhones and computers (31).

In June 2013 after Edward Snowden revealed NSA's dragnet surveillance programs, sales of Orwell's 1984 novel spiked (32). One edition climbed to the top 3 spot on Amazon.com after sales jumped by almost 10,000%.

George Orwell's novel *Nineteen Eighty-Four* (first published in 1949) (33) portrays pervasive government surveillance, incessant public mind control, disinformation, and manipulation of the past in a "Big Brother" society that is a dystopian future. It tells a terrifying story of a world without privacy. Orwell coined the terms Big Brother, doublethink, thoughtcrime, Newspeak, and memory hole that have become contemporary vernacular.

Social commentator Ed West considers George Orwell the prophet of political correctness: "Among the various characteristics of political correctness is the branding of dissident thinkers as racists, sexists or homophobes (thoughtcrime), the necessity of holding two contradictory ideas together (doublethink), and attempts to change the language to change politics (Newspeak)" (34).

*CNN's* Lewis Beale opines that we are living "1984" today (35). His *CNN* article compares Orwell's endless global war with today's war on terror, doublethink with abortion legislation, anti-sex league with abstinence-only sex education, and tele-screens with websites like Facebook and the ever-present surveillance cameras.

In the year 2012, from ATMs to parking lots to shopping malls, there are approximately 30 million cameras in the world capturing 250 billion hours of raw footage annually (36). Since the 1970's, the proliferation of CCTV cameras in public places has led to some unease about the erosion of civil liberties and individual human rights, along with warnings of an Orwellian "Big Brother" culture.



In the United Kingdom, CCTV is so prevalent that some residents can expect to be captured by a camera at least 300 times a day (37). With more than 1.85 million cameras operating in the U.K. (38), the security-camera cordon surrounding London has earned the nickname of “Ring of Steel” (39). The U.K. first introduced the security measures in London’s financial district in the mid-1990s during an Irish Republican Army (IRA) bombing campaign. After the terror attacks in the United States on September 11, 2001, the “Ring of Steel” was widened to include more businesses (40).

In the U.S., New York, Los Angeles, San Francisco, and Chicago are among the major cities that have implemented citywide CCTV monitoring systems. Disney theme parks, Six Flags, and other public attractions also use video surveillance systems that can see in the dark.

In January 2008, Pulitzer Prize-winner Lawrence Wright wrote in *The New Yorker*, “The fantasy worlds that Disney creates have a surprising amount in common with the ideal universe envisaged by the intelligence community, in which environments are carefully controlled and people are closely observed, and no one seems to mind” (41).

Tourists not only love to visit Disneyland but also flock to Las Vegas casinos and resorts, another fantasy world, where security cameras are in ample use. In March 2012, Mirage Resort in Las Vegas became the 50th casino to install facial recognition software as part of the surveillance suite of Visual Casino loss-reduction systems (42).

Video surveillance is not always associated with crime prevention. SceneTap, for example, allows consumers to get a real-time snapshot of 50 bars and clubs in Chicago (43). Facial detection and “people-counting” technologies automatically inform customers about the crowd size and male-to-female ratio in each venue. Without encroaching on individual privacy, the system does not store the videos or identify the faces. SceneTap takes barhopping into the 21st century.

In the future, private citizens will join Big Brother in “watching us.” An Intel-commissioned white paper in May 2012 summarized, “While the future is never certain, a future where humans are infused with mobile technology where we are part of the device, our own bodies and brains part of the technology, and where there are no barriers to pure capability, is becoming more believable by the day” (44).

We have already seen a glimpse of that future...

In 1998, Microsoft researcher Gordon Bell experimented with digitally recording as much of his life as possible for the MyLifeBits project: “Photos, letters, and memorabilia were scanned. Everything he did on his computer was captured. He wore an automatic camera, an arm-strap that logged his bio-metrics, and began recording telephone calls. This experiment, and the system they created to support it, put them at the center of a movement studying the creation and enjoyment of e-memories” (45).

In 2009, Canadian filmmaker Rob Spence called himself an “Eyeborg” when he replaced his prosthetic eye with a battery-powered, wireless video camera that records everything that he sees in real time to a computer. “In today’s world, you have Facebook and camera eyes,” he said. “Tomorrow, we’ll have collective consciousness and the Borg. It’s a collective robot consciousness. I believe that’s a genuine modern concern” (46).

In 2010, controversial professor Wafaa Bilal at New York University implanted a camera in the back of his head for a yearlong art project (47). The camera snapped a picture every minute, published the image on a website, and displayed it on monitors labeled “The 3rd I” at Mathaf: Arab Museum of Modern Art in Doha, Qatar.

We may begin to wonder how many people like Gordon Bell, Rob Spence, and Wafaa Bilal are living among us. Commercially available life-logging devices such as the Autographer and the Narrative Clip are clip-on cameras that continually take pictures on their own (48). The “NameTag” app allows Google Glass users to capture images from their live video and scan them against photos from social media, dating sites, and a database of more than 450,000 registered sex offenders (49).

People have their own personal rights to take pictures and record videos in public. Dictatorship of the majority over the minority would be an encroachment on the rights of the individual and their prerogative to personal freedom. A saying commonly attributed to Benjamin Franklin goes like this, “Any society that would give up a little liberty to gain a little security will deserve neither and lose both.” The question is: Did we give up any personal freedom because of public CCTV, red light cameras, Google social search, or Facebook privacy settings? The answer is: No, not really. We do not hesitate to go to public places, drive around town, search for information on Google, and socialize with friends on Facebook and other social networks.

Pete Cashmore, founder and CEO of *Mashable*, has commented that our current world is both reminiscent of George Orwell's *Nineteen Eighty-Four* and radically at odds with it. Cashmore wrote in a January 2012 *CNN* article, “The online world is indeed allowing our every move to be tracked, while at the same time providing a counterweight to the emergence of Big Brother. ... Unlike in Orwell's dystopian world, people today are making a conscious choice to do so. The difference between this reality and Orwell's vision is the issue of control: While his Thought Police tracked you without permission, some consumers are now comfortable with sharing their every move online” (50).

## 16.3 Aldous Huxley's Brave New World

Will the “Big Friend” of Facebook replace the “Big Brother” of government? Will human beings have their lives recorded from birth to death on the pages of Facebook?

In fact, some parents have been posting the sonograms of their unborn babies on Facebook (51). Some families and friends have been leaving posts on the deceased's Facebook Timeline in remembrance (52). Our future may be one step closer to Aldous Huxley's *Brave New World* (1932) rather than George Orwell's *Nineteen Eighty-Four* (1949).

Social critic Neil Postman contrasted the worlds of Orwell and Huxley in his 1985 book *Amusing Ourselves to Death: Public Discourse in the Age of Show Business*. Postman wrote, “What Orwell feared were those who would ban books. What Huxley feared was that there would be no reason to ban a book, for there would be no one who wanted to read one. Orwell feared those who would deprive

us of information. Huxley feared those who would give us so much that we would be reduced to passivity and egotism. Orwell feared that the truth would be concealed from us. Huxley feared the truth would be drowned in a sea of irrelevance. Orwell feared we would become a captive culture. Huxley feared we would become a trivial culture, preoccupied with some equivalent of the feelies, the orgy porgy, and the centrifugal bumblepuppy. As Huxley remarked in *Brave New World Revisited*, the civil libertarians and rationalists who are ever on the alert to oppose tyranny ‘failed to take into account man’s almost infinite appetite for distractions.’ In 1984, Orwell added, ‘people are controlled by inflicting pain.’ In *Brave New World*, they are controlled by inflicting pleasure. In short, Orwell feared that what we fear will ruin us. Huxley feared that our desire will ruin us” (53).

What a surprise it is that Postman’s discourse about television in the age of show business is equally applicable to the Internet and social networks in the age of big data.

## **16.4 Point of No Return and Internet.org: “Every one of us. Everywhere. Connected.”**

Every major technological innovation propels humanity forward to the point of no return. Although the 1969 hit song “In the Year 2525 (Exordium et Terminus)” by Zager and Evans (54) painted a grim future of humanity being overly dependent on technology, hardly anyone today would seriously consider giving up the Internet, cell phones, automobiles, and everyday comfort and convenience. Instead of turning back, we must continue to innovate and push humanity towards the next point of no return. It is a good thing.

X PRIZE Foundation founder and CEO Peter Diamandis spoke at the TED2012 conference in February, “The future is going to be better than many of us think ... We will live in a world of abundance made possible by new technology” (55).

*Time Magazine* named Facebook co-founder and CEO Mark Zuckerberg its Person of the Year 2010 for connecting more than half a billion people and mapping the social relations among them, for creating a new system of exchanging information and for changing how we live our lives. *Time* summarized Facebook’s mission in an idealistic description: “Facebook wants to populate the wilderness, tame the howling mob and turn the lonely, antisocial world of random chance into a friendly world, a serendipitous world. You’ll be working and living inside a network of people, and you’ll never have to be alone again. The Internet, and the whole world, will feel more like a family, or a college dorm, or an office where your co-workers are also your best friends” (56).

Such a grand vision is a tall order indeed. In August 2013, Facebook introduced Internet.org, a “global partnership between technology leaders, nonprofits, local communities and experts who are working together to bring the internet to the two thirds of the world’s population that doesn’t have it. # ConnectTheWorld ” (57). The slogan is “Every one of us. Everywhere. Connected.” In March, 2014, Internet.org announced Connectivity Lab at Facebook to build drones, satellites, and lasers

to deliver the Internet to everyone (58). At the *MIT Technology Review's* Digital Summit in June 2014, Facebook revealed its data diet campaign to make Facebook's apps leaner for people who have scarce bandwidth. "Our apps were crashing all the time and they maxed out their data plan in 40 minutes," said Jay Parikh, head of infrastructure at Facebook. "We now have a whole team of people focused on reducing data consumption. There's continual effort to drive data use down. ... There are three or four billion folks out there that walk around in a 2G or 3G area but may not have devices or economic standing, or don't think the Internet is valuable to them. We're working with carriers to rethink how they price and offer data plans" (59). Parikh described Internet.org as "the next phase of the company."

In a 2014 interview with *The New York Times*, Mark Zuckerberg said, "I'm focused on Internet.org and how to connect all these people. But my life is so different from the person who's going to be getting Internet in two years. One of the things that we do is ask product managers to go travel to an emerging-market country to see how people who are getting on the Internet use it. They learn the most interesting things. People ask questions like, 'It says here I'm supposed to put in my password – what's a password?' For us, that's a mind-boggling thing" (60).

"Our explicit strategy for the next several years is to focus on growing and connecting everyone in the world," Zuckerberg said (61). "They're going to use it to decide what kind of government they want, get access to healthcare for the first time ever, connect with family hundreds of miles away that they haven't seen in decades" (62).

We will know in the future whether Facebook or a new breed of social networks will be able to connect all 7 billion people on Earth (63). Media theorist Douglas Rushkoff shared his optimism on *CNN*, "This new form of media – social networking – will not only redefine the Internet, change human relationships, create a new marketing landscape, and challenge Google, but it will now rescue and alter the economy itself. Like virtual kudzu, it will infiltrate the financial markets, creating new sorts of opportunities for this peer-to-peer 'social' economy to take root. We will all make our living playing Farmville, or designing new versions of it, or investing in companies that do" (64).

Google chairman Eric Schmidt predicted in 2013 that the entire world will be online by 2020 (65). With Facebook's Internet.org, Google-backed Geeks Without Frontiers (66), Samsung's solar-powered Internet schools in Africa (67), and other philanthropic efforts, Schmidt's prediction has a good chance of coming true.

## 16.5 Privacy and E-Activism: Mesh Networks and Peer-to-Peer Social Networks

An old English proverb says, "If you can't beat them, join them." There is another saying, "If you can't beat them, join them, and then beat them."

Perhaps a decentralized Internet will create the utopia for privacy protection and personal freedom in the age of big data and total information awareness. Isaac Wilder and Charles Wyble co-founded the Free Network Foundation (FNF) in 2011

to investigate peer-to-peer communications infrastructure that is resistant to government censorship and corporate influence (68). NFN deployed nine-foot-tall Freedom Towers at Occupy Wall Street in September and Occupy Austin in October 2011, in order to provide secured WiFi connectivity to activists on the ground (69).

Mesh networks have the potential to circumvent government oversight even if the Internet is being shut down. Meraka Institute in South Africa offers a do-it-yourself guide to planning and building a Freifunk based mesh network in rural areas (70). The Serval Mesh is an Android app that allows smartphones on the same WiFi network to communicate with each other like two-way radios or CB radios (71). FireChat makes use of the Multipeer Connectivity APIs in iOS 7 to enable iPhones to connect to one another directly using Bluetooth or WiFi without Internet connection (72). In September 2014, Hong Kong's young protesters were able to set up splinter protests using FireChat.

"You could have someone taking pictures and video at a protest and sharing them immediately to the mesh," said Paul Gardner-Stephen, a research fellow at Flinders University in Adelaide, Australia. "Even if that person's phone is seized, the footage has already made it to 10 other phones in the area, and then to hundreds or thousands more" (73).

As affordable computing power and data storage capacity continue to increase, we can envision a new peer-to-peer social networking application in the future that combines Skype's VoIP (voice over Internet Protocol) and Facebook's Timeline. We will not upload personal information for storage in central servers or public clouds that are subject to the exploitation by businesses. Instead, each tight-knit community of family and friends will form its own circle of peer-to-peer social network, secured from prying eyes.

Backed by America's largest home security company ADT, San Francisco-based startup Life360 offers a free mobile app that allows families to share their locations and activities with each other in a secure private network (74). Recent research on steganography allows covert communication by concealing messages among background noise like a camouflage (75). In the distant future, quantum Internet will allow the transmission of information with ultimate privacy and security using quantum teleportation which transmits data from one point to another without passing through the space in between (76).

## 16.6 Facebook Questions

In July 2010, Facebook introduced "Facebook Questions." Akin to Yahoo! Answers, the question-and-answer feature allows users to pose their questions to the entire Facebook community (77). Peace on Facebook <https://www.facebook.com/peace/> poses the same question every day in the users' own language: "Do you think we will achieve world peace within 50 years?" On May 29, 2014, the answer was a minuscule 5.41% in the United States (78). So Facebook is asking the follow-up question: "How can we grow this number?"

In April 2011, Google launched “A Google a Day” trivia. User experience researcher Dan Russell wrote in the official Google blog, “As the world of information continues to explode, we hope ‘A Google a Day’ triggers your imagination and helps you discover all the types of questions you can ask Google – and get an answer” (79).

The “Deep Thought” supercomputer in Douglas Adams’ *The Hitchhiker’s Guide to the Galaxy* (first broadcasted in 1978) took seven and a half million years to compute the answer to the ultimate question of life, the universe, and everything. The answer turned out to be 42, but the ultimate question itself was unknown (80).

Billions of cybercitizens on Facebook, Google, Twitter, Yahoo!, and other social networks are giving us many different answers to every difficult question. Nevertheless, if we ask the right question, we will get the correct answer. The question is not whether Total Information Awareness (TIA) is here to stay; the real question is whether TIA is a one-way street or a two-way street.

## 16.7 Two-Way Street of Total Information Awareness

Private businesses and the ubiquity of social networks are creating the necessary technologies and infrastructures for Total Information Awareness (TIA). However, unlike the government-proposed TIA which is a rigid one-way mirror, the industry-led TIA is an evolving two-way street. Facebook, Google, YouTube, Wikipedia, Politwoops, AllGov.com, and even the controversial WikiLeaks all collect information and make it available to everyone, whether they are individuals, businesses, or government agencies. Medical patient social networks such as PatientsLikeMe share their databases with biotechnology and pharmaceutical companies to advance medical research.

There are some safety concerns about exposing too much information online, especially high value terrorist targets. According to the Federal Bureau of Investigation (FBI), the individuals who planned the attempted car bombing of Times Square on May 1, 2010 used public web cameras for reconnaissance (81).

As a precaution, Google Maps has digitally modified or blurred its satellite imagery on some landmarks including the roof of the White House, NATO air force hub serving as a retreat for the Operation Iraqi Freedom forces, Mobil Oil facilities in Buffalo New York, and even the Dutch Royal Family’s Huis Ten Bosch Palace in Netherlands (82).

Not only are consumers knowingly sharing their private information with big businesses, government officials are also leaking classified information to the media and private companies for either financial gains or political purposes. In 2012, seven U.S. Navy SEALs were reprimanded for divulging classified combat gear to Electronic Arts, maker of the multiplatform game “Medal of Honor: Warfighter” (83). A string of leaks from high-ranking government officials resulted in the public airing of details about the U.S. cyber attack on Iran’s nuclear centrifuge program

(84), increased U.S. drone strikes against militants in Yemen (85) and Pakistan (86), and a double agent disrupting al-Qaeda's custom-fit underwear bombing plot (87).

Even President Barack Obama himself revealed on a Google+ video chat room interview in January 2012 that the U.S. conducted many drone strikes to hunt down al-Qaeda and Taliban in Pakistan (88). Some former military and intelligence officers accused Obama of disclosing clandestine operations to the public. Ex-Navy SEAL Benjamin Smith voiced his opposition to leaks, "As a citizen, it is my civic duty to tell the president to stop leaking information to the enemy. It will get Americans killed." Another former Navy SEAL Scott Taylor said of the bin Laden raid, "If you disclose how we got there, how we took down the building, what we did, how many people were there, that it's going to hinder future operations, and certainly hurt the success of those future operations" (89).

Then CIA director David Petraeus issued a statement to his employees in January 2012 about the arrest of a former Agency officer by the FBI on charges that he illegally disclosed classified information to reporters. Petraeus wrote, "Unauthorized disclosures of any sort—including information concerning the identities of other Agency officers—betray the public trust, our country, and our colleagues" (90).

On the other hand, Thomas Blanton, Director of National Security Archive at George Washington University, testified in December 2010 before the U.S. House of Representatives on the massive overclassification of the U.S. government's national security information. At the Judiciary Committee hearing on the Espionage Act and the legal and constitutional implications of WikiLeaks, Blanton said that "Actually our job as citizens is to ask questions. ... Experts believe 50% to 90% of our national security secrets could be public with little or no damage to real security" (91). He cited his findings:

A few years back, when Rep. Christopher Shays (R-CT) asked Secretary of Defense Donald Rumsfeld's deputy for counterintelligence and security how much government information was overclassified, her answer was 50%. After the 9/11 Commission reviewed the government's most sensitive records about Osama bin Laden and Al-Qaeda, the co-chair of that commission, former Governor of New Jersey Tom Kean, commented that "three-quarters of what I read that was classified shouldn't have been" — a 75% judgment. President Reagan's National Security Council secretary Rodney McDaniel estimated in 1991 that only 10% of classification was for "legitimate protection of secrets" — so 90% unwarranted. Another data point comes from the Interagency Security Classification Appeals Panel, over the past 15 years, has overruled agency secrecy claims in whole or in part in some 65% of its cases.

WikiLeaks founder Julian Assange said in a 2011 interview, "Our No. 1 enemy is ignorance. And I believe that is the No. 1 enemy for everyone — it's not understanding what actually is going on in the world" (92). Bill Keller, former executive editor of *The Times*, opines that "the most palpable legacy of the WikiLeaks campaign for transparency is that the U.S. government is more secretive than ever" (93). U.S. Air Force Senior Airman Christopher R. Atkins wrote in his email to American filmmaker Michael Moore, "The single greatest danger to America and our way of life is ourselves. No foreign power can dictate your oppression. No foreign army can impose martial law upon us. No foreign dictator can remove the precious right that I am exercising at this moment. Militaries do not keep people free! Militaries keep us safe, but it is we citizens who ensure freedom!" (94).



Notwithstanding the potential risks and benefits of information sharing, the two-way street of Total Information Awareness is the road that leads to a more transparent and complete picture of ourselves, our governments, and our world. As Wikipedia's founder Jimmy Wales said, "Imagine a world in which every single person on the planet is given free access to the sum of all human knowledge" (95). Lila Tretikov, Executive Director of the Wikimedia Foundation, told *The Guardian* in her 2014 interview, "Glasnost was a phenomenal, renaissance period in the history of Russia and taught me much about importance of freedom of information. The only real way to improve conditions of civilizations is to provide open access to information for education and culture, and to be honest about the past. Otherwise we spend our lives siloed from each other and we repeat the mistakes of our grandparents" (96).

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# Appendix A: Facebook Timeline (October 2003 – August 2014)

## 2003

### *October*

- Mark Zuckerberg releases Facemash, the predecessor to Facebook. It was described as a Harvard University version of Hot or Not.

## 2004

### *January*

- Zuckerberg begins writing Facebook.
- Zuckerberg registers thefacebook.com domain.

### *February*

- Mark Zuckerberg and co-founders Dustin Moskovitz, Chris Hughes, and Eduardo Saverin launch Facebook on February 4.
- 650 Harvard students joined thefacebook.com in the first week of launch.

### *March*

- Facebook expands to MIT, Boston University, Boston College, Northeastern University, Stanford University, Dartmouth College, Columbia University, and Yale University.

### *April*

- Zuckerberg, Dustin Moskovitz, and Eduardo Saverin form Thefacebook.com LLC, a partnership.

*June*

- Facebook receives its first investment from PayPal co-founder Peter Thiel for US\$500,000.
- Facebook incorporates into a new company, and Napster co-founder Sean Parker becomes its president.
- Facebook moves its headquarters to Palo Alto, California.

*August*

- To compete with growing campus-only service i2hub, Zuckerberg launches Wirehog. It is a precursor to Facebook Platform applications.

*September*

- Facebook launches Facebook Wall for users to post messages to their friends.
- ConnectU files a lawsuit against Zuckerberg and other Facebook founders, resulting in a \$65 million settlement.

*October*

- Maurice Werdegar of WTI Partner provides Facebook a \$300,000 three-year credit line.

*December*

- Facebook achieves its one millionth registered user.

**2005***February*

- Maurice Werdegar of WTI Partner provides Facebook a second \$300,000 credit line and a \$25,000 equity investment.

*April*

- Venture capital firm Accel Partners invests \$12.7 million into Facebook. Accel's partner and president Jim Breyer also puts up \$1 million of his own money.

*May*

- Facebook grows to support more than 800 college networks.

*July*

- News Corp acquires MySpace, spurring rumors about the possible sale of Facebook to a larger media company. Zuckerberg stated he did not want to sell Facebook.



*August*

- Facebook acquires Facebook.com domain for \$200,000.

*September*

- thefacebook.com officially becomes Facebook.com
- Facebook launches a high school version of the website.

*October*

- Facebook launches Facebook Photos.
- Facebook expands to universities in the United Kingdom, Mexico, Puerto Rico, and U.S. Virgin Islands.

*December*

- Facebook expands to universities in Australia and New Zealand.
- Facebook reaches 6 million users.

**2006***January*

- Facebook rebuffs an offer from Viacom that gives Facebook a valuation of \$750 million.

*April*

- Facebook launches Facebook for Mobile.
- Greylock Partners, Meritech Partners, the Founders Fund, and Accel Partners invest \$27.5 million into Facebook.

*May*

- Facebook expands to add work networks.

*June*

- Interpublic invests \$5 million in Facebook.

*August*

- Facebook introduces the first version of the Facebook API.

*September*

- Facebook and Yahoo! discussed possible acquisition of Facebook for \$1 billion. Facebook eventually turned down the offer.
- Facebook launches News Feed on user homepage and Mini-Feed on user profile.

- Facebook expands registration by accepting everyone aged 13 and over with a valid email address.

#### *December*

- Facebook reaches 12 million users, a 100% increase from a year ago.

## **2007**

#### *May*

- Facebook launches Facebook Platform to enable third-party developers to access Facebook user data.
- Facebook launches Marketplace application for classified listings.

#### *June*

- Facebook launches Facebook Video.

#### *September*

- Google expressed interest in buying a portion of Facebook.

#### *October*

- Microsoft invests \$240 million into Facebook.
- Facebook opens office in London.
- Facebook launches the Facebook Platform for Mobile

#### *November*

- Li Ka-Shing Foundation in Hong Kong invests \$60 million into Facebook.
- Facebook launches Beacon., a self-service ads platform.
- Facebook launches Facebook Pages for businesses, brands, and organizations.

#### *December*

- Facebook reaches 58 million users, a 383% increase from a year ago.

## **2008**

#### *January*

- European Founders Fund invests \$15 million in Facebook.
- Facebook and ABC News co-sponsor Republican and Democratic Presidential Debates in New Hampshire.
- Facebook hosts Hackathon '08.

*March*

- Li Ka-Shing invests a second \$60 million into Facebook.
- Facebook launches in German.

*April*

- Facebook launches Chat.

*June*

- Facebook settles both lawsuits, ConnectU vs. Facebook, Mark Zuckerberg et al. and intellectual property theft, Wayne Chang et al. over The Winklevoss Chang Group's Social Butterfly project. The settlement effectively had Facebook acquiring ConnectU for \$20 million in cash and over \$1.2 million in shares, valued at \$45 million based on \$15 billion company valuation.

*July*

- Facebook launches iPhone app.
- Facebook launches new redesign.

*August*

- Employees reportedly privately sell their shares to venture capital firms, at a company valuation of between \$3.75 billion to \$5 billion.
- Facebook has 100 million registered users with a monthly growth rate of 178.38%.

*October*

- Facebook sets up its international headquarters in Dublin, Ireland.

**2009***January*

- Facebook surpasses MySpace to become top social network site for the first time.

*February*

- Facebook introduces the “Like” button.

*March*

- Facebook launches new redesigned home page.
- Facebook launches SMS service for Facebook Pages for people to become a fan of Facebook Pages with a text message.

*April*

- Facebook has 200 million registered users with a monthly growth rate of 13.33%.
- Facebook announces first-ever user vote on terms of service changes.

*May*

- Digital Sky Technologies invests \$200 million into Facebook.
- Facebook celebrates its annual Game Day for employees.
- Facebook moves to new offices in Palo Alto, California.

*June*

- Facebook launches Facebook Usernames. Within one hour after release, over 1 million Facebook usernames had been snapped up.

*August*

- Facebook acquires social media real-time news aggregator FriendFeed.
- Facebook opens New York office.

*September*

- Facebook claims that it has turned cash flow positive for the first time.
- Facebook has 300 million registered users with a monthly growth rate of 9.38%.
- Facebook shuts down Beacon.

*October*

- Facebook introduces “memorialized” profiles.

*December*

- Facebook partners with the AMBER Alert.
- Facebook reaches 360 million users.

**2010***January*

- Facebook breaks ground on first custom-built data center in Prineville, Oregon.

*February*

- Facebook acquires Malaysian contact-importing startup Octazen Solutions.
- Facebook has 400 million registered users with a monthly growth rate of 6.99%.

*April*

- Facebook launches the “Like” button.
- Facebook announces the acquisition of photo-sharing service called Divvy-shot for an undisclosed amount.
- Facebook introduces Community Pages that are populated with articles from Wikipedia.
- Facebook introduces Instant Personalization, starting with Microsoft Docs, Yelp, and Pandora.

*June*

- Facebook employees sell shares of the company on SecondMarket, a U.S. financial marketplace online, at a company valuation of \$11.5 billion.

*July*

- Facebook has 500 million registered users with a monthly growth rate of 4.52%.
- Facebook launches “Facebook Questions for users to get recommendations, conduct polls, and learn from Facebook friends.
- Facebook introduces “Facebook Stories” for sharing individual and collective experiences.

*August*

- Facebook launches “Facebook Places” to enable location-based functionality.

*September*

- Facebook opens office in Hyderabad, India.

*October*

- Facebook introduces “Facebook Groups” for small group communication.
- *The Social Network*, a film about the beginnings of Facebook directed by David Fincher is released. The film is met with widespread critical acclaim as well as commercial success. However, Mark Zuckerberg says that the film is a largely inaccurate account of what happened.

*December*

- Facebook reaches 608 million users, a 69% increase from a year ago.

**2011***January*

- Facebook receives \$450 million investment from Goldman Sachs, \$50 million from Digital Sky Technologies, and \$1 billion from Goldman’s overseas clients.
- Facebook has 600 million registered users with a monthly growth rate of 3.57%.
- President Barack Obama, in his 2011 State of the Union Address, called America “the nation of Edison and the Wright brothers” and “of Google and Facebook.”

*February*

- Facebook becomes the largest online photo host. Facebook application and content aggregator Pixable estimates that Facebook will host 100 billion photos by summer 2011.

- Facebook adds new “civil union” option for gay partnerships.
- Kleiner Perkins Caufield & Byers invest \$38 million in Facebook.

### *March*

- Mutual fund company T. Rowe Price invests \$190.5 million in Facebook.
- Yahoo! files a lawsuit against Facebook for infringing on ten of its patents covering advertising, privacy controls and social networking.
- Facebook launches first annual Facebook Hacker Cup for worldwide programming competition.

### *April*

- Facebook data center in Prineville, Oregon opens.
- President Barack Obama visits Facebook.

### *May*

- Facebook has 700 million registered users with a monthly growth rate of 3.45%.

### *July*

- Facebook relaunches Snaptu as Facebook for Every Phone app for Java-enabled phones.
- Facebook launches Video Calling.

### *August*

- Facebook overtakes Orkut as top social networking site in Brazil.
- Facebook launches “bug bounty” security initiative.

### *September*

- Facebook partners with Heroku for Facebook application development using the Facebook Platform.
- Facebook collaborates with Cartoon Network in launching the “Stop Bullying: Speak Up” social pledge application.
- Facebook introduces new Timeline and Open Graph at the 2011 f8 Conference.
- Facebook has 800 million registered users with a monthly growth rate of 3.73%.

### *October*

- Facebook launches iPad app.

### *November*

- Facebook reaches 845 million users.

### *December*

- Facebook launches its new profile user interface, Facebook Timeline.
- Facebook hosts its first Congressional Developer Hackathon.
- Facebook moves its headquarters to Menlo Park, California.

## 2012

### *January*

- Facebook conducts a massive psychological mood experiment on 689,003 users by secretly manipulating their News Feed in the course of one week.

### *February*

- Facebook files for an initial public offering (IPO) seeking to raise \$5 billion.

### *March*

- Facebook introduces Sponsored Stories.

### *April*

- Facebook acquires picture sharing and social network, Instagram, for \$1 billion.
- Facebook has 900 million registered users with a monthly growth rate of 1.74%.

### *May*

- Facebook unveils organ donation initiative.
- Facebook acquires ambient location app Glancee.
- Facebook sets IPO price at \$38 a share, giving the company a \$104.2 billion market value.
- A group of Facebook engineers rewires the NASDAQ bell to post the listing to Mark Zuckerberg's Timeline.
- Facebook IPO raises \$16 billion, making it the third largest in U.S. history, trailing only Visa in March 2008 and General Motors in November 2010.
- Facebook stock ends its first full week of trading at \$31.91 per share, a 16.5% decline from the IPO price.
- In a dozen of lawsuits, Facebook shareholders sue Facebook and its underwriters for misleading private investors in the purchase of Facebook's stock.
- Facebook launches Facebook Camera, an Instagram-style photo filtering, sharing, viewing iOS app.

### *June*

- Facebook acquires facial recognition company Face.com for between \$55 and \$100 million.
- Facebook announces real-time ad bidding Facebook Exchange (FBX).
- Facebook tests Find Friends Nearby feature.
- Facebook and its underwriters file a motion in New York to consolidate the outstanding shareholder lawsuits against them.
- Facebook has 955 million monthly active users, 81% of whom are outside the U.S. and Canada.



*August*

- Facebook unveils mobile app install ads.
- Facebook launches phish@fb.com – an email address that users can forward suspected phishing messages to.
- Facebook’s first quarterly report reveals 83 million fake profiles, including millions created for users’ pets.

*September*

- Facebook introduces “&gt;Gifts” feature to allow users to send real presents.
- Facebook stock hits rock bottom, trading at \$17.729 per share, a 53% decline from the IPO price.

*October*

- Facebook surpasses 1 billion active users per month.

*November*

- Facebook rolls out new Friendship and relationship pages.
- Facebook launches job search app.
- Facebook proposes to end user vote on terms of service changes.
- Facebook starts switching all users to secure https: connections.

**2013***January*

- Facebook charges \$100 to message Mark Zuckerberg.
- Facebook announces smart search engine “Graph Search”.

*March*

- Facebook unveils a redesigned News Feed as the center of Facebook homepage.
- Facebook adds “Reply” option to comments.
- Facebook users in the U.S. can share favorite TV shows and movies on Netflix.

*April*

- Facebook unveils “Partner Categories” for advertisers to use offline purchases to target ads.
- Facebook launches “Facebook Home” app for Android.
- Facebook announces new data center in Altoona, Iowa.
- Facebook buys Parse to offer mobile development tools as its first paid B2B service.
- Facebook hosts the first-ever Mobile Developer Conference in New York City.

*June*

- Facebook adds hashtag.
- Facebook launches Video on Instagram.

*July*

- Facebook no longer allows ads on pages that contain sexual or violent content.
- Facebook rolls out “Graph Search” in the U.S.
- Facebook enables embedded posts.
- More than 100 million people use Facebook for Every Phone each month.

*August*

- Facebook pushes for DREAM act that creates a path to citizenship for undocumented immigrants who were brought as children to the United States by their parents.
- Facebook tests new mobile features designed to help public figures interact with their fans more easily like Twitter.
- Facebook experiments with one-click checkout for mobile shopping.
- Facebook announces Internet.org.
- Facebook rolls out shared photo albums.
- Facebook stock rises slightly above the IPO price for the first time, trading at \$38.05 per share.

*September*

- Facebook removes “group messaging” feature, essentially deletes opted-in mailing list functionality.

*October*

- Facebook’s Graph Search now finds comments and status updates.
- Facebook announces remarketing tool Website Custom Audiences (WCA).
- Instagram introduces limited advertisement via sponsored photos and sponsored videos.
- Facebook builds its own apartment complex for employees.
- Facebook kills privacy setting for searches by strangers.
- Facebook changes privacy settings to allow teens to post photos and updates to the general public.

*December*

- Facebook launches Poke – a Snapchat copycat app.
- Facebook launches auto-play video ads.
- Facebook launches “Donate” button for nonprofits.
- Facebook launches Instagram Direct for private photo, video, and text messaging.
- Facebook CEO Mark Zuckerberg takes on a symbolic annual salary of \$1.

## 2014

### *January*

- Facebook launches Paper – a news-reading app.
- Facebook buys discussion-based social network Branch for \$15 million.

### *February*

- To mark its 10th anniversary, Facebook unveils “Look Back” feature that automatically creates customized videos with most-liked posts and photos for Facebook users.
- Facebook launches editor for “Look Back” videos.
- Facebook adds new gender options allowing U.S. users choose among some 50 options such as “transgender,” “cisgender,” “gender fluid,” “intersex” and “neither.”
- Facebook buys text messaging application WhatsApp for \$19 billion.

### *March*

- Facebook discontinues email services.
- Facebook removes search setting “Who can look up your Timeline by name”.
- Facebook publishes DeepFace – a facial recognition system that approaches human-level performance.
- Facebook unveils Hack – a PHP-based official programming language at Facebook.
- Facebook announces the purchase of virtual reality firm Oculus VR for \$2 billion.
- Facebook announces the Connectivity Lab to build drones, satellites, and lasers to deliver the Internet to everyone.
- Facebook starts sending out “Privacy Checkups” using a cartoon dinosaur as the messenger.
- Facebook launches 15-second auto-play video ads.
- Facebook reaches 802 million daily active users on average, 609 million mobile daily active users on average, 1.28 billion monthly active users, and 1.01 billion mobile monthly active users. Approximately 81.2% of daily active users are outside the U.S. and Canada.
- Facebook stock hits an all-time high, trading at \$72.03 per share, a 90% increase from the IPO price.

### *April*

- Facebook releases Messenger app for sending and receiving private Facebook messages.
- Facebook launches “Nearby Friends” friend-tracking feature.
- Facebook acquires ProtoGeo Oy, Helsinki-based maker of a fitness tracking mobile app called “Moves.”

- Facebook unveils Anonymous Login, Facebook Audience Network, FbStart, and Graph API 2.0 at 2014 f8 Conference.
- Facebook introduces new ad network initially targeted for mobile devices.
- Facebook drops Sponsored Stories.
- Facebook launches FB Newswire for journalists and newsrooms to find, share, and embed newsworthy content from Facebook.

### *May*

- Facebook adds “Ask” feature to let users inquire about their Facebook friends’ relationships and other personal information.
- Facebook rolls out audio-recognition feature that can identify what song is playing or what show or movie is on TV.
- Facebook reduces the amount of automatic posts from apps to users’ News Feed.
- Facebook brings the Like button to mobile apps.
- Facebook introduces a new Share Dialog for the web to support friend and location tagging in addition to Open Graph.
- Facebook shuts down Poke app.

### *June*

- Facebook acquires Pryte, Helsinki-based technology provider that lets smartphone users download applications using temporary mobile data allowances.
- Facebook’s Instagram expands ads beyond U.S. to Britain, Canada, and Australia.
- Facebook reveals data diet campaign to reduce Facebook apps’ data use.
- Facebook launches Slingshot app – another variation of Snapchat.

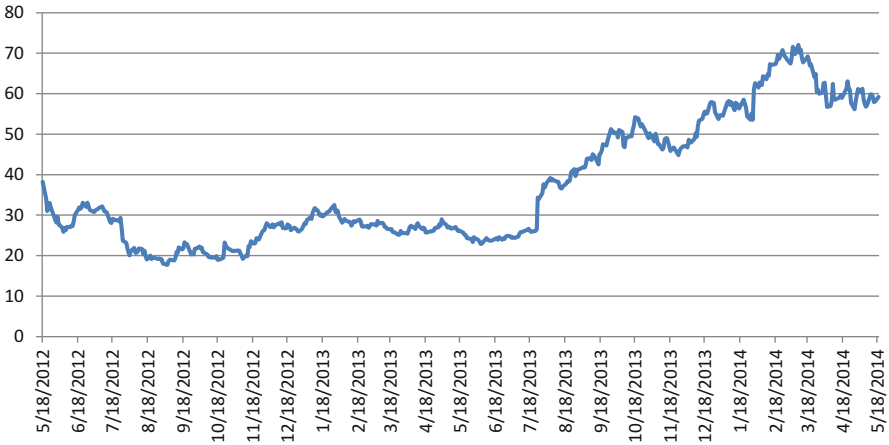
### *July*

- Facebook releases “Mentions” app for public figures with verified Facebook Pages.
- Facebook unveils “Buy” button.
- Instagram introduces “Bolt” app – a Snapchat clone with self-destruct messages.
- Facebook acquires advertising technology company LiveRail for \$400M to \$500M to serve video ads.

### *August*

- Facebook discontinues Gifts service.
- Facebook acquires cybersecurity start-up PrivateCore for server data protection.
- Facebook reveals cross-device reports to advertisers to show where someone saw an ad.

# Appendix B: Facebook's Two-Year Historical Stock Prices (May 18, 2012 – May 18, 2014)



Source: NASDAQ Facebook, Inc. Historical Stock Prices  
<http://www.nasdaq.com/symbol/fb/historical>

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