

Association for Information Systems AIS Electronic Library (AISeL)

AMCIS 2009 Proceedings

Americas Conference on Information Systems
(AMCIS)

2009

Online Readership Popularity and Media-embedded Characteristics

Helen S. Du

Hong Kong Polytechnic University, cshelen@inet.polyu.edu.hk

Christian Wagner

City University of Hong Kong, iscw@cityu.edu.hk

Follow this and additional works at: <http://aisel.aisnet.org/amcis2009>

Recommended Citation

Du, Helen S. and Wagner, Christian, "Online Readership Popularity and Media-embedded Characteristics" (2009). *AMCIS 2009 Proceedings*. 777.

<http://aisel.aisnet.org/amcis2009/777>

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 2009 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

Online Readership Popularity and Media-embedded Characteristics

Helen S. Du

Department of Computing
The Hong Kong Polytechnic University
cshelen@inet.polyu.edu.hk

Christian Wagner

Department of Information Systems
City University of Hong Kong
iscw@cityu.edu.hk

ABSTRACT

Readership popularity has been an important proxy for the success of many online interactive media. Given the exponential growth of new web properties and the hype of competition among them, attaining and retaining popularity is difficult. One possible approach to this problem is to enhance the competitiveness of web presence by using appropriate web design mechanisms. So far, research in this area has been focused on technological issues or usability studies. Few studies have recognized the importance of media-embedded social scripts or environmental cues in influencing online communication. Drawing on social cognition theories, we identified two important media-embedded characteristics: source credibility and content freshness; and tested their impact to readership popularity in online interactive media. The content analysis result from 100 very popular weblog sites strongly supported our hypotheses. Our findings highlight key web design principles, which may serve to guide the practice of millions of online users and practitioners.

Keywords

Interactive media, popularity, source credibility, content freshness, social cognition, weblogs.

INTRODUCTION

The explosion in the use of online interactive media for social computing and collective knowledge discovery has been highly significant in shaping business management (Wagner and Majchrzak, 2006), marketing strategies (Bernoff and Li, 2007) and organization communication (Pereira and Soares, 2007) around the globe, though it is only recently receiving academic attention. The proliferation of this social phenomenon creates new opportunities as well as challenges to both individual online practitioners and net-enabled organizations in the increasingly competitive online interaction spaces. In particular, the issue of user (or reader) popularity is crucial to online community sustainability (Butler, 2001; Fulk, Flanagan, Kalman, Monge and Ryan, 1996) and e-business success (Sweeney, 2001), but is not easy to achieve in practice (Menchen, 2005; Nardi, Schiano, and Gumbrecht, 2004). To harness the network effect of an online medium, the more users engage in it the more valuable it becomes (Barabási, 2003). Readership popularity, *refers to the number of readers or visitors to the website*, is often used as a key surrogate for success and potential business value of a net-enabled organization (Blood, 2002). The success stories of *YouTube* (www.youtube.com) and *Facebook* (www.facebook.com) are renowned examples¹ that large firms, such as Google and Microsoft, are recognizing the potentially lucrative market value of these prominent online interactive media sites due to their rapidly growing readership (and user) popularity. Hence, individual media sites are competing for audience and user attention as more and more adopters emerging into the marketplace. Studies find that weblogs, for instance, have been following a power-law distribution with most of the readership focusing on a very small group of highly successful sites (Shirky, 2003; Sifry, 2005). Meanwhile, online users (and readers) are forced to cope with information overload (Jones, Ravid and Rafaeli, 2004) and web disorientation (Wen, 2003) given the escalating amount of information and choices available online.

¹ **Examples:** *YouTube* is a free video sharing website founded in February 2005 as a small online company, and grew to have more than 100 million daily downloads (<http://news.bbc.co.uk/2/hi/technology/5186618.stm>). According to the Internet research firm Hitwise, YouTube obtained a 43% share of the online video market in May 2007 (<http://www.hitwise.com/press-center/hitwiseHS2004/videosearch.php>). On November 13, 2006, Google announced that it has closed its acquisition of YouTube for \$1.65 billion in stock (http://www.youtube.com/press_room_entry?entry=AwPf9c9qJDC). *Facebook*, a college-based social networking site launched four years ago, expanded to have over 65 million users in February 2008 (<http://www.facebook.com/press/info.php?statistics>). Microsoft has invested \$240 million to acquire 1.6% share of Facebook's equity stake (<http://www.facebook.com/press/releases.php?p=8084>).

Researchers in the area of web design have largely responded to this type of problem either by suggesting recommendation aids (Häubl and Trifts, 2000; Wang and Benbasat, 2007) or navigational tools (Head, Archer and Yuan, 2000; Webster and Ahuja, 2006), with a recent emphasis on multimedia technologies, to facilitate information filtering and/or to reduce web disorientation. These design efforts tend to focus on technical and cost aspects, assuming that users are analytical with respect to a wealth of social information and variety of choices on the web, but ignoring the heuristic power of human cognition.

Grounded in social cognition theories, psychologists argue that people in social interactions are heavily influenced by existing social scripts and environmental cues to draw distinctions and categorizations (Chanowitz and Langer, 1981; Langer, 1992). Studies in the area of human-computer interaction also suggest that when people interact via the computer they tend to respond socially to non-verbal contextual cues, such as senders' social status and expertise, and result in mindless categorization and acceptance of information (Johnson and Gardner, 2007; Nass, Fogg and Moon, 1996). Such mental shortcuts triggered by social cues are consistent with the assumption that information is processed heuristically (Chaiken, 1987) rather than systematically. Information seeking and social exchange behavior, after all, are not always systematic and task-oriented, especially in online interaction spaces where users are easily distracted by a variety of information and choices.

While the electronic medium provides powerful means for rich information exchange, it inserts an extra layer of mediation in social interaction (as oppose to traditional face-to-face communication). Studies find that computer-mediated communication generally lacks social and contextual cues about the participants and their immediate environments. Such "visual anonymity" (Joinson, 2001) or "lack of presence" (Johnson, Hornik and Salas, 2008) sometime creates uncertainty about the information sources and therefore, hinders people's desire to further engage in them. This study, therefore, argue that the availability and salience of certain media-embedded characteristics or contextual cues may become influential proxies to trigger online users' mental shortcuts or cognitive heuristics leading to more social engagement and interaction. In particular, we examined two potentially valuable media-embedded proximal cues, namely source credibility and content freshness, and their impact on readership popularity in the context of weblogs.

We chose weblogs (blogs) as the context of this inquiry among a set of very popular online interactive media and enabling technologies mainly for two reasons. Firstly, blogs are designed to facilitate web content publishing and persistent social interaction (Du and Wagner, 2006). With rich content and a history of archived entries, blogs provide a natural field for observation with plentiful of information to analyze. Secondly, among the set of popular online interactive media, blogs have attracted the participation of millions of online users and readers, and have also gained considerable business attention. According to Technorati's 2008 annual report on blogosphere (<http://technorati.com/blogging/state-of-the-blogosphere/>), there are over 130 million active blogs worldwide. At least 40 percent of American Internet users are blog readers (Lenhart and Fox, 2006). Large firms, such as IBM and Microsoft, are seen at the forefront of the corporate blogging phenomenon, where employees are encouraged to actively embrace and participated in this medium, thus demonstrating that blogging has become a "mainstream" corporate activity.

The remainder of this article is organized as follows. First, we will review related literature to formulate the theoretical foundation and define hypotheses. Then, we will describe the study and present the results of our observation based on a comprehensive content analysis of 100 blog sites. Limitations of the study and possible future work will also be discussed. Last, we will conclude this investigation with both theoretical and practical implications.

THEORETICAL FOUNDATION AND HYPOTHESES DEVELOPMENT

Social cognition studies suggest that people are social actors who are often selective with respect to a wealth of information by drawing distinctions and categorizations based on given social and environmental cues (Broadbent, 1958; Langer, 1989; Schultze and Vandenbosch, 1998). Actively drawing these distinctions keeps the individuals situated in the present and more attentive to recent events (Sternberg, 2000) or fresh content. As social or contextual cues trigger a series of expectations, assumptions and attributions (Nass and Moon, 2000), individuals in social interactions—both online (Nass and Moon, 2000) and offline (Langer and Moldoveanu, 2000)—have been observed to quickly form social categorizations and expectations based on minimal contextual cues. Today, these less mindful approaches to cognition and behavior are becoming even more inevitable in the online interaction spaces where users are faced with excessive information and choices. When information is given by, for instance, an authority or expert, individuals may mindlessly categorize it as credible without critically examining the content. Similarly, information foraging theory (Pirolli and Card, 1999) posits that people, when possible, will rely on "environmental cues in judging [the value of] information sources and navigating through information spaces" (Pirolli, 2003, p. 158). Extending from this theory, Sunder, Knobloch-Westerwick and Hastall (2007) investigated the psychological significance of proximal cues in Google News, which they called the "information scent". Their study suggests that online users' perception of a given piece of information is heavily influenced by the information scent transmitted via such cues.

Taken together, these studies point out that some media-embedded proximal cues trigger cognitive heuristics or mental shortcuts, and in turn influence recipients' evaluation and preference of the information exchanged.

SOURCE CREDIBILITY, an important media-embedded characteristic, generally refers to the "believability" (Fogg, 1999) of source content. A credible source is "trustworthy" and providing "expertise" (Self, 1996). Sunder and his colleagues (2007) suggest that source credibility cues, such as the name of the primary source and the number of related articles written by others, trigger the "professional expertise heuristic" that tends to influence online users' perceptions of information. Drawing on the heuristic model of social cognition, studies have consistently found strong positive relationships between source credibility and the Internet audiences' attitude, behavior and value orientation (Wathen and Burkell, 2002; Zhu and Zhou, 2002). Source credibility cues prompt cognitive quality or authority to the readers (Olaisen, 1990). Since online users (e.g., readers and authors) are mostly unrelated individuals, their navigational decisions may be heavily influenced by the trustworthiness and expertise characteristics exhibited in an interactive media site. Thus, we propose

H₁: Source credibility of an interactive media site is positively related to its readership popularity.

CONTENT FRESHNESS, the extent of 'up-to-dateness' (Lewandowski 2008) that the web information presents, is another important media-embedded characteristic, often represented by the recency and frequency of content updates. Recency/frequency cue is a proximal cue that conveys situational relevance (Saracevic, 1996) of media information with regards to current events and trendy issues. This prompts "an immediate assessment of information need" heuristic to readers (Sunder et al., 2007, p. 370). In online interactive media, readers or visitors are often encouraged to participate by either contributing new post entries or by commenting on existing posts. Content freshness in this case is also reflected by recency and frequency of comments. This proximal cue implies real-time social responsiveness (i.e. number of comments made) by other visitors; and may trigger "bandwagon" heuristic (Sundar 2008). "Social proof" (Cialdini, 1993) is another similar the as the term as the "bandwagon effect" in the classic persuasion models of social cognition. Both models suggest that socially constructed content freshness cue prompts the readers to "simply follow the crowd" or "jump on the bandwagon". Thus, we propose

H₂: Content freshness of an interactive media site is positively related to its readership popularity.

RESEARCH METHOD

Sampling. We observed and examined the content of 100 popular blog sites for one month. These sites had appeared in *Technorati's*² top-100 list of blogs during the month of our observation. Initially, 108 sites were identified. We removed 8 cases, namely 4 blog sites that were written in languages (that either rater was not able to understand) and 4 others which had no archive to trace content updates.

Coding. Two raters completed content analysis of the 100 selected blog sites and coding of the content-related variables, including the first author and a research assistant from the area of communication and media. Both raters were experienced blog users. Their task was to assess the independent variables, namely website-embedded characteristics (proximal cues) for source credibility and content freshness, and two control variables. First, each rater worked independently following an initial coding scheme developed based on our prior study [reference to be supplied after the blind review]. Raters then compared and discussed their observation and findings. After few rounds of modification and re-coding of the disputable items, they were able to reach 100% consensus. A post-test was conducted using 20 randomly selected cases. Percent agreements of two newly hired raters with respect to the final coding instrument were 99.7% and 98%, and 97.7% between themselves.

Dependent variable. *Readership popularity* was measured by Technorati's blog popularity ranking score (1 to 100), which was determined based on the number of unique inbound links from other blogs or websites. During the observation month, we recorded Technorati's blog ranking information every day at about the same time, including number of inbound links and ranking score. Since the number of inbound links of a blog varied considerably on a daily basis and was highly skewed in its distribution, we decided to use the ranking score as the measure for readership popularity. Moreover, ranking score better reflected the relative (winning or losing) position of a blog in the top-100 list than the actual number of inbound links. To derive an overall blog popularity ranking from the daily-recorded ranking scores, a *rank aggregation*³ technique called

² **Technorati** (www.technorati.com/pop/blogs) is the best-known blog search engine, which maintains and regularly updates the ranking of top-100 most popular blogs. During the time of our data collection, it had monitored over 70 million blogs worldwide (Sifry, 2007).

³ **Rank aggregation** is to combine the ranked preferential voting based on certain rules. It is widely discussed in the literature in terms of forming a collective choice or a social decision (Arrow, 1963), and has been applied to determine winners for sports/elections (Reilly, 2002), and recently in the context of the web (Dwork, Kumar, Naor and Sivakumar, 2001).

“Borda rule” was used, essentially treating each inbound link as a *vote* for popularity by a committed blog reader. The Borda rule is often used for aggregating ordinal ranks, such as the blog popularity ranking (cf. Du and Wagner, 2006). This rank aggregation technique provides a certain degree of robustness over a period of time, by reducing the bias and unstable preference of daily rankings. Following this rule, a unique monthly aggregated “rank” score (1 to 100) was generated for each of the 100 observed cases.

Independent variables. Two *content freshness* related variables were measured: average number of daily posts over the month (“daily post rate”) and average number of daily comments over the month (“daily comment rate”). Three *source credibility* related binary variables were measured: “expertise” [whether the site introduces the editor(s) or author(s) expertise], “credential” [whether there was any badge, banner or sponsorship that indicate the site's qualification, achievement and identity], and “reference” [whether a reference link to the primary source of a post was provided]. Respectively, each of these variables, expertise, credential and reference, is a proxy measure for one of the three dimensions of source credibility (cf. Watten and Burkell, 2002), namely author(s) expertise, site credentials and content trustworthiness.

Control variables. Two control variables, *theme* of the blog content and *age* (number of months since creation), have been included in the analysis to reduce their confounding effects to the impact of source credibility and content freshness on readership popularity. The theme of each blog case was categorized into technology, entertainment, politics, business and general, based on the information it provided in the website’s profile or “about” area.

DATA ANALYSIS AND RESULTS

We use linear regression to test our hypotheses. Table 1 presents the descriptive statistics of the variables used in the regression analysis. Although the distribution of daily post rate and daily comment rate are left skewed, the regression results using the log values are not significantly different. We decided to use the actual observed data. From the table, we notice that blog age varies, from being just created 4 months ago to over 12 years (Mean = 5 years). This may suggest that even a late starter (adopter) can quickly become successful, if they have the right “formula to win”. Moreover, technology seems to be a very popular theme (or topic) to write and discuss about than the other types (percentage of technology theme out of the sample set = 33%).

Table 1. Descriptive Statistics (N = 100)

Variable		Mean	S. D.	Min	Max
Daily post rate		9.84	11.08	0.00	53.52
Daily comment rate		359.36	730.63	0.00	4416.62
Age		60.73	36.24	4	148
		Frequency			
Expertise	1 = Yes (0 = No)				43 (57)
Credential	1 = Yes (0 = No)				48 (52)
Reference	1 = Yes (0 = No)				35 (65)
Theme	1 = Technology				33
	2 = Entertainment				14
	3 = Politics				14
	4 = Business				7
	5 = General				32

The patterns of associations shown in Table 2 are largely as might be expected. The two content freshness related variables, daily post rate and daily comment rate, are positively correlated ($r = 0.37, p < 0.001$), which makes sense: more posts draw more related comments while more comments by visitors motivate the author (editor) to post more entries. In addition, expertise, credential and reference cues each represents author(s) expertise, site credentials and content trustworthiness dimension of source credibility respectively, so it is expected that they were not corrected.

Table 2. Correlations

Variable	Daily post rate	Daily comment rate	Expertise	Credential	Reference	Age
Daily post rate	-					
Daily comment rate	0.37***	-				
Expertise	-0.03	0.06	-			
Credential	0.10	-0.01	-0.03	-		
Reference	0.26**	0.00	0.04	0.01	-	
Age	-0.00	0.02	0.30*	-0.07	0.09	-
Theme	0.02	0.01	0.04	-0.08	-0.14	0.05

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 3 presents the regression results. The model is highly significant at $p < 0.001$ with adjusted $R^2 = 0.34$. Both hypotheses were fully supported. All three source credibility related variables showed significant relationships with rank: expertise ($\beta = -0.35$, $p < 0.001$), credential ($\beta = -0.20$, $p < 0.05$) and reference ($\beta = -0.17$, $p < 0.05$). Content freshness related variable, both daily post rate ($\beta = -0.20$, $p < 0.05$) and daily comment rate ($\beta = -0.28$, $p < 0.01$) were strongly related to rank. Collinearities of the independent variables were also checked and were all statistically acceptable.

Table 3. Regression[†]

Predictor		β	t	Adjusted R^2	F
Content freshness cues	Daily post rate	-0.20	-2.19	0.34	8.37
	Daily comment rate	-0.28	-3.17		
Source credibility cues	Expertise	-0.35	-4.21		
	Sponsor	-0.20	-2.46		
	Reference	-0.17	-1.96		
Control variables	Age	0.00	0.08		
	Theme	-0.03	0.29		

[†] Dependent variable: Rank (reverse score variable with “1” being the highest and “100” being the lowest)

DISCUSSION

Sampling issue. In the “blogosphere” (the world of all blogs), bloggers read other blogs, link to them and reference them in their own writing. Such characterization of the blogosphere appears to be most faithfully represented by a small set of extremely popular blogs, known as the A-list (Herring, Kouper, Paolillo, Scheidt, Tyworth, Welsch, Wright and Yu, 2005). So, this study took a unique perspective. Rather than random sampling, we investigated 100 highly successful blogs, focusing on the best practice of these “A-list” bloggers. Nevertheless, any sampling mechanism will have its own bias, and may not fully represent the phenomenon as a whole. In the future studies, we will include other types of online interactive media, and different sampling mechanisms.

Data collection issue. To reduce researchers’ bias, we apply the multi-source multi-rater data collection method. The dependent variable, i.e. readership popularity, used the inbound link based ranking scores provided by Technorati. This is an objective measure of the “recipients’ consumption of the output of an information system” (DeLone and McLean, 1992, p. 66). Though a secondary source, the ranks of the 100 sampled blogs were generated out of a large base set of over 70 million blogs worldwide (Sifry, 2007). This value reflects a collective choice made by many online readers, with each inbound link as a popularity vote by a distinct reader. Meanwhile, the independent variables and control variables were directly collected from the 100 selected blog sites by two raters. Since these predicting variables are more objective than perceptions and relatively less contentious, two raters’ double verification and full agreement (at last) served to ensure reliability of the coding. In addition, the use of two very experienced blog users with different backgrounds (one from information systems

and the other from communication and media) to enhance face validity of the coding. The post-test result also suggests a good level of reliability of the coding.

Measurement issue. Single item was used to measure readership popularity, namely blog rank based on number of inbound links (rank and inbound links were highly correlated at $p < 0.001$ with $r = 0.72$). Although this measure captures the level of persistent and committed readership, it does not reflect occasional surfing behavior. For example, some readers visit the site and read the content, but decide not to come back; some readers are occasional online users who do not have their own site to establish an inbound link. In the future, we may incorporate visit rates (new and repeated visits) and number of page views to increase validity and reliability of the measure on readership popularity.

Age and theme. Interestingly, our results showed that readership popularity was not related to blog age (months since creation) as well as blog theme (see Table 3). This finding suggests two things. Firstly, the “first-mover advantage” does not seem to apply in the online interactive media, at least not among the group of best practice sites. Apparently the speed with which information is shared across the Internet devalues first mover advantages, as the time required to create critical mass can be compressed through technology. Very early in our research we already observed that blog portals, which promoted automatic linking between blogs and serendipitous discovery of interesting new blogs, yielded fast growth. The formal results validate that observation. Secondly, the type of main theme does not matter, but having a theme appears to matter. Some informants compared blog properties to “lounges” or “cafe houses” of past times. Thus, a particular theme would bring a like-minded community to the site. The choice of any particular theme, however, apparently matters less, as communities can be formed around so many of them, given the vast audience of blog readers.

IMPLICATIONS AND CONCLUSION

This study extends existing media and design research literature at both theoretical and applied levels. Theoretically speaking, this study attempts to bring in social cognition perspective into web design principles, and calls for design attention to influential media-embedded characteristics or proximal cues. First, our findings suggest that a more credible interactive media site (or a site having more proximal cues that trigger higher source credibility heuristic) may obtain more committed online readers or visitors. Studies (Joinson, 2001; McKenna and Bargh, 2000) find that people communicating electronically tend to feel a sense of anonymity and experience reduced identity awareness of others, and therefore are less likely inclined to interact with mostly unrelated individuals in the online environment. This research suggests a possible way to reduce such online “*deindividuation*”⁴ problem (Weisband, 1995), i.e. by enhancing the salience of source credibility cues. Moreover, fresh content cues, both individual (e.g. posts by authors and contributors) and socially constructed (comments by site visitors) cues, are also important media-embedded characteristics that may lead to higher readership popularity.

Furthermore, existing studies of online media-embedded characteristics and their impact on human cognition and behavior mostly have been conducted in a well-controlled lab (e.g., Sunder et al., 2007) or using survey (e.g., Zhu and Zhou, 2002). Our study observed and analyzed the content of 100 very successful media sites to seek for more insights in a natural setting. This methodological approach is particularly suitable for investigating content related media characteristics. From a practitioner’s perspective, our study provides a potential success formula for designing a popular interactive media site. It also suggests to potential adopters that success in online interactive media is possible even as a “newcomer”. Finally, this research is valuable for explaining the successful adoption and use of social or firm-based user communities, and other similar types of online interactive media.

REFERENCES

1. Agarwal, R. and Venkatesh, V. (2002) Assessing a firm’s web presence: A heuristic evaluation procedure for the measurement of usability, *Information Systems Research*, 13, 2, 168-186.
2. Arrow, K. (1963) *Social Choice and Individual Values*, 2nd ed, Yale University Press, New Haven.
3. Barabási, A. L. (2003) *Linked-How Everything Is Connected to Everything Else and What It Means for Business, Science, and Everyday Life*, Penguin Group, New York.
4. Bernoff, J. and Li, C. (2007) Harnessing the power of the oh-so-social web, *MIT Sloan Management Review*, 49, 3, 36-42.
5. Blood, R. (2002) *We’ve Got Blog: How Weblogs Are Changing Our Culture*, Perseus Publishing, Cambridge, UK.
6. Broadbent, D. (1958) *Perception and Communication*, Pergamon Press, London, U.K.

⁴ For explanation about the Deindividuation Theory, readers may refer to Festinger, Pepitone and Newcomb (1952).

7. Butler, B. S. (2001) Membership size, communication activity, and sustainability: A resource-based model of online social structures, *Information Systems Research*, 12, 4, 2001, 346-362.
8. Chaiken, S. (1987) The heuristics model of persuasion, in *Social Influence: The Ontario Symposium*, M. P. Zanna, J. M. Olson and C. P. Herman (Eds.), 5, 3-39, Erlbaum, Hillsdale, NJ.
9. Chanowitz, B. and Langer, E. (1981) Premature cognitive commitment, *Journal of Personality and Social Psychology*, 41, 6, 1051-1063.
10. Cialdini, R. (1993) *Influence: Science and Practice*, (3rd Ed.), HarperCollins, New York.
11. DeLone, W. H. and McLean, E. R. (1992) Information systems success: The quest for the dependent variable, *Information Systems Research*, 3, 1, 60-95.
12. Du, H. S. and Wagner, C. (2006) Weblog success: Exploring the role of technology, *International Journal of Human-Computer Studies*, 64, 9, 789-798.
13. Dwork, C., Kumar, R., Naor, M. and Sivakumar, D. (2002) Rank aggregation methods for the web, *Proceedings of the 10th International Conference on WWW*, Hong Kong, 613-622.
14. Festinger, L., Pepitone, A. and Newcomb T. (1952) Some consequences of deindividuation in a group, *Journal of Abnormal and Social Psychology*, 47, 382-389.
15. Fogg, B.J. (1999) Persuasive technologies—Now is your chance to decide what they will persuade us to do—and how they'll do it, *Communications of the ACM*, 42, 5, 26–29.
16. Fulk J., Flanagin, A. J., Kalman, M. E., Monge, P. R. and Ryan, T. (1996) Connective and communal public goods in interactive communication systems, *Communication Theory*, 6, 1, 60-87.
17. Häubl, G. and Trifts, V. (2000) Consumer decision making in online shopping environments: the effects of interactive decision aids, *Marketing Science*, 19, 1, 4-21.
18. Head, M., Archer, N. and Yuan, Y. (2000) World Wide Web navigation aid, *International Journal of Human-Computer Studies*, 53, 2, 301-330.
19. Herring, S. C., Kouper, I., Paolillo, J. C., Scheidt, L. A., Tyworth, M., Welsch, P., Wright, E. and Yu, N. (2005) Conversations in the Blogosphere: An analysis from the bottom up, *Proceedings of the 38th Hawaii International Conference on System Sciences*, Hawaii, USA.
20. Johnson, D. and Gardner, J. (2007) The media equation and team formation: Further evidence for experience as a moderator, *International Journal of Human-Computer Studies*, 65, 2, 111-124.
21. Johnson, R. D., Hornik, S. and Salas E. (2008) An empirical examination of factors contributing to the creation of successful e-learning environments, *International Journal of Human-Computer Studies*, 66, 5, 356-369.
22. Joinson, A. N. (2001) Self-disclosure in computer-mediated communication: The role of self-awareness and visual anonymity, *European Journal of Social Psychology*, 31, 177-192.
23. Jones, Q., Ravid, G. and Rafaeli, S. (2004) Information overload and the message dynamics of online interaction spaces: A theoretical model and empirical exploration, *Information Systems Research*, 15, 2, 194-210.
24. Langer, E. J. (1992) Matters of mind: Mindfulness/mindlessness in perspective, *Consciousness and Cognition*, 1, 289-305.
25. Langer, E. J. (1989) *Mindfulness*. Addison-Wesley, Reading, MA.
26. Langer, E. J. and Moldoveanu, M. (2000) The construct of mindfulness, *Journal of Social Issues*, 56, 1, 1-9.
27. Lenhart A. and Fox, S. (2006) Bloggers: A portrait of the Internet's new storytellers, *Pew Internet & American Life Project*, July 19. www.pewinternet.org/PPF/r/186/report_display.asp
28. Lewandowski, D. (2008) A three-year study on the freshness of web search engine database, *Journal of Information Science*, 38,6, 817-831.
29. McKenna, K. Y. A. and Bargh, J. A. (2000) Plan 9 from cyberspace: The implications of the Internet for personality and social psychology, *Personality and Social Psychology Review*, 4, 1, 57-75.
30. Menchen, E. (2005) Blogger motivations: Power, pull, and positive feedback, *Presented at the 6th International and Interdisciplinary Association of Internet Researchers*, October, Chicago, IL.
<http://blog.erickamenchen.net/MenchenBlogMotivations.pdf>

31. Nardi, B. A., Schiano, D. J. and Gumbrecht, M. (2004) Blogging as social activity, or would you let 900 million people read your diary? *Proceedings of the 2004 ACM Conference on Computer Supported Cooperative Work*, Chicago, IL, November, 222-231.
32. Nass, C., Fogg, B. J. and Moon, Y. (1996) Can computer be teammates? *International Journal of Human-Computer Studies*, 45, 6, 669-678.
33. Nass, C. and Moon, Y. (2000) Machines and mindlessness: Social responses to computers, *Journal of Social Issues*, 56, 1, 81-103.
34. Olaisen, J. (1990) Information quality factors and the cognitive authority of electronic information, in *Information quality: Definitions and dimensions*, I. Wormell (Ed.), 91-121, Taylor Graham, London, UK.
35. Pereira, C. S. and Soares, A. L. (2007) Improving the quality of collaboration requirements for information management through social networks analysis, *International Journal of Information Management*, 27, 2, 86-103.
36. Pirolli, P. (2003) Exploring and finding information, in *HCI Models, Theories and Frameworks: Toward a Multidisciplinary Science*, J. Carroll (Ed.), 157-191. Morgan Kaufmann, San Francisco.
37. Pirolli, P. and Card, S. K. (1999) Information foraging, *Psychological Review*, 106, 4, 643-675.
38. Reilly, B. (2002) Social choice in the South Seas: Electoral innovation and the Borda count in the Pacific island countries, *International Political Review*, 23, 4, 355-372.
39. Saracevic, T. (1996) Relevance reconsidered, in *Information science: Integration in Perspective*, P. Ingwersen and N. O. Pors (Eds.), 201-218, Royal School of Library and Information Science, Copenhagen.
40. Self, C. S. (1996) Credibility, in *An Integrated Approach to Communication Theory and Research*, M. Salwen and D. Stacks (Eds.), Erlbaum, Mahwah, NJ.
41. Schultze, U. and Vandenbosch, B. (1998) Information overload in a groupware environment: Now you see it, now you don't, *Journal of Organizational Computing & Electronic Commerce*, 8, 2, 127-148.
42. Sifry, D. (2007) State of the blogosphere / State of the live web, *Sifry's Alert*, April. www.sifry.com/stateoftheliveweb/
43. Sifry, D. (2005) State of the blogosphere, part 3: The A-list and the long tail, March. www.sifry.com/alerts/archives/000301.html
44. Shirky, C. (2003) Power laws, weblogs, and inequality, February. www.shirky.com/writings/powerlaw_weblog.html
45. Sternberg, R. J. (2000) Images of mindfulness, *Journal of Social Issues*, 56, 1, 11-26.
46. Sundar, S. S. (2008) The main model: A heuristic approach to understanding technology effects on credibility, in *Digital Media, Youth, and Credibility*, M.J. Metzger and A. J. Flanagin (Eds.), 73-100, MIT Press, Cambridge, MA.
47. Sunder, S. S., Knobloch-Westerwick, S. and Hastall, M. R. (2007) News cues: Information scent and cognitive heuristics, *Journal of the American Society for Information Science and Technology*, 58, 3, 366-378.
48. Sweeney, S. (2001) *The E-Business Formula for Success: How to Select the Right E-Business Model, Web Site Design, and Online Promotion Strategy for Your Business*. Maximum Press, Gulf Breeze, FL.
49. Wagner, C. and Majchrzak, A., (2006) Enabling customer-centricity using wikis and the wiki way, *Journal of Management Information Systems*, 23, 3, 17-43.
50. Wang, W. and Benbasat, I. (2007) Recommendation agents for electronic commerce: Effects of explanation facilities on trusting beliefs, *Journal of Management Information Systems*, 23, 4, 217-246.
51. Wathen, C. N. and Burkell, J. (2002) Believe it or not: Factors influencing credibility on the Web, *Journal of the American Society for Information Science and Technology*, 53, 2, 134-144.
52. Wen, J. (2003) Post-valued recall web pages: User disorientation hits the big time, *IT & Society*, 1, 3, 184-194.
53. Webster, J. and Ahuja, J. S. (2006) Enhancing the design of web navigation systems: The influence of user disorientation on engagement and performance, *MIS Quarterly*, 30, 3, 661-678.
54. Weisband, S. P., Schneider, S. K. and Connolly, T. (1995) Computer-mediated communication and social information: Status salience and status differences, *The Academy of Management Journal*, 38, 4, 1124-1151.
55. Zhu, J. H. and Zhou H. (2002) Information accessibility, user sophistication, and source credibility: The impact of the Internet on value orientations in Mainland China, *Journal of Computer-Mediated Communication*, 7, 2.