

Advancing Research Methods with New Technologies

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Chapter 12

Techniques for Analyzing Blogs and Micro-Blogs

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ABSTRACT

The chapter reviews research techniques commonly used in the study of blogs and micro-blogs, including both quantitative and qualitative analyses. Using published studies as illustrations, each section explains the options before the researcher and how he/she might reasonably choose among the many methodological options.

INTRODUCTION

Studies examining online behavior appear on a regular basis in business and social science journals. Scientists “widely recognize that cyberbehavior offers a new and exciting frontier” (Hookway, 2008, p. 92), yet issues concerning appropriate research methods for such explorations remain largely undiscussed—especially research methods for examining the exceptionally popular online behaviors of blogging and micro-blogging. This chapter offers guidance to the novice as well as the experienced researcher who desires to begin a study of blogs or micro-blog posts by reviewing extant methodologies for quantitative and qualitative analyses.

What is a Blog? How Do They Work?

Blogging can be described as the offspring of personal Webpages and user-generated content (Haferkamp & Kramer, 2008; Turkle, 1995). Personal Webpages present original content in fairly static formats. In contrast, Weblogs, or blogs, contain regularly changing content; new posts typically appear on a daily basis in reverse chronological order (Wei, 2009). Blog software offers the option of archiving past posts and discussion so that they are readily available to reader. Further, blogs usually allow readers to comment on each post, thus creating original, constantly changing content. Blogs can contain information about a wide range of topics from personal life to politics

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(Jost & Hipolit, 2006) and are often characterized into genres based on content, including self-help blogs and political-action blogs.

Because blogs are easy to create and maintain via software templates, and because various blogging services offer free blog space (e.g., wordpress.com, blogger.com, and google.com; Rodzvilla, 2002), “anyone with access to a computer and the Internet to create and maintain a blog” (Stefanone & Jang, 2007, p. 124). Blog-hosting Websites provide blog templates that encourage the posting of both text as well as graphics including pictures, cartoons, drawings, charts, and graphs. Such Websites publically post bloggers’ discourse and provide copyright protection for the authors’ intellectual work product (Hookway, 2008). From 2000 to 2005, the number of blogs grew from 100,000 to more than 4 million (Woods, 2005). Riley (2005) reported about half a million blogs in Australia and 2.5 million blogs in the U. K. In 2009, more than 12 million adults in the US maintained a blog (Schechter, 2009).

Blogs typically have three main characteristics (Droge, Stanko, & Pollitte, 2010) that distinguish them from other types of Websites. (1) Blogs offer original content in posts written by an author or authors. (2) Blogs usually link to other blogs. This list of links or the “blogroll” enables blog authors to add links to other blogs to their site, creating networks or communities of blogs sometimes called the “blogosphere” (van Doorn, van Zoonen, & Wyatt, 2007, p. 146). (3) Most blogs have an interactive component, allowing readers to comment on posts (Droge et al., 2010).

Blogs are often categorized as either filter blogs or personal blogs (Cenite, Detenber, Koh, Lim, Ng, & Soon, 2009; Herring & Paolillo, 2006; Wei, 2009). A filter blog “includes certain items while excluding others, often focused on news and political events” (Wei, 2009, p. 533). Political blogs, for example, often link to the Websites of traditional media sources, such as newspapers. In turn, traditional media outlets often quote political filter blogs (Tucker, 2009). Other scholars prefer

the term “information hubs” for such blogs (e.g., Bar-Ilan, 2005) to acknowledge that many filter blogs simply offer information about a topic rather than engage in partisan advocacy, such as a blog about organic gardening that offers multiple solutions to common problems (e.g., multiple natural fertilizers that work well in a dry climate). Indeed, many blogs fiercely guard their neutrality.

Personal blogs are more journal-like and feature disclosures of events occurring in daily life and informal photographs (Jung, Vorderer, & Song, 2007); they often chronicle everyday occurrences such as haircuts and dentists visits. At the other extreme, some journal blogs become “highly confessional and self-analytical blogs in which bloggers make sense of their identity and relationships with others” (Hookway, 2008, p. 102). While such blogs are more private and personal than filter blogs or information hubs, they are written for a mass and ambiguous audience that may include family, friends, acquaintances, and strangers (Kleman, 2007). Because such bloggers write to communicate within relationships as well as to transmit messages to mass audiences, personal blogging can be described as the “epitome of masspersonal communication” (Kleman, 2007, p. 2).

From the beginning, scholars have characterized blogs as a powerful medium of communication (Kline & Burstein, 2005; Rodzvilla, 2002; Rosenberg, 2009; Woods, 2005). Researchers as well as lay people have characterized blogs as serving four powerful functions in modern democracies: “the new guardians of democracy, a revolutionary form of bottom-up news production, and a new way of constructing self and [the digital] community in late-modern times” (Hookway, 2008, p. 91). The most researched and documented of these claims include “the twin pillars” of cybercultural studies (Silver, 2000): virtual communities and identity. Scholars employ the term community to reference a sense of cohesiveness, commonality, and propinquity among members of online groups. Such groups typically coalesce

around a common topic, interest, or interaction Website, such as a blog or online bulletin board on a specific subject.

Theorists explain and connect these twin-pillar functions; for example, the ICC (identity, content, community) theory of blog participation argues that its three major components (bloggers' identity, blogs' content, blogger communities) maintain symbiotic relationships that drive the blogosphere (Lee & Webb, 2012; Webb & Lee, 2011). Hookway suggested that blogs serve a fifth function: They facilitate "knowledge production within education and business sectors" (2008, p. 94).

Because blog participants directly engage in knowledge production, and because blogs typically limit content to specific and narrow foci, blogs lend themselves to community formation. Blogs form online communities around a specific theme, idea, or industry activity (Droge et al., 2010), where a "sense of community is developed through interactions with like-minded people" (Kaye, 2005, p. 76). Through blogging, authors invite audience members to discuss, share, and support one another (Lopez, 2009). Community is formed through blogging by the talk between bloggers and their audiences (Tucker, 2009), typically fellow bloggers who write on the same or similar subject matter.

What is a Micro-Blog? How Do They Work?

Micro-blogs, a newer technology than traditional blogs, can be described as publically broadcast status updates offering opinions or describing activities. Twitter.com is perhaps the best known micro-blog hosting Website. Accounts are free and short posts (140 characters maximum) can be broadcast 24 hours per day. Members can select whose posts they will follow. Each members' home page is actually a newsfeed of followed micro-bloggers' posts appearing in reverse chronological order. Hosting Websites can be searched by topic and by account holders. Unlike blogs, micro-blog

Websites only allow posts to remain available to readers for a relatively short time, typically under a month. Therefore, they are not viewed as a venue for in-depth, detailed discussion of complex public issues. Instead, multiple micro-bloggers posting about the same topic create a "trend" and thus focus public attention on "hot" issues. When trends continue, such "chatter" can function as online protest and can pressure organizations and governmental units to take action, including rescinding recent controversial decisions. Micro-bloggers often discuss current events, including political and popular culture developments, such as film openings. The activity of micro-blogging has become increasingly popular. According to the Pew Internet and American Life Project, "15% of [US] online adults use Twitter as of February 2012, and 8% do so on a typical day" (Smith & Brenner, 2012, p. 1).

Micro-blogging communities form around two objects of attention: topics and specific micro-bloggers. When followers form communities around a given micro-blogger, the followers function as "fans" often checking frequently for new posts because they desire to know the very latest update from their micro-blogger. Celebrities and leaders often draw such a following. However, communities also form around trending topics, typically marked by a hash sign (#) with no blank spaces or punctuation in the topic description (e.g., #2012election) or immediate crises (e.g., #oilspill). Searching the micro-blog site for a given hash mark provides the latest commentary on the topic from around the world, whether or not the searcher is a follower of the micro-bloggers writing the relevant updates.

Due to the particular technical affordances of micro-blogs, compared to traditional blogs, the micro-blog audience becomes "visible" (Scheidt, 2006). Efimova (2009) argued that the specific features of traditional blog posts, including permalinks, trackbacks, and the comment feature stand in contrast to the referencing signals of micro-blogs such as Twitter. Micro-blogs make it possible for

audiences to emerge in “distributed conversations” across traditional barriers to interaction such as race, class, income levels, nationality, and geographic location (p. 108). Efimova (2009) defined distributed conversations as “asynchronous and non-linear conversations where multiple authors refer to and discuss a topic on various sites” (p. 109). Indeed, micro-blogging users and their behaviors create a unique domain in audience studies (Krishnmaurthy, Gill, & Arlitt, 2008).

Micro-blogs possess the comparative advantage of speedy publication—they have a first-mover advantage in socially constructing frames for understanding of current events (Farrell & Drezner, 2008). When elite micro-bloggers concentrate their attention on a breaking story or under-reported story, the agenda-setting power of micro-blogs can create focal points for intermediaries, such as organizations’ official spokes-persons as well as traditional mass media outlets. Researchers have begun to examine how the information can spread quickly through micro-blogs during mass crisis and emergency events (e.g., Brownstein, Freifeld, & Madoff, 2009).

Like blogs, micro-blogs are widely recognized as powerful media tools for business, social, and political change. Micro-blogs also are widely used for promotion and branding (e.g., Ferguson & Greer, 2011; Greer & Ferguson, 2011). Scholars have linked micro-blogs to globalization, due to the media’s ability to blur the line between public and private spheres (Youngs, 2009). Further, in countries where the government tightly controls traditional mass media outlets, micro-blogging permits citizen journalists to report on-the-spot, breaking news events (Yu, 2011). Micro-blogs’ limitation of 140 characters coupled with its ability to transmit an accompanying picture make it an almost perfect medium for “headline news” reporting.

BACKGROUND

Why Study Blogs and Micro-Blogs?

Blogs and micro-blogs offer low cost (or no cost) access to vast pools of data that are publically and readily available for downloading and subsequent analysis. Such data can be gathered with tools already at the researcher’s disposal: computers with Internet access. No expensive lab equipment is necessary, nor will obvious equipment such as tape- or video- recorders alter the participants’ behavior. No further costly or time-consuming documentation of the data such as transcription is necessary. Further, online access means immediate access to the words of people with whom the researcher might never speak in face-to-face mode--people who are socially, geographically, and culturally distant from the researcher.

Such data provide a textual record of public discourse as well as responses to that discourse via readers’ comments. Thus, the researcher can study opinions, interactions, as well as “repostings” to discover how widely an information bit or idea is circulated. Because the software allows users of low technical competency to post (Hookway, 2008), researchers can access a wide variety of opinions and responses, rather than only the discourse of the government, the traditional mass media, or the educated elite of the population.

Many blogs and micro-blogs display responses and reactions to public messages and events. For example, fan Websites display fan commentary about popular-culture icons, including but not limited to entertainers, politician, and millionaires as well as entertainment events such as plays, films, and television shows. Thus, blogs and micro-blogs offer researchers the opportunity to study sense making and interpretations of public and pop-culture events.

In sum, in comparison to traditional business and social scientific investigations, blog and micro-blog research offer several potential advantages:

1. With no initial investment of capital, researchers can simply harvest data sets from the Internet.
2. Because the data pre-exists in the public domain, researchers can abandon many labor-intensive activities such as training interviewers and preparing applications for review boards governing legal procedures surrounding the use of human subjects.
3. Data can be “collected” as quickly as the researcher can download files from the Internet—so data collection is almost instantaneous.
4. Such data sets are fresh, contemporary, and immediate—allowing timely research of important, contemporary developments.
5. Non-response and missing data become non-issues, as all sampled data appear in the data set.
6. The interactivity of bloggers and commenters allows researchers to examine public response to opinions, including which issues are discussed and which are not, the valence of responses, and the strength of responses as evidenced both in language as well as number of repostings on micro-blogs.
7. Finally, the interconnectivity of bloggers in the blogosphere and fans in the micro-blogsphere, as well as simply Internet users, allow researchers to follow trails of influence to examine adoption of ideas and innovations in ways simply not available prior to the wide-spread use of the Internet and the advent of micro-blogs and blogs discussing every imaginable topic.

What Kinds of Blogs and Micro-Blogs Do Researchers Study?

Researchers have examined organizational blogs (e.g., Kelleher & Miller, 2006), academic blogs (e.g., Luzon, 2011), teenage blogs (e.g., Subrahmanyam, Garcia, Harsono, Li, & Lipana, 2009),

fan blogs (Webb, Chang, Hayes, Smith, & Gibson, 2012), and mommy blogs (e.g., Hayes, 2011); but the vast majority of blog research examines political blogs (e.g., Hunter, 2011). Studies of political blogs focus primarily on content, examining such issues as gender disparity in dominant beliefs (Harp & Tremayne, 2006). However, a growing number of studies focus on blog format, specifically Website design characteristics (Foot, Schneider, Dougherty, Xenos, & Larsen, 2003; Herring, Scheidt, Bonus, & Wright, 2005; Schmidt, 2007; Tisinger Stroud, Meltzer, Mueller, & Gans, 2005; Trammel, Williams, Postelnicu, & Landreville, 2006; Tremayne, Zheng, Lee, & Jeong, 2006; Webb, Fields, Boupha, & Stell, 2012; Williams, Trammel, Postelnicu, Landreville, & Martin, 2005; Xenos, 2008) or the relationships between design characteristics and important outcome variables such as blog popularity (Bar-Ilan, 2005; Hargittal, Gallo, & Kane, 2008; Harp & Tremayne, 2006; Hu, Liu, Tripathy, & Yao, 2011; Reese, Rutigliano, Hyun, & Jeong, 2007; Steyaert, 2004)

What kinds of *micro-blogs* do researchers examine? Researchers occasionally examine micro-blog messages from a specific source or type of source. For example, Greer and Ferguson (2011) examined micro-messages from 488 local television stations to examine strategic media promotion. However, most typically, micro-blog researchers analyze micro-messages from multiple sources on a given channel (e.g., Twitter) about a given topic. Micro-blog researchers examine primarily four content areas: health (e.g., Cheng, Sun, Hu, & Zeng, 2011), business issues (e.g., Burton & Soboleva, 2011), politics (e.g., Ifukor, 2010), and public opinion (e.g., Thelwall, Buckley, & Paltoglou, 2011). The ability to key-word search posts on micro-blogs allows researchers to gather data on the word that embodied the focus of the study. For example, McNeil, Brna, and Gordon (2012) studied views of epilepsy using a 48-hour key-word search for “seizure” across Twitter posts.

HOW TO CONDUCT RESEARCH ON BLOGS AND MICRO-BLOGS

This chapter describes methods for conducting research on blogs and micro-blogs via three sections: selecting an object of study, quantitative analytic techniques, and qualitative analytic techniques. Each section identifies options before the researcher, appropriate rationale for choosing among the options, as well as the use of software programs that assist in data analysis. Finally, we illustrate the research techniques using a diverse set of published studies from multiple disciplines including but not limited to business, communication, political science, psychology, and women's studies.

Selecting an Object of Study

Exactly what do blog and micro-blog researchers study? How specifically do they study it? A review of the relevant research reveals that blog and micro-blog researchers tend to conduct three types of studies:

- Researchers interview or survey users of these new media to discover their perceptions and motivations (e.g., Guadagno, Okdie, & Eno, 2008; Hsu, Liu, & Lee, 2010).
- Researchers examine the design characteristics of blogs per se by assessing design elements such as the linking patterns (Hale, 2012) and documenting connections between channel characteristics and outcomes variables such as popularity (e.g., Webb, Fields et al., 2012).
- Researchers analyze the content per se of the blogs and micro-blogs, typically to either:
 - Compare new media to more traditional information sources (e.g., Attwood, 2009; Liu & Ji, 2012; Schiffer, 2006); or

- Assess aspects of posts, such as the use of certain words during a crisis (Thelwall & Stuart, 2007) or the collective mood of the nation (Bollen, Mao, & Zeng, 2011).

Given that four chapters in this volume address surveys and another four address interviewing, the focus of this chapter will be on the latter two items named above, namely, how to examine the online texts per se as well as how to study design characteristics of these new media.

Blogs often employ complex and diverse formatting composed of pictures, graphics, borders, backgrounds, as well as text. Conversely, micro-blogs contain only pictures and text—although the text can be presented in creative and artistic ways. Thus, researchers who examine design characteristics study blogs rather than micro-blogs; they examine a wide variety of style, format, and expression variables. However, most typically researchers examine connections between blogs (i.e., linkages or blog rolls), counting the number of occurrences of elements such as the number of hyperlinks across a sample of blogs and then examining whether the number of occurrences of that design element is associated with an outcome variable, such as popularity. For example, Hale (2012) examined blog linkages to determine the spread of multi-national relief efforts during and after the 2010 Haitian earthquake as manifest in multi-lingual linkages. Almost always, studies of channel design employ traditional statistical methods to analyze data.

Almost all new media researchers who focus on content examine text per se (i.e., the posts and readers' comments). When a researcher studies blogs or micro-blogs text per se (rather than gathering information from its users), the issue becomes which text to analyze. Blogs and micro-blogs can contain thousands of posts and comments across many topics and across many years. What exactly should the researcher analyze? Of course, the answer depends on the focus of the study, its

research questions, and hypotheses. However, the vast majority of blog and micro-blog researchers who analyze content collect data by sampling one of three objects of study:

- **Entries:** Bloggers' original posts that begin an online conversation (e.g., Trammel, 2006, 2007; Woo-Young & Park, 2012).
- **Comments:** Responses that readers post to original entries or to previous comments (e.g., Gilbert, Bergstrom, & Karahalios, 2009).
- **Conversational Strings or Threads:** Posts and comments on a given topic, typically comprised of an entry and its relevant comments to that entry (e.g., Shaw, 2012; Webb, Chang et al., 2012).

Each of the above three options has advantages and disadvantages. If the researcher focuses on entries, he/she undertakes an examination of opinion-leaders' discourse. If comments are examined, the researcher can look at decoding, sense-making, information-processing and other very human activities that lie at the heart of influence and persuasion. If the researcher examines strings/threads, he/she can observe equally interesting human activities including how individuals express agreement and disagreement as well as how groups reach consensus and/or engage in conflict.

In addition to deciding what to study, researchers must make decisions about the time elements of the phenomenon under study. When blogs contain archival posts, across-time data can reveal how the number of entries, comments, and strings increase or decrease on a given topic and/or in response to current events. Thus, researchers can explore changes across time, such as examining a given candidate's blog posts across time (Trammel, 2007) or examining a given organization's posts across time (e.g., Burton & Soboleva, 2001). Alternatively, other researchers (Arceneaux & Weiss, 2010; Ifukor, 2010) examined micro-blog posts on a given topic across a three-year period.

Specifically, researchers can employ stratified sampling at random times across a fixed period. For example, Trammel et al. (2006) examined blog posts on ten Democratic presidential candidates' Websites during the 2004 primary campaigns; they reported "using a stratified sampling method [that included] 10% of the days spanning the beginning of the primary season (Labor Day 2003) through the Iowa caucuses (January 2004), 14 target days, were identified for analysis" (p. 29). In another study of candidates 2004 Websites, Williams et al. (2005) examined hyperlinks posted in a stratified random sample of "10% of the days in the hot phase of the general election period, from Labor Day through Election day 2004" (p. 181).

Alternatively, the researcher can collect data across time, for example across media coverage of a political scandal (e.g., Schiffer, 2006) or across the launch of a new product to discover changes in discussion (e.g., Burton & Soboleva, 2011). Collecting data across time holds strong appeal for micro-blog researchers as the medium is designed to facilitate conversation of current trends and to discover trending topics. Thus, for studies of how trends come and go, researchers simply sample micro-blog posts periodically across time, for example, every third day for four months. Finally, and more typically, researchers can examine current thinking at a given point in time by sampling current (1) micro-blog entries and/or reposts or (2) blog comments and/or strings.

When might aspects of blogs and micro-blogs be most effectively used as an object of study? A researcher might reasonably examine these new media whenever he/she desires to study human behavior by examining the textual trail left behind. Blogs and micro-blogs offer glimpses into "what happens in reality" when people debate important and complex issues (Hookway, 2008, p. 94), such as deliberations during national elections (e.g., Ifukor, 2010) and sense-making techniques they employ as they engage in conversations about the meaning of cultural artifacts (e.g., Webb, Chang et al., 2012). A researcher might select a genre of

blogs or micro-blog posts generally to discover the issues that surround that topic. For example, McNeil et al. (2012) studied views of epilepsy using a 48-hour key-word search for “seizure” across Twitter posts. Alternatively, a researcher might examine consumer report blogs on kitchen appliances to discover what bloggers talk about when discussing both effective and ineffective appliances, thus deducting the major concerns of these outspoken consumers. Finally, an examination of blogs and micro-blogs offers insight into online behavior per se, such as self-disclosure (e.g., Tang & Wang, 2012), social presence (Luzon, 2011), self-presentation strategies (e.g., Sanderson, 2008), and displays of gender identity (e.g., van Doorn, van Zoonen, & Wyatt, 2007).

Blogs and micro-blogs each present as unique objects of study. Nonetheless, an increasing number of researchers examine content from both blogs and micro-blogs as part of an examination of multiple online media channels (e.g., Ifukor, 2010; Netzer, Feldman, Goildenberg, & Fesko, 2012). Often researchers analyze content from these new media simultaneously within the same data set. For example, Gilpin (2010) examined one company’s online press releases, blog posts, and Twitter messages to gain a more comprehensive picture of an organizations’ online presence.

Conversely, there are multiple limitations to the study of blogs and micro-blogs.

- Bloggers and micro-bloggers are aware of their audience and in fact write for an audience, real or imagined; writing to an audience (versus a private diary) raises validity issues about the data, given the authors’ potential goals of persuasion and/or impression management (Hookway, 2008).
- Ethical questions have emerged about harvesting blog and micro-blog posts for use as data without the authors’ permission. Because such discourse is publicly posted, most researchers believe no ethical concerns are warranted; other scholars have

raised questions about whether researchers are violating authors’ expectations of privacy (e.g., see Elgesem, 2002 versus Walther, 2002). For example, micro-bloggers may assume they are posting only to their followers, when in reality the medium allows key-word searches of world-wide posts. Thus, researchers can select their sample of posts based simply and solely on key-word searches. For example, Cheng et al. (2011) tracked information diffusion during the 2009 H1N1 flu outbreak by searching micro-bloggers’ posts containing the terms “swine flu” and “h1n1”.

- Blogs and micro-blog channels have developed so quickly that the population parameters of the media remain unknown. Thus, selection of broad, representative samples can prove problematic.

Quantitative Analyses of Blogs and Micro-Blogs

While quantitative methods have been used to study the perceptions of bloggers (e.g., Tang & Wang, 2012) and readers (e.g., Chiang & Hsieh, 2011), relatively few researchers have conducted quantitative examinations of blogs or micro-blogs per se (rather than surveying the bloggers) to draw conclusions based on the content of the blog. Instead, studies of blog and micro-blog content tend to employ qualitative methods—methods that we explain in detail in the following section of the chapter. However, it is interesting to note that the few quantitative studies examining content tend to rely on computer program analysis of content and test for relationships between content and an important outcome variable. For example, Bollen et al. (2011) linked mood expressed on a daily Twitter feed (assessed via two computerized mood tracking devices) to the Dow Jones Industrial Average across a 10 month period.

Rather than focusing on content, quantitative studies tend to focus on the form or format of the blog or micro-blog by examining the design elements of the Websites or software (e.g., the number of hyperlinks). Scholars who study design characteristics acknowledge that blogs and micro-blogs function as designed channels of communication. Such channels can be studied without consideration of content simply to understand how a specific design characteristic of a channel of communication functions.

Studies of blog and micro-blog characteristics focus on blog popularity (Bar-Ilan, 2005; Hargittal et al., 2008; Harp & Tremayne, 2006; Hu et al., 2011; Reese et al., 2007; Steyaert, 2004) or design characteristics such as link-relationships (Foot et al., 2003; Hale, 2012; Trammell et al., 2006; Tremayne et al., 2006; Williams et al., 2005) and interactivity opportunities between author and reader (Herring et al., 2005; Webb, Fields et al., 2012). For a review of channel characteristic research (see Webb, Fields et al., 2012).

Research hypotheses and questions that query how the blog and micro-blog function lead to the studies of design characteristics. Researchers who examine the characteristics of these new media face two critical decisions: What phenomenon to study and how to operationalize that phenomenon (i.e., what to count). For example, researchers who wish to examine links or ties in the blogosphere often count blog roll entries. To assess the importance of a micro-blogger, a researcher might assess his/her number of followers. To assess blog navigability, a researcher might count the number of tabs on the homepages. When channel characteristics are widely studied, general agreement develops on how to assess the characteristics. For example, almost all researchers assess interactivity by counting the number of comment opportunities on a blog. In contrast, occasionally no common agreement emerges on assessment for certain frequently examined phenomena. Multiple assessment techniques develop when the conceptualization and definition of the characteristic becomes contested. For example, researchers have assessed popularity via the number of links

to the page, Google PageRank, number of hits, and number of unique page views (Webb, Fields et al., 2012). A researcher undertaking a study of blog or micro-blog characteristics will want to conduct an in-depth literature review to learn about the frequently studied characteristics and frequently used operationalizations. A review of previous studies can provide a menu of options for the researcher to employ.

The critical decisions surround the choice of assessment when multiple options are available. In those cases, the researcher can select and defend choices based on conceptual thinking or simply employ multiple assessment techniques in the given study. For example, Webb, Fields et al. (2012) measured popularity in two ways: number of comments and number of hits. Their analyses yielded two paths to popularity; one set of variables was associated with popularity as assessed by number of comments (length of homepage and number of comments opportunities), whereas a different set of characteristics were associated with popularity as assessed by number of hits (number of tabs, link, and graphics as well as the Website's internal accessibility).

Qualitative Analyses of Blogs and Micro-Blogs

Blog and micro-blog researchers employ both quantitative and qualitative research methods, because researchers use differing methods to analyze differing objects of study, specifically, the form versus the content of posts. In more recent years, blog and micro-blog researchers almost exclusively have employed qualitative research methods to examine *content*. The recent ascendancy of qualitative research methods for analyzing all manner of online behavior, including blog and micro-blog posts, may be due in no small part to the development of increasingly sophisticated computer programs to analyze quickly massive amounts of textual data. Detailed reviews of these computer programs are available (e.g., Boulos, Sanfilippo, Corley, & Wheeler, 2010; Heese-Biber & Crofts, 2010).

Techniques for Analyzing Blogs and Micro-Blogs

It is interesting to note the relative absence of many qualitative techniques in the study of blogs and micro-blogs, including focus groups, ethnographies, participant-observations, oral histories, as well as analysis of historical documents including letters and diaries. Instead, qualitative studies of these new media engage almost exclusively in field studies of naturally occurring conversation in text. That is, the researchers conduct textual analysis of blog and micro-blog content as a naturally occurring phenomenon. Occasionally, such studies could be reasonably described as secondary analyses, when they examine content to understand decoding of yet a separate primary message, such as examining discourse on fan Websites to understand how message receivers decode their object of fandom (Webb, Chang et al., 2012).

In its most basic form, all qualitative methods are similar in that they involve six basic characteristics that distinguish them from quantitative methods (Heese-Biber & Crofts, 2010):

1. Qualitative methods involve *holistic engagement* with the data. That is, the researcher makes no attempt to separate the data from its source or context; in contrast, the researcher attempts to preserve the holistic sense of the data, often presenting it within its context. For example, a quotation from a political blog may be accompanied with a description of its source as a left-leaning uber-blog from the U.K.
2. Most methodologists consider qualitative analysis a *craft* as much as a method. That is, analysts become trained coders akin to guild members; they practice a craft that embodies both technical skill and creativity to, for example, create accurate and descriptive titles for emergent themes and categories.
3. Qualitative analyses employ *complex methodologies* involving coding (category development, concept/category/supra-

category hierarchies, intercoder reliability), a constant-comparison process, judging forcefulness, and establishing saturation.

4. Various data analyses techniques share *common features* including the search for constituent elements, a constant comparison process, and a reconsideration of the accuracy of the categories prior to finalization.
5. *Analysis occurs during the data collection process.* The on-going, simultaneous processes of data collection and analysis can lead to refining and reformulating both the research questions as well as the size of the sample.
6. *Representations of the data* may vary in form but are always methodical. Researchers employ matrices, network diagrams, flow charts, and contingency displays to present data. Such visual representations assume widely recognized and accepted forms.
7. Reports of analyses usually assume a *narrative form* that provides a process explanation of the procedures. Further, reports of research findings often assume a narrative form that provides an explanation of the phenomenon under study via a chronological sequence of events.

It is interesting to note that blog and micro-blog studies employ few, if any, truly innovative data analytic methods (Wiles, Crow, & Pain, 2011), and instead rely almost exclusively on four traditional qualitative techniques: case studies (e.g., Hayes, 2011), content analyses (e.g., Kerr, Mortimer, Dickson, & Waller, 2012), thematic analysis using a grounded theory approach (e.g., Jansen, Zhang, Sobel, & Chowdury, 2009), and discourse analysis examining the language per se (e.g., Ifukor, 2010). Typically only the latter three are conducted with the assistance of computer analysis. This section of the chapter reviews issues related to qualitative analysis, including types of analyses and methods for interpreting results.

Types of Analyses

Case Studies. “A case study is the empirical investigation of a specified or bounded phenomenon” (Mabry, 2008, p. 214). Researchers use case studies to closely examine only a few examples of a phenomenon. By examining only a few cases, typically between one to five cases, the researcher can analyze the cases in considerable depth and tease out fine points of concern. Case studies are typically used to examine rare phenomenon (e.g., Schiffer’s 2006 examination of blog coverage of the atypical controversy surrounding the Downing Street Memo) and to conduct exploratory research at the beginning of a line of inquiry to discover what variables might be in play (e.g., Webb, Thompson-Hayes et al.’s 2012 analysis of posts from one limited set of fan blogs to examine perceived portrayals of fictional brides and their weddings). How are case studies selected? Three guiding (and sometimes contradictory) principles can guide the selection of case: typicality, complexity, and conformity. In the methods section, the researcher usually acknowledges the principles that guide the selection of cases.

- **Typicality:** Researchers often select cases that they believe are typical of the phenomenon under study. They may employ random sampling techniques to select the cases in an effort to avoid introducing bias in case selection and to increase the probability of selecting typical cases. For example, Luzon (2011) randomly selected 11 academic blogs from Weblog directories to examine social and anti-social behavior on academic blogs. Exploratory research often uses typical cases.
- **Complexity:** At other times, exploratory research intentionally examines complicated cases in an attempt to discover the issues at play in the phenomenon through the examination of a limited number of cases. For example, Du and Wagner (2007)

examined posts from only one class blog to learn if blogging influenced student outcomes. The 31 students produced 279 posts, yielding a limited yet comprehensive case study that proved complicated to analyze. Obviously, complicated cases are not necessarily typical cases but can yield numerous, rich findings.

- **Conformity:** Cases “may be selected because of the researcher’s interest in a particular instance or site or because of the case’s capacity to be informative about a theory, an issue, or a larger constellation of cases” (Mabry, 2008, p. 214). Conformity selection occurs when the researcher begins with hypotheses or very specific research questions. For example, Trammel (2006) examined “attacks” on presidential candidates’ blogs to test the Functional Theory of Political Campaign Discourse.

Content Analyses. Content analysis involves reading textual data to identify incidences of preselected phenomenon that may be displayed in the data set. Content analysis researchers search texts for occurrences of the preselected categories or themes—categories or themes based on one of two concerns:

- To apply a theory or principle being tested or examined in the study. For example, Kerr et al. (2012) searched posts on Australian tourism blogs for evidence of Denegri-Knott’s (2006) four on-line power strategies.
- To ensure consistency in the coding of characteristics under study, such as Fullwood, Sheehan, and Nicholls (2009) coding for style, format, and expression on MySpace blogs.

Thematic Analysis. “Thematic content analysis is the scoring of messages for content, style, or both for the purpose of assessing the characteristics

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or experiences of persons, groups, or historical periods” (Smith, 1992, p. 1). Thematic analysis is among the most frequently employed methodologies to study blog and micro-blog content. Thematic analyses employ open coding meaning the identified themes emerged from the data rather than *a priori* categories imposed on the data (as is the case in the above described content analytic method). During open coding, researchers attempt to identify common concepts (also called themes) that reoccur across informants’ accounts. For example, McNeil et al (2012) discovered that Twitter posts containing the word “seizure” fall into four dominant categories or themes: metaphorical, personal accounts, informative, and ridicule/joke.

Many researchers adopt Owen’s (1984) three criteria of a theme: recurrence (the words, manner, and style of expression may vary, but the same idea appears and reappears across the data set), repetition (the same words or relatively the same language expresses the same idea across the data set), and forcefulness (ideas strongly stressed verbally or nonverbally). In textual data, forcefulness can be operationalized as sources stressing an idea by using dramatic language, vivid imagery, or textual emphasis such as italicizing a passage. Such operationalizations add to the validity of the findings by ignoring any single occurrence in the data. How many sources must engage in recurrence, repetition, or forcefulness for a theme to emerge? In smaller samples such as 20 or fewer sources, researchers typically believe two sources reporting the same idea can be considered a theme. More typically, however, researchers require three or more sources to recognize themes. A theme is considered major and defining if virtually all sources mention the same idea.

As explained by Gibson and Webb (2012), coding for themes is related to many critical aspects of qualitative analysis such as the constant comparison process and ultimately determines sample size:

Coding typically begins during the data collection process. Thus, part of the constant comparison process becomes comparing the current categories to the new data—often necessitating the development of new codes, concepts, or themes. When the coders can develop no new themes from additional data, then data collection ceases as the researcher has achieved category saturation. Some researchers will continue to collect data for a short while (e.g., conduct a few more interviews) to ensure that no new concepts emerge and to document the achievement of theoretical saturation, but such a step merely provides further validation of saturation and is not essential (p. 167).

Themes could be located via computer programs, but “hands on” analyses remain the common methodology, even for complex analyses (e.g., Burton & Soboleva, 2011). In hand-coding, coders highlight key concepts in text and then summarize patterns in separate notes. Often multiple coders conduct thematic analyses separately and later met to compare observations and identify common themes across coders. Researchers believe that high agreement across multiple coders offers evidence of reliability of the analysis and thus increases the credibility of the results. Most published thematic analyses report intercoder agreement at 88% or higher but reviewers prefer over 95% agreement.

Discourse Analysis. Like thematic analysts, discourse analysts look for patterns across text, specifically and exclusively patterns in language, language use, and/or linguistic qualities, such as the use of emoticons. Thematic and discourse analyses share the same procedures; they differ only in the object of study. It is not surprising that blog researchers study language patterns, given the thousands of blogs and given that “in the most part, politics is a linguistic activity” (Zglobiu, 2011, p. 19). But researchers have subjected blogs and micro-blogs on a variety of subjects to linguistic analysis. For example, Amir, Abidin, Darus, and Ismail (2012) identified five distinct language

differences in blogs written by male versus female Malaysian teens (e.g., use of intensifiers and tag questions). Luzon (2011) identified “discursive strategies aimed at constructing and sustaining affective” relationships in academic blogs (2011, p. 517). Jansen et al. (2009) examined micro-blog posts to discover “types of expression and movement from positive or negative sentiment” (p. 2169).

Computer Analyses. The extreme down-side of qualitative research is the labor-intensive analysis of voluminous data sets. For decades researchers engaged in the labor-intensive process of coding such data sets by hand across multiple coders; a detailed description of that process is offered by Gibson and Webb (2012) in their treatise on grounded-theory methodology. More recently, qualitative researchers increasingly employ computer software to analyze textual data. Some programs were designed specifically to analyze online data; see Boulos et al. (2010) for a helpful review of such programs. Other software programs can be used to analyze any text-based data set (e.g., transcripts of interviews and focus groups; participant-observer field notes) as well as to analyze posts from blogs and micro-blogs; see Heese-Biber and Crofts (2010) for a comprehensive review of these programs. These data analytic programs range from the simple to the complex:

- The simplest programs allow searches and counts of key words or phrases of particular interest to the researcher. These programs rarely exceed the capability of Microsoft Word’s “Find” feature.
- The more advanced software programs allow coders to embed markers in the text as they read it; the computer programs then retrieve and classify the various markers, including overlaps and co-occurrences. For example, using these programs, a researcher could code each time a confession occurs and every time an accusation occurs;

then the researcher can discover if micro-bloggers tend to lay blame when they experience negative events. Such programs allow researchers to identify emerging themes and patterns—processes usually completed solely “by hand.”

- The cutting edge programs go further; they allow for theory and hypothesis testing by employing advanced code searching that identify linkages and networks that might very well be missed by “hands on” analysis; see, for example, Woo-Young and Parks (2012) network analysis of Korean protest bloggers. In sum, these programs can “uncover linkages within or between cases that might escape the researcher’s notice” without the assistance of the software (Heese-Biber & Crofts, 2010, p. 662).

Software analytic programs are not without their critics. Coffey, Holbrook, and Atkinson (1996) warn against the dangers of relying too heavily on such programs. They fear that researchers will become lazy and fail to use the well trained human mind for analytic purposes. In reality, the output of the computer programs requires interpretation, so failing to examine the data becomes impossible (Hesse-Biber & Croft, 2010). Further, Coffee et al. claimed that software programmers developed analyses with taken-for-granted assumptions that limit researchers’ analytic creativity. Given later development of software programs allowing multiple analytic options, the programs may provide more options than researchers can possibly employ with a given data set; thus, it is difficult to image how programmers predetermine analytic methods employed in a given study (Lee & Fielding, 1996). As the debate continues, an increasing number of researchers conduct computer analyses (e.g., Hassid, 2012) while the majority of contemporary blog and micro-blog researchers report “hands on” analyses (e.g., Webb, Chang et al., 2012).

Interpretation: Making Sense of the Findings

The key issue confronting the researcher as he/she begins to interpret findings is generalizability. How transferable or generalizable are the findings? Given the results of the study, what can he/she reasonably say is now known? Generalizability is a function of sampling and theory. Each is considered in more detail below.

Sampling is based on the notion of a population under study. To the extent that the researcher employed probability sampling, and thus can offer an argument for representativeness of the sample, then the study's findings can be generalized to the population under study. For example, if the researcher randomly sampled micro-blog posts across the three month period when a new product was introduced, then he/she can argue that the results of the study speak to all micro-blog posts during that period. In short, a representative sample allows generalizations to the population under study—but no further. In the above example, the researcher could not generalize to all micro-blog posts during all time periods or for all product roll-outs or for roll-outs of similar products. To do so is to generalize beyond the data. How, then, can researchers reason beyond the limitations of sampling? They can do so by developing and testing theory.

If a theory emerged from grounded theory analyses (see Gibson & Webb, 2012, on how to conduct ground theory analyses), the researcher can offer a tentative theory to explain the phenomenon under study. Further testing of the theory will be expected, of course, as no theory, model, or principle is accepted based on data from only one study. Nonetheless, offering a new, albeit tentative, explanation for any category of human behavior is a laudable outcome to scientific study. Alternatively, if the researcher tested a theory,

then the data (1) fully supported the theory, (2) partially supported the theory, or (3) failed to support the theory. The outcome can be stated in a straight-forward manner. In the case of the latter two outcomes, the researcher can offer a tentative revision of the theory, based on his/her results. As with any new theory, such a revision awaits further testing before wide-spread adoption can be anticipated.

In contrast, a supported theory begins to build a case that the theory explains a class or type of human behavior across multiple data sets and thus is worthy of abstraction and generalization beyond any one data set. Note that it is the theory that is generalizable, rather than any one data set. Multiple, supportive data sets together make generalizations increasingly warranted and credible. For example, if a given data set of micro-blog posts confirmed a theory about the communication surrounding product rollouts, then the researcher might propose generalization beyond the sampled population of posts to all micro-blog posts during rollouts.

CONCLUSION

Micro-blogs and “blogs offer a low-cost, global and instantaneous tool of data collection. Blogs [and micro-blogs] can have an important and valuable place in the qualitative researcher's toolbox” (Hookway, 2008, p. 107). Blogs and micro-blogs make interesting objects of study in examinations of human behavior. They can be studied as an online phenomenon per se, and as a textual trail of other human behaviors such a political debate, self-presentation, and product placement. They can be readily sampled and studied using both quantitative and qualitative methods. Such studies can yield rich insights about a wide variety of topics and concerns.

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KEY TERMS AND DEFINITIONS

Blog: A medium established through the Internet, which enables people to publish their personal stories, opinions, product reviews, and many other forms of texts in real time.

Blog Audience: Boyd (2010) introduced four analytics of blogs audiences: First, the intended audience which comprises a blogger's general idea of the audience she or he wants to address. Second, the addressed audience comprises those people that are addressed in a specific blog posting, which may be the same as the intended audience in general but may also be a specific subset. The third category contains the empirical audience who actually take notice of any given posting or tweet. The final category includes the potential audience determined by the technological reach of a blog within the wider context of networks by communication.

Blogosphere: The totality of all blogs and their interconnections which implies that blogs are connected to each other in a virtual community.

Micro-Blog: An online medium inheriting features from traditional blogging, and differing from traditional blogging by imposing a limit on the number of characters in a single posting (140 characters) and facilitating a more instant updating speed, through more flexible forms of platforms (Web, text messaging, instant messaging and other third-party application).

Permalink (Portmanteau of Permanent Link): A live link to a specific and individual blog post and its accompanying comments, typically a post that is no longer on the front page of the blog and thus exists only in the blog's archive. A

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permalink provides a direct and quick connection to a given post, an alternative to searching the archive for the post. Permalinks are used to direct readers to a specific blog post--in contrast to an entry in a blog roll that directs readers to a blog's front page and thus, theoretically, to all its posts and comments.

RSS: A standardized format that automatically syndicates blog content into summarized text and sends it to the readers who subscribed to the bloggers. RSS is often dubbed Really Simple Syndication.

Social Networking Service: An online platform that builds social structures among people sharing common interests, activities, and other social connections. The term is often presented in abbreviation as SNS.

Trackbacks: A computerized method for tracking when a blog is cited online and then notifying the blogger of the location of the citation. Bloggers often cite to other bloggers; also traditional mass media articles (published online as well as via additional traditional media) can contain references to blogs. Bloggers are notified of the location of such citations via computer software that "trackbacks" when a blogger's URL is posted elsewhere on the Web.

Web 2.0: A combination of different Web applications that facilitates participatory information sharing and collaborating in a social media dialogue (such as social networking sites, blogs sites) in a virtual community.