

Mapping the Consequences of Technology on Public Relations

by

John V. Pavlik, Ph.D.

**Professor and Chair, Department of Journalism and Media Studies
School of Communication, Information and Library Studies
Rutgers, the State University of New Jersey**

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John V. Pavlik, Ph.D., is professor and chair of the Department of Journalism and Media Studies at the School of Communication, Information and Library Studies, Rutgers, the State University of New Jersey. He is also director of the Journalism Resources Institute at Rutgers. Pavlik is faculty associate at the Columbia Institute for Tele-Information (CITI). He is chair of the editorial board for *Television Quarterly*, the journal of the National Academy of Television Arts and Sciences. He is the former executive director of The Center for New Media at the Columbia University Graduate School of Journalism, where he was also a professor. Pavlik served as the founding director of the School of Communication at San Diego State University and he is also a former senior fellow of the San Diego Supercomputer Center. He is the former associate director for Research and Technology Studies at The Freedom Forum Media Studies Center at Columbia University. Pavlik has written many publications on the impact of new technology on journalism, media and society. His most recent book is "Converging Media," co-authored with Shawn McIntosh. His other books include "Journalism and New Media," and "New Media Technology: Cultural and Commercial Perspectives." Pavlik has also authored more than a dozen computer software packages for education in journalism and communication. Pavlik's Ph.D. and M.A. in mass communication are from the University of Minnesota. He is a 1978 graduate of the School of Journalism and Mass Communication at the University of Wisconsin at Madison. He can be reached at jvpavlik@gmail.com. Source: Rutgers University Web site.

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EXECUTIVE SUMMARY

From twitter to mash-up media, new technology presents significant implications for public relations. Whether in the form of blogs, podcasts or YouTube videos, the Internet and World Wide Web have transformed how the public accesses information. The traditional role of media gatekeepers is in a state of enormous flux. Moreover, a wide spectrum of other technologies, ranging from satellites, to cell phones, to video news releases, have become the standard tools that continue to influence public relations practices and policies.

The following paper examines what research tells us about a variety of emerging technologies and their impact on and implications for public relations. The technologies examined here are digital, or computer-based, and networked-enabled, such as wired and wireless technologies that reach globally through the Internet and World Wide Web.

The impact and implications are examined in four broad areas. First, the impact of technology on how public relations practitioners do their work is considered. Second, the implications of technology on the content or messages developed and delivered in public relations is examined. Third, the implications of technology on organizational structure, culture and management is evaluated. Finally, the impact of technology on the relationships between or among organizations and their publics is analyzed. These four areas of impact are assessed through a combination of what research tells us as well as case studies, anecdotal evidence and interviews with leading experts, scholars and professionals.

Note that although this four-part framework is used to organize this analysis, these four themes are not meant to be mutually exclusive. In fact, many of the technologies examined here have implications for two or more of these areas. Moreover, much of the research literature on technology does not specifically address the implications of these new media for public relations. As a result, in this paper a conceptual framework outlining the possible implications for public relations is essential.

Further, this paper views the field of public relations broadly, and inclusive of far more than just media relations. Although many of the technologies examined here address the area of media relations, the consequences of these emerging new media extend far into the broader realm of managing relationships between organizations and their publics, as well as developing a strategic approach to the overall utilization of digital technologies in those relationships.

Based on this examination, a series of recommendations for the profession is presented. In addition, a research agenda is outlined for future investigation of technology and its impact on the profession of public relations. A bibliography is also provided.

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IMPACT ON HOW PRACTITIONERS DO THEIR WORK

Examples of technologies that illustrate this theme: Blogs, Twitter, Email Trends, Texting, Mobile Media, Google Scholar

Technology has long influenced how public relations practitioners do their work. Once typed on paper and sent via mail or fax, press releases are now produced on a computer and delivered via email. PR Newswire sent the first electronically transmitted press release on March 8, 1954.¹ The electronic press release was sent to 12 media outlets in New York. By 2007, a variety of competitors offer a wide range of online media services, ranging from an RSS (really simple syndication) feed to ProfNet expert source services to free media monitoring.² Video news releases are delivered digitally via satellite or the Internet. Public opinion surveys are conducted via the World Wide Web. Photography and videography are widely produced and delivered digitally.

Because much of the strategy and tactics of public relations rely on use of the media, as media have evolved technically, practitioners have adapted their methods as well. Some of these adaptations have been strategic and intentional, designed to improve the effectiveness, efficiency or efficacy of various tactics or techniques. In other cases, the changes have been perhaps more subtle and unintentional, possibly adversely influencing practices.

Journalists and the Internet

Internet use by journalists in general has grown dramatically since the 1990s to become a routine part of the normal work day for reporters and editors. The 2004 Media in Cyberspace study found:

- 98% of the journalists say they are online at least once a day to check email.
- 15 hours a week are spent by journalists reading and sending email.
- 76% of reporters go online to find new sources and experts.
- 73% of reporters go online to find press releases.
- 53% of journalists use email to receive story pitches. This is more than double the percent (25%) who used email to receive story pitches in 1995.
- Most journalists have two email addresses. 12% have six or more. Typically, different addresses are used or given out for different purposes.
- 24% of journalists used instant messaging in 1999; by 2004, 44% did.
- 81% of reporters go online daily to do searching.
- 92% of journalists go online as part of their story research. A growing portion of journalists use corporate Web sites to obtain information. Magazine journalists in fact report that for breaking news when a live source is not available, corporate Web sites are the top choice for information.

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- 55% of print media sites at least occasionally use their Web site to scoop the print product. This is up substantially since 1999, when 42% would use the Web to scoop the print product.

A growing portion of journalists prefer receiving photographs, audio and video.

- 46% of magazine editors favor receiving digital images.
- 26% prefer slides.
- 26% prefer camera-ready art.
- 61% of newspaper editors prefer to receive digital photos or other images.
- About a third of all broadcasters welcome receiving audio files from Web sites.
- 20% of broadcasters receive video files online.

Blogs and Traditional Media

The 2006 Annual Euro RSCG Magnet and Columbia University Survey of the Media in collaboration with Steve Ross provide a useful window on how the practices of public relations, especially as they relate to the news media, have evolved with the rise of the Internet and World Wide Web.^{3 4 5}

The RSCG Magnet 2006 study shows that "Journalists are also agreed that Weblogs have a healthy future in the coming year for spreading information on the corporate level and functioning as watchdogs; 68% of respondents agree that blogs will become a more popular tool for corporations seeking to inform consumers while 56% agree that blogs will remain an independent and unorthodox means of disseminating information." Blog use by journalists has only increased since the 2006 study.

"More than 51% of journalists use blogs," reported the 2006 - 11th Annual Euro RSCG Magnet and Columbia University Survey of the Media. The study surveyed 1,202 journalists in North America and around the globe. The study found that:

- "70% of journalists who use blogs do so for work-related tasks. Most often, those work-related tasks involve finding story ideas, with 53% of journalist respondents reporting using blogs for such purposes.
- "43% of journalists use blogs for researching and referencing facts and finding sources.
- "36% of respondents use blogs to find sources.
- "Most notable is that 33% of journalists say they use blogs as a way of uncovering breaking news or scandals. Few blog-using journalists are engaging with this new medium by posting to blogs or publishing their own."

But, evidence suggests that journalists are gradually turning more to posting to their own blogs in order to have independence from traditional editors or media gatekeeping. This is much of what attracts millions of citizens around the U.S. and persons around the world to publish their own blogs. Corporate blogging is growing as well, as organizations seek new vehicles to directly communicate with their publics without media intermediaries or gatekeepers.

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Blogs and the Public

Beyond media relations, blogger Stephan Spencer observes that blogs have grown into an important element in the realm of public opinion. "The 'blogosphere' is already a force to be reckoned with. Bloggers can wreck havoc on reputations (just ask Kryptonite) and careers (e.g., Dan Rather). Or they can create the 'next big thing'. The immensely popular blog BoingBoing covered a very cool product called "InstaSnow" ... and traffic and sales spiked".⁶

Spencer concludes: "The 'power of the people' has become the 'power of the bloggers.'"

Technorati presents data on the growth of blogs.⁷ As of July 31, 2006, Technorati tracked 175,000 new blogs each day with an estimated 1.6 million postings a day, or 18.6 posts per second. This a two-fold increase from 2005. The total number of blogs tracked by Technorati exceeds 50 million, although Riley reports that there are more than 70 million blogs worldwide as of July 2006.⁸ English-language posting is most frequent between 1 p.m. and 5 p.m. Eastern time, with another spike at about 8 p.m. Bloggers often post several times a day (40.7%) or once a day (25.8%).

Trammell and Keshelashvili present data on the activity of bloggers.⁹ The structure used by leading bloggers includes a topic statement, blog-roll, calendar, archive, comments, syndication and hyperlinks within posts. Top bloggers reveal their full names (83.26%) and provide contact information, particularly an email address (99.5%).

The popularity of blogs among the general population is documented by The Pew Internet and American Life Project.^{10 11}

Bloggers vs. Internet Users in General		
Demographic Groups	Bloggers	All Internet Users
Sex	%	%
Men	54	49
Women	46	51
Age		
18-29	54	24
30-49	30	45
50-64	14	24
65+	2	7
Race/Ethnicity		
White (non-Hispanic)	60	74
Black (non-Hispanic)	11	9
Hispanic (English-speaking)	19	11
Other	10	6
Location		
Suburban	51	54
Urban	36	30
Rural	13	16
Access Speed		
Dial-up	20	34
Broadband	79	62

Source: Pew Internet & American Life Project Tracking Surveys, November – December 2005 and February – April 2006. For sample based on bloggers, N=308. Margin of error is ±7%. For sample based on internet users, n=4,753, margin of error is ±2%.

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- 8% of internet users, or about 12 million American adults, keep a blog.
- 39% of internet users, or about 57 million American adults, read blogs.
- 54% of bloggers are under the age of 30.
- 52% of bloggers say they blog mostly for themselves, not for an audience.
- 79% of bloggers have a broadband connection at home, compared with 62% of all internet users.
- 49% of bloggers believe their blog readership is mostly made up of people they personally know.
- 15% of bloggers include video on their sites.

Pew reports data on the growing readership of blogs by U.S. teens and adults.¹² Although blogs are particularly popular among teens and Gen Y, both reading and creating them, blogs are read and created by U.S. adults of all ages.

	Read Blogs	Create Blogs
Online Teens (12-17)	38	19
Gen Y (18-28)	41	20
Gen X (29-40)	30	9
Trailing Boomers (41-50)	20	3
Leading Boomers (51-59)	21	9
Matures (60-69)	19	3
After Work (70+)	16	4
All Online Adults	27	9

A growing body of research documents the impact of blogs in public relations.¹³ Some research also confirms that regardless of the medium, including blogs, writing quality is still a deciding factor in effective communication.¹⁴

One of the more recent developments in blogging is twitter. Twitter is a technology developed in 2006 that enables persons to use their cell phones to send text messages to blogs. Although limited to about 140-150 characters, twitter can nevertheless provide extremely up-to-the-minute updates to blogs. Sometimes the messages posted via twitter can be trivial such as campaign blogs that post twitter such as "Clinton stepping from the plane in Iowa." Among the U.S. presidential candidates reported to twitter are John Edwards and Barack Obama. *Business Week* reports that "With twitter, people share quick updates on their most mundane doings, often from a cell phone."¹⁵ If a growing number of bloggers are shying away from the citizen journalism and mass consumption that originally defined the medium, twitter's popularity shows how eager people are to share quotidian tidbits of life in real time."¹⁶ ¹⁷ But just because a message is short doesn't preclude its importance (e.g., recall the telegraph message, "Lincoln shot").

IMPLICATIONS FOR CONTENT OR MESSAGES

Examples of technologies that illustrate this theme: Web 2.0, Wikimedia, RSS, or Really Simple Syndication, Podcasting, Mash-up Media, VNRs, Interactive Advertising, Virtual Product Placements

Technology has many significant implications for the content or messages developed and utilized in public relations. Blogs, podcasts and Web sites in general all present vehicles for distributing messages to a variety of publics. Expanded use of audio and video files – podcasts, vodcasts – is a major trend. Moreover, these media can shape the character of the messages themselves. Text messaging via cell phones has emerged as a viable means to reach mobile publics, especially youthful targets. Because of the nature of the medium, the messages must conform to certain strict parameters. Among these parameters are text-only, short messages, and often messages encoded in short-hand, such as “LOL” for Lots of laughs or “c2it” for see to it. The Lingo 2 Word Web site provides a comprehensive alphabetic listing of text messaging terminology and characters. It also provides a conventional text to texting translator for the texting neophyte.¹⁸ News releases must also be adapted to cell phone and mobile media formats. Embedding links within content is also important, enabling consumers to immediately act on content or messages of interest. Interactive media, including online games, are increasingly important tools in public relations, as more sponsored games emerge as a way to reach young publics in particular.

Web 2.0

There is an important difference between technologies that modify existing channels of communication and technology that is changing the environment for all communication, observes Peter Debreceny, chair of the Institute for Public Relations Board of Trustees, retired VP-Corporate Relations for Allstate Insurance and authority on new technology and public relations.¹⁹ The new media, especially Web 2.0, is of the latter type of influence. Video news releases are an example of the former. They are not really any different than a press release, but in electronic, visual and sound form. They are important, but are essentially just tailored to the particular medium. Research confirms this view.²⁰

“The new media, Web 2.0, is disrupting everything,” Debreceny explains. Web 2.0 is not just adding to the communication mix. “It requires a completely new way of thinking.”

Research also confirms this viewpoint.²¹ Goldstein presents evidence that “Public relations professionals who wish to provide value to their employers and clients in the future will have to adjust their strategic perspective accordingly, from planning and research to counseling, media relations and crisis communications.” He contends that “The media environment in the U.S. has undergone several major transformations--primarily, the establishment of the Internet as both national and global communications media, the proliferation of vertical media nationally, and a

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general shift from objectivity to advocacy in news reporting.” In addition, Goldstein demonstrates that “The Internet has successfully introduced three revolutionary elements into the communications equation. First is the publication of electronic versions of print and broadcast news products. Second are online databases of credible sources of information, such as scientific literature and public records. Third are inexpensive Weblogs published by private individuals, many of whom use news coverage as a base upon which to provide commentary and analysis by themselves and their readers, who sometimes are experts in the field, but participate anonymously, for the most part.” Research by van der Merwe, Pitt, Abratt, and Russell shows that the Internet is transforming stakeholder relations as well.²² They show that “Stakeholders can now communicate with each other about an organization in a very public way. The public relations function will in most cases be the department dealing with these unplanned messages. As stakeholder strength increases, PR practitioners will have to develop strategies that deal with the rising power of different stakeholders on the Web.”

There is also an important difference between Web 1.0 and Web 2.0. From a strategic communication perspective, Web 1.0 was basically adding a technological capability to existing techniques ideally suited to public relations or marketing. “Web 1.0 meant better pathways to sending information to publics, editorially based, and right up our alley. Those in PR did a very good job in 1994-2004 in taking advantage of the opportunities the Web offered. Web 2.0 is different because it's not just a technological enabler of existing methodologies. There is a fundamental shift in what Web 2.0 has enabled and the way it's being used.” Echoing this view is Jim Macnamara, whose report, “New Media: How Web 2.0 is Changing the World,” outlines the significance of the second generation of Web technologies to public relations.²³

Wikipedia, the online encyclopedia created by users, provides a useful definition of Web 2.0: a phrase coined by Media in 2004,^[1] refers to a perceived second-generation of Web based communities and hosted services — such as social networking sites, wikis and folksonomies — that facilitate collaborative content and sharing between users. O'Reilly Media titled a series of conferences around the phrase, and it has since become widely adopted.²⁴

Tim O'Reilly provides a summary of the key differences between Web 1.0 and 2.0²⁵:

Exemplars of Web 1.0 and 2.0

Web 1.0		Web 2.0
DoubleClick	-->	Google AdSense
Ofoto	-->	Flickr
Akamai	-->	BitTorrent
mp3.com	-->	Napster
Britannica Online	-->	Wikipedia
personal Web sites	-->	blogging
evite	-->	upcoming.org and EVDB
domain name speculation	-->	search engine optimization
page views	-->	cost per click
screen scraping	-->	Web services
publishing	-->	participation
content management systems	-->	wikis
directories (taxonomy)	-->	tagging ("folksonomy")
stickiness	-->	syndication

Web 2.0 is breaking down barriers. Much of the change is about control, adds Debreceeny. "Although conceptually the 2-way symmetric model of public relations is the ideal, it's not usually the practice. PR people like to be in control and get messages out and see the messages resonate and the audience respond accordingly." Web 1.0 permitted this. Web 2.0 is breaking this down. Web 2.0 is empowering citizens to communicate directly online and the organization can be left out of the conversation entirely. "The field of public relations needs to come to terms with that. There's a big debate among practitioners about how real all this is. The Evangelists vs. Nay Sayers. See the blog "Strumpette" by Amanda Chapel. She does a rant on Monday, April 16. No one knows who she really is. She says, 'We're in the business of creating false idols.' I don't know the answer to the question, but there's definitely something happening and it's going to fundamentally change what we're doing and how we operate in this new world. Practitioners need to accept what's going in that you can't control the conversation. The people who are participating in this conversation are the people who have access to broadband technology. It's not just access to the Internet. The next phase may be the expansion of broadband into mobile phones, mobile media."

Among the most important Web 2.0 technologies is RSS, or Really Simple Syndication. As defined by Wikipedia, "RSS is a family of Web feed formats used to publish frequently updated digital content, such as blogs, news feeds or podcasts." A growing number of online publishers utilize RSS feeds to distribute their content on a timely basis.

"Users of RSS content use software programs called 'feed readers' or 'feed aggregators,'" explains Wikipedia.²⁶ "The user subscribes to a feed by entering a link of the feed into the reader program. The reader can then check the user's subscribed feeds to see if any of those feeds have new content since the last time it was checked, and, if so, retrieve that content and present it to the user." Research also

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confirms the continuing importance of Web site presence in public relations and organizational communication.²⁷

Video News Releases

A notable example of how technology has influenced public relations messages is the video news release (VNR). With the rise of video tape technology, VNRs emerged in the 1980s as a video version of the traditional news or press release. Having started as oftentimes amateurish promotional video on analog tape, mailed or sent by overnight delivery to selected television stations for possible inclusion in the evening newscast, the VNR has evolved into a sophisticated digital public relations tool and a frequent part of television news, particularly at the local level.²⁸ Further, new technologies have made it increasingly effective to distribute VNRs in digital format via satellite or other broadband technologies. Typically, journalists can view or download VNRs online before deciding whether to use them.

On CBS Newspath, VNRs are transmitted digitally in a separate area and are clearly identified as a video news release feed, explained John Frazee, senior vice president, CBS News Services, in a telephone interview January 10, 2006.²⁹ CNN Newsource has a similar process of formally vetting VNRs before they are accepted for transmission.³⁰ VNRs must adhere to a variety of formatting requirements including ensuring the script approved corresponds with the video.³¹

The advent of electronic, digital tracking of VNRs has greatly improved the accuracy of determining how widespread the use of VNRs has become. One leading electronic system is SIGMA by Nielsen Media Research. It covers VNR use in all 210 U.S. television markets. "Because SIGMA places an active code in the Vertical Blanking Interval (VBI; invisible to the human eye)," Nielsen Media Research reports the "technology electronically recognizes and records each airing throughout the entire U.S. with over 95% accuracy."³²

VNRs are rapidly being transformed in the age of digital convergence. Lamoureaux of West Glen Communications said, "VNRs will morph into a form of marketing communication that will be available for viewing on portable devices, such as mobile phones, and other technologies."³³ Perhaps more importantly, there will be no need to deliver these videos through news channels. They are already available online and are becoming increasingly so. Viewership is easier to measure online and consumers are able to easily find them through search engines such as Google and Yahoo. In fact, the rise of digital video production and online distribution through sites such as YouTube is propelling organizational uses of video to communicate directly with publics such as consumers, without traditional media filters or gatekeepers.

Emerging Message Techniques

An emerging form of content or message technique is called "mash-up" media. Mash-up media are those formed by merging two or more sets of data. An example comes in the form of Chicagocrime.org, which merges together crime data reported by the Chicago Police Department, the Citizen ICAM and mapping and satellite data provided by Google.³⁴ Citizen ICAM stands for Information Collection for Automated Mapping, a system developed by the Chicago Police Department for use by its police officers. Chicagocrime.org provides users a detailed, interactive and useful look at where crimes have been reported in Chicago. Data can be sorted by type, such as

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arson, homicide, assault and gambling; by street or block, and map nearby crimes; by date and much more. Users can view the crime sites on a map; or plan a route based on where crimes have or have not occurred.

Conducting research is also significantly being reshaped by technologies, especially those of the Internet. Studies show that Google Scholar and CrossRef can greatly enhance the effectiveness of research investigations conducted by public relations practitioners, helping them find relevant scholarly research in a timely, cost-effective fashion.³⁵

Another system is a subsidiary of MediaLink and is called TeleTrax. It utilizes an electronically embedded "watermark" securely measuring VNR use even when digitally altered. The watermark is almost impossible to strip off in editing, so monitoring is highly reliable.

IMPLICATIONS FOR ORGANIZATIONAL STRUCTURE, CULTURE AND MANAGEMENT

Examples of technologies that illustrate this theme: Transparency, Online Virtual Reality, including Second Life

Technological change presents many significant implications for the structure, culture and management of organizations, particularly from the point of view of public relations. Perhaps among the most significant is the opportunity to flatten the hierarchical nature of many organizations, at least from the point of view of communication. Digital communications makes it possible for more efficient management of organizational communications, including both internally and externally. This also means organizations can be more open and transparent to facilitate better understanding between and among various groups. It is also possible to better transcend time and distance constraints via digital communications. We are witnessing the rise of decentralization, with increasing use of collaboration (intranets have succeeded Lotus Notes, etc.) and group decision-making software. Organizational openness and transparency are increasing as online technologies have become ubiquitous and powerful.

Public relations educator Kirk Hallahan explains that, "Openness and transparency includes things such as extranets used as part of expanded, special-purpose organizational structures (e.g., alliances, joint ventures, etc.) and relationships with suppliers and distributors who have access to at least a portion of an organization's systems. Materials online might be read by the organization's expanded community. Internal communications has been transformed with the abandonment of printed materials – including written memos, employee publications, employee benefits communications. Is 'high touch' important in light of this 'high tech'?"

Organizational Structure

Organizational structure is also becoming virtual, and the virtual is becoming increasingly real. Consider the case of online virtual reality games. One notable example is Second Life, a global virtual reality game developed by San Francisco, CA-based Linden Corp.³⁶ As of August 2, 2007, Second Life had more than eight

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million residents (8,557,546), with nearly two million (1,696,250) having logged in during the previous 60 days (see Figure 1.1). At the moment the author logged on to the site, 33,015 were currently logged in... giving it the size of a small city. Not only is Second Life a remarkable world populated by a large and growing number of persons represented by visually compelling animated avatars in a photo-realistic virtual reality, but the dimensions of this virtual reality are increasingly reaching over into the real, or physical world. Second Life has a real economy where so-called Linden dollars can be redeemed for actual U.S. dollars. When the author logged on, the total U.S. dollars spent in Second Life in the prior 24 hours totaled \$685,697. This is more than enough economic activity to have captured the attention of the Internal Revenue Service. Linden Labs is reported to be resisting the IRS on the matter of taxing money earned in Second Life and the matter had not been resolved as of May, 2007. Several people have made significant dollars in Second Life. One Hong Kong woman has reported amassed real estate in Second Life valued at more than \$1 million. There is also growing debate about the legality of the increasingly popular gambling taking place in Second Life. Moreover, many real-world organizations have already established a presence in Second Life. Global news agency Reuters has even assigned a full-time correspondent to cover the goings-on of Second Life and report entirely within the virtual reality. Others report on the virtual reality, as well.³⁷ Other organizations with a presence in Second Life include the MacArthur Foundation, which has held a conference in the virtual reality.

Figure 1.1: Statistical Profile of Online Virtual Reality Second Life August 2, 2007 ³⁸

Total Residents:	<u>8,557,546</u>
Logged In Last 60 Days:	1,696,250
Online Now:	43,053
US\$ Spent Last 24h:	<u>\$1,160,974</u>
LindeX Activity Last 24h:	<u>\$227,211</u>

IMPACT ON RELATIONSHIPS BETWEEN ORGANIZATIONS AND THEIR PUBLICS

Examples of technologies that illustrate this theme: Citizen-media, Two-Way Communication Technology, Natural Language Processing/Artificial Intelligence, Automated News Summarization Tools, Google Trends and Alerts, YouTube, MySpace, RFID, Cell Phone Location Tracking, Google Earth, Computer-Automated Facial Recognition

As audiences have increased their use of the Internet and have grown more savvy with digital media of all types, public relations has needed to evolve with them. Audience members, or members of often key publics, maintain their own Web sites, blogs or podcasts, often circumventing traditional media outlets. Practitioners monitor such online sources alongside traditional media outlets. These citizen-produced online media can be influential and widely seen and accounting for them

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may be essential to a public relations campaign. Gauging public opinion can also involve the use of online media. Conducting public opinion surveys online is now a common practice in public relations.

Facilitating two-way, or interactive dialogs with various publics can depend upon the use of email, discussion boards or other online media. In this context, digital, networked communications such as those possible on the Internet and World Wide Web make possible the cost-effective advent of two-way symmetrical communications. This is a profound opportunity for public relations professionals to implement more effective, balanced communications with various publics.

As communication technology has evolved, U.S. society has come to expect ever more rapid communications. This can be both a boon and a bane to human existence. For public relations, it often means great expectations for fast and efficient communications between and among organizations and their publics.

Reporters similarly participate in dialogues with audiences via email or discussion groups. The Middleberg-Ross survey shows that 70% of reporters engage their readers, listeners or viewers via online technologies.

It is also increasingly feasible to monitor news media coverage via computer-based systems that employ natural language processing, a branch of artificial intelligence (AI), to monitor and synthesize press coverage and automatically track coverage of topics, organizations and individuals. One interesting example of an AI-based system monitors, sorts and summarizes news coverage from the U.S. and around the world is the Columbia Newsblaster. Led by Prof. Kathleen McKeown, a Columbia computer science research team has applied natural language processing to sort and summarize published news reports from dozens of news sources available online.³⁹ As reported on the Newsblaster Web site, the "system automatically collects, clusters, categorizes, and summarizes news from several sites on the Web (CNN Reuters, Fox News, etc.) on a daily basis, and it provides a user-friendly interface to browse the results. Articles on the same story from various sources are presented together and summarized using state-of-the-art techniques.

Related are various tools on Google Labs, including google.com/trends. Google Trends allows the automatic tracking of user search queries around the U.S. and internationally, and tied to current events. For instance, on February 19, 2007 a sort using Google Trends for searches for the Super Bowl, NCAA, Oscars, and election revealed not only the absolute and relative search volume of each term, but provided the data by cities, regions and languages, as well as year-long trends since 2004 and by news events. Such data may be useful in tracking the consequences of news coverage. A scan of the data from the aforementioned sort showed major spikes in search activity related to elections following the November 3, 2004 concession of the U.S. presidential election by Sen. John Kerry to Pres. George W. Bush. Google Alerts can also be used to monitor traffic on blogs, including customized tracking of industries, organizations, and topics.

Hallahan points out how Internet technologies can be especially useful in communicating with external publics. "Online is especially valuable when people are seeking information about organizations – so anticipate needs, concerns and

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interests of publics. Involve people when they are *interested*. Optimize search engine searches, make content useable. Be accessible 24/7, maximize the interactive nature of Web and mobile media. Such access is especially important in times of crisis or risk.” Hallahan also notes that technology plays a critical role in facilitating two-way communication. Among the useful tools are sponsored chats and newsgroups (discussion boards), game sites, cookie technology that allows recognizing users and customizing content, and providing options for users to personalization content on Web sites, portals and mobile phones to suit their preferences (“My...”). Also useful are fill-in-forms, query and ordering mechanisms – provided that the organization can fulfill requests promptly, pop-up and other Web surveys.

These computer-based technologies can potentially provide highly cost-effective methods for not only tracking news media coverage and correlated public opinion indicators, but help in assessing media agenda setting and news media framing. As of 2007, the automated content analytic systems are still relatively expensive to the end user, with the lowest-cost systems running about \$40,000 a year.

Further, emerging digital technologies enable the automatic tracking of video based on the content features of the video. For example, computer systems can scan a video clip and identify patterns of action, scenes, or edits. Columbia computer science Professor Shih-fu Chang developed an experimental computer-based video recognition system in the late 1990s. Based on such automated analysis, a commercial system developed by Audible Magic in Los Gatos, CA can compare clips on YouTube against a database of copyrighted video and determine if illegally copyrighted material resides on the social-networking site.⁴⁰ Such technology might be employed in public relations in a variety of ways. For instance, company logos or topics of interest might be automatically monitored on a variety of video file sharing Web sites.

Social Networking

Social networking sites such as MySpace and video file sharing sites such as YouTube also have enormous implications for public relations. As millions of users populate such Web sites and spend increasing amounts of time immersed in them, these online environments become increasingly relevant to the communication strategies for organizations. Yet, how to appropriately participate or communicate in these online environments where sometimes the social and cultural rules are stricter than the legal requirements can present a slippery slope. At the same time, consumers are empowered by digital technologies to voice their opinions more easily and more powerfully via social networking sites, including creating and posting their own videos, sometimes griping against corporate practices they find objectionable. How to respond effectively is an increasing challenge for many organizations. Transparency, immediacy and clarity are among the key elements in the process.

Privacy and Tracking

One of the challenges raised by social networking sites and other new technologies is the notion of privacy and security in the digital age, with all of the attendant public relations issues. Many organizations of various types will likely be confronted by privacy and security concerns as online technologies bring together both increasing ability to track individuals and data about them and facilitate convenience at the potential sacrifice of personal privacy and data security.⁴¹ One exemplar comes in the form of Radio Frequency Identification (RFID) technology, used in wide ranging

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applications from marketing to medicine.⁴² For example, in airport trials, ticket holder tracking has enabled better coordination of flight departures and passenger routing and loading.⁴³ RFID devices can be smaller than the head of a pin,⁴⁴ and such chips can have embedded sensors or even a tiny camera. Rutgers University sociologist Colleen Bloom has conducted a national survey of public opinion regarding the Food and Drug Administration's (FDA) approval of the implantation of RFID chips in humans. The overwhelming majority of U.S. adults surveyed (75%) are opposed to having RFID chips implanted, even for health purposes. Yet, a third of those surveyed would wear an RFID device in order to monitor blood pressure or to lower insurance premiums or for emergency services. RFID chips are already in cell phones and other devices, such as Easy Pass for automated highway toll collection.

A variety of other technologies present similar communication opportunities juxtaposed against privacy concerns. Jonathan Donner, of Microsoft Research India, points out the dramatic growth of mobile technologies internationally. In China, for example, more than 600 million persons use mobile phones, and 100 million more persons begin using mobile phones there each year. While mobile communications is a powerful communication tool, there are also significant privacy implications. A growing number of online services are providing free or low-cost cell phone location-tracking capabilities. Plazes is one online service that provides free cell phone location tracking.⁴⁵ Users enter a cell phone number, and their cell phone is then placed on the tracking service, and can be tracked by other users.

Another powerful online technology is Google Earth.⁴⁶ Users can quickly and easily travel visually to any location on the Earth and see in high resolution any precise location. Users can populate specific locations by geographic coordinates with high-resolution three-dimensional imagery, and embed textual communications associated with those locations. Yet, privacy concerns may arise as well as citizens become increasingly aware of the ease with which any one from anywhere in the world can observe their home or other locations (admittedly not in real-time but still relatively recently). The introduction of Street View in Google Earth in May, 2007, allows users from any location the ability to zoom into a high-resolution 360 degree street-level photographic view of locations all around the world.

Further fueling privacy concerns in the digital age are computer vision technologies that enable automatic face recognition and more. Communication professor Mark Frank at SUNY Buffalo and others have developed powerful digital vision systems that can quickly scan the faces of persons walking past a security checkpoint, for example, and match them up automatically and quickly against databases of known or suspected terrorists.⁴⁷ This technology has other applications, including the ability to automatically scan a human face to determine the emotional state of a person, including whether he or she is lying. Such technology has potentially significant implications for police interrogations of criminal suspects, as well as others, such as a television interview of a CEO suspected of covering up alleged corporate wrong doing. Journalists might find such technology particularly useful as an aide in determining when to ask a probing follow-up question.

A RESEARCH AGENDA

As this report has shown, research has much to tell us about how technology influences the practice of public relations. Yet, much research remains to be done in this regard. Following is an agenda of ten research questions or problems to study in the context of public relations and new technology.

1. What are the unintended consequences of changing technology on the practice and nature of public relations?
2. What are the most effective ways to design messages for a new media, or digital, networked media environment?
3. What are the most significant ethical considerations surrounding the utilization of digital technologies in public relations?
4. How can interactive communications be most effectively fostered with members of the public?
5. What theoretical issues emerge for public relations practices in a new media environment?
6. How has the balance of power changed between organizations and their publics in a digital, networked age?
7. How can computer-based, artificial intelligence systems be most effectively used to gauge media coverage and public opinion?
8. What are the implications of this changing technological milieu for the agenda setting process and how media frame news coverage, including understanding emerging technologies for summarizing and editing news coverage?
9. What are the implications of online virtual reality environments such as Second Life for public relations?
10. What are the implications of social networking Web sites and file sharing systems for public relations?

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