

# **Visualizing Technology: Images in Google and Yahoo News Aggregators**

**Dr. Cindy Royal**  
Assistant Professor  
Virginia Commonwealth University  
School of Mass Communications  
901 West Main Street, Room 2216  
P.O. Box 842034  
Richmond, Virginia 23284-2034  
804-827-3733  
[clroyal@vcu.edu](mailto:clroyal@vcu.edu)

## **Visualizing Technology: Images in Google and Yahoo News Aggregators**

According to a report by the Pew Internet and American Life Project (2004), Americans turn to the Internet for news and images they cannot find in other media. Of Internet users, 24% say they have searched the Internet for news, photographs or videos that other media outlets have decided not to publish or broadcast. Overall, the Internet news audience in the US climbed from 54 million in 2002 to 92 million in 2004 (Pew Internet & American Life Project, 2004). The Internet promotes news readership due to its offering of multimedia content and through the wide range of sources available.

In December 2005, another Pew report showed that 67% of the adult American population goes online, including 68% of men and 66% of women with women slightly outnumbering men because they make up a greater share of the overall U.S. population. This statistic indicates that women are catching up and, in some cases, exceeding men in terms of their access to the Internet. But, the same study indicated differences in the quality of one's usage based on gender. Men were more intense in their usage and go online in greater numbers than women for a vast, but scattered array of activities. Women outpace men for a small number of activities, including the areas of health, medicine and religion (Pew Internet & American Life Project, 2005).

Further, in what could be considered an alarming trend, the study also indicated that men are more interested in technology than women, and that they are more tech savvy or comfortable in their usage of computers. Men value the Internet for the breadth of experience it offers; women value it for enriching their relationships, but they're more concerned about its risks. Compared with women, men are more interested in the world of technology and how gadgets

and systems work. Men are more likely to try new things in regard to both hardware and software. Men are more likely than women to know the latest terms and to have heard about the latest tech-related issues. Significantly more men than women maintain and fix their own computers. Men also find it more important to use search engines for their jobs (Pew Internet & American Life Project, 2005).

With online news sources becoming a predominant way that humans learn about their world, and with such vast gender differences in the ways that technology usage is manifesting by gender, it is important to understand the ways that news frames men's and women's usage of technology. As multimedia content becomes prominent on Web-based news sources, visuals become an important device used to convey information. This study analyzes images on the technology sections of the two major news aggregators, Google News and Yahoo News.

### *Review of Literature*

With such significant differences in the quality of one's usage and the ways one envisions their role with technology being determined by gender, it is important to understand the cultural and social reasons for such diverse patterns. Given that news is an important way that our world is reflected and often influenced, the images that are represented in news can often influence how we imagine our role in society. The concept of "framing" is often used to explain how news influences reality. Framing as defined by Entman is selecting "some aspects of a perceived reality" to enhance their salience in such a way as to "promote a particular problem definition, causal interpretation, moral evaluation and/or treatment recommendation" (Entman, 1993).

Frames can be used as a strategy by humans to help with processing vast amounts of information, a process of selection and prioritization, or as Goffman relates, frames help

audiences “locate, perceive, identify, and label” the flow of information around them (Goffman, 1974). In regard to media, Reese offered the following definition for frames: “Frames are organizing principles that are socially shared and persistent over time, that work symbolically to meaningfully structure the social world” (Reese, et al., 2001, pp. 11). “What we call things, the themes and discourses we employ, and how we frame and allude to experience is crucial for what we take for granted and what we assume to be true” (Altheide, 1996, p. 69). According to Tankard, framing differs from bias, however, in that it is more sophisticated and complex, reflects the richness of media discourse and subtleties of nuances of debates, and can have a subtle, yet powerful, influence on audiences (Tankard, 2001, pp. 96-97).

Content analysis has been applied in a variety of areas of communication research including framing. Use of content analysis in communications research has a long history. In 1952, Berelson offered this definition: “(C)ontent analysis is a research technique for the objective, systematic, and quantitative description of the manifest content of communication” (Berelson, 1952, p. 18). Holsti, in 1969, defined content analysis as “any technique for making inferences by objectively and systematically identifying specified characteristics of the messages” (Holsti, 1969, p. 14). The emphasis is on the systematic nature of the process. Krippendorff (1980, p. 21) further highlighted this characteristic with “(c)ontent analysis is a research technique for making replicative and valid inferences from data to their context.” This view placed the emphasis further on the text as “data” and the importance of validity and reliability in the research. Content analysis can be both quantitative, in which occurrences of words, terms, or phrases are counted and analyzed, or qualitative, in which trends and themes within texts are discussed.

According to Bell (2001, p. 13), content analysis is “an empirical (observational) and objective procedure for quantifying recorded ‘audio-visual’ (including verbal) representation using reliable, explicitly defined categories (‘values’ on independent ‘variables’).” As opposed to analyzing individual images or visual texts, it is used to test hypotheses about “the ways in which media represents people, events, situations, and so on” (Bell, 2001, p.14). Visual content is most frequently quantified from social categories, such as roles, settings shown, and age and gender of participants.

The concept of cyberfeminism is a general area in which theories of feminism are applied to women’s usage of technology. Cyberfeminism borrows qualities from other feminist theories, like socialist feminism’s focus on the social and economic exercise of power in society, and postfeminism’s representation of marginalized groups, and applies those theories to digital discourse. In 1989, Jansen discussed the exclusion of gender politics in regard to the information society (Jansen, 1989). In 1992, van Zoonen studied the relationship of feminist theory and information technology (van Zoonen, 1992). “Common sense has led many of us to believe that women and men relate differently to technology” (van Zoonen, 1992, p. 9). She cited that several publications have identified the absence of women from the invention, creation, and design of new technologies, but that their role as consumers of certain technologies is equally well documented.

Dale Spender identified that women were behind in their usage of Internet technology. “When it comes to cyberspace, men have the power. But it doesn’t have to stay this way. And it won’t. Not if women are convinced of the necessity – and the desirability – of becoming involved” (Spender, 1995, p. xxi). Other researchers have explored the reasons behind women’s

reluctance to enter the field of computing, citing social and cultural attitudes formed in childhood and education (Cooper & Weaver, 2003; Margolis & Fischer, 2002; Furger, 1998).

And, still other feminist researchers have explored the ways in which gender and identity are created online (Haraway, 1991; Turkle, 1995; Wajcman, 1996). Wajcman saw technology as having three distinct paths available. Computing could have been gender neutral or it could have been a female domain, based on Plant's description of technology with stereotypically feminine qualities. But evidence shows that computing has been socially constructed as a male domain (Wajcman, 1991, p. 150-159). By defining technology in regard to men, girls and women may approach technology less often and with less confidence, may relate to the machines differently, and may use them for different purposes. "But we should be extremely wary of saying that because women have different ways of proceeding, this indicates a fundamental difference in capacity. Rather, such discrepancies in cognitive style as can be observed are the consequences of major sexual inequalities in power" (Wajcman, 1991, p. 158).

Exploring the gendered discourse in *Wired* magazine, arguably the most influential medium around techno-culture, Millar explored "how digital technological change is being packaged and sold to the public through cultural messages that support a particular view of how the future should be organized" (Millar, 1998, p. 25). Millar found that many women did not read *Wired*, and if they did, they did not enjoy the experience or find its content meaningful. She applied feminist theory to the cultural symbols and conditions of digital culture as exemplified in *Wired* and identified what was being left out and who had the power. She found that *Wired* used specific discourses around the future, innovation, and the hypermacho man that served to eliminate difference and excluded those it considered Other - women, minorities, poor, technologically challenged. "The construction of women and minorities that are found form a

separate discursive stream in *Wired* and are relegated to subordinate status” (Millar, 1998, pp. 96-97).

Representations of gender in media are often the source of what we consider natural or logical. As research on media representation shows, women are often underrepresented or portrayed as sexual objects in magazines and on TV (Tuchman, 1978). Gender representations on the Internet often follow stereotypical lines presenting females as sexualized and objectified (Herring 2001.)

Following the literature on visual representation of women both online and in the media, this paper presents the results of content analysis of news images in the Technology sections provided by automatic news aggregators Google News (<http://news.google.com>) and Yahoo News (<http://news.yahoo.com/>). A similar analysis, not specific to Technology, was performed by Inna Kouper on two news aggregators, Google News and Yandex, a Russian search engine. She found a considerable bias toward men in news images on both sites (Kouper, 2005).

This study focuses specifically on images because of the way they represent people and the ways that users immediately interact with them. Ostensibly, the presence of more and varied sources should make the dialogue more representative and inclusive. Both Google and Yahoo News sections now offer photos to accompany news stories. Both sites have an opening page for each category that offers a short teaser, a description or opening lines of the article, providing a link to read the entire article. Google has a small thumbnail photo accompanying almost all stories. Yahoo is increasingly providing photos with each story.

In focusing on the representations of technology, these news aggregator services offer a way to see what images we use to represent technology in society. The method used was to capture a screen shot of the category page of Science/Technology for Google and Technology for

Yahoo and analyze the images for variables based on the hypotheses identified below, using a modified analysis as recommended by Bell (2001, pp. 27-32).

### Method

The method of this analysis included visiting Google and Yahoo News sites daily for 15 consecutive days from January 18 – February 1, 2006, with a total of 513 images collected. 273 images were analyzed for Google and 240 for Yahoo. Sites were visited at 8am each morning to simulate the viewing habits of a user surfing for news early in the day. Images that were the same from one day to the next were still coded separately, as they were deemed as a separate occurrence for that day, and often the story associated with the image had changed or morphed on the next occurrence.

The screenshot shows the Google News interface. At the top, there is a search bar with the text "Search News" and "Search". Below the search bar, there are navigation links for "Web", "Images", "Groups", "News", "Froogle", "Local", "New!", and "more". There is also a "Sign in" link in the top right corner. The main content area displays several news stories under the "Sci/Tech" category. The first story is titled "Talking convergence at Macworld" and is from CNN International, dated 2 hours ago. It features a small image of Steve Jobs. The second story is titled "Windows hit with more .wmf problems" and is from PC Pro, dated 1 hour ago. It features a small image of a Windows logo. The third story is titled "High-definition DVD invites format wars" and is from USA Today, dated 6 hours ago. It features a small image of an HD DVD logo. The fourth story is titled "Google is more foe than friend" and is from MarketWatch, dated 7 hours ago. It features a small image of a person. On the left side of the page, there are navigation links for "Top Stories" (World, U.S., Business, >Sci/Tech, Sports, Entertainment, Health) and "News Alerts" (RSS, Atom, About Feeds, About, Google News).

Sign in

Google News BETA

Web Images Groups News Froogle Local New! more » Advanced News Sea

Search News Search

Search and browse 4,500 news sources updated continuously.

Top Stories

World

U.S.

Business

>Sci/Tech

Sports

Entertainment

Health

News Alerts

RSS | Atom

About Feeds

About

Google News

Sci/Tech

 [Talking convergence at Macworld](#)  
**CNN International - 2 hours ago**  
 Apple is far and away the most important force in Gizmoland. Can it stay on top? NEW YORK (FORTUNE) - It's almost comical, really.  
[At Macworld, All Eyes Are on Steve Jobs](#) Washington Post  
[No threats to iPod from usual suspects](#) CNET News.com  
[USA Today](#) - [Macworld](#) - [Forbes](#) - [MSN Money](#) - [all 252 related »](#)

 [Windows hit with more .wmf problems](#)  
**PC Pro - 1 hour ago**  
 Numerous additional problems with Windows' handling of .wmf format files have been identified, according to reports. Submissions to the bugtraq mailing list recently highlighted flaws in the handling of such ...  
[Microsoft Releases WMF Patch Early](#) Techtree.com  
[Two new Windows bugs found](#) Techworld.com  
[Xinhua](#) - [eWeek](#) - [PC Magazine](#) - [ZDNet UK](#) - [all 61 related »](#)

 [High-definition DVD invites format wars](#)  
**USA Today - 6 hours ago**  
 Move over DVD. A more-buffed movie disc is on the way. Actually, two new high definition disc formats, HD DVD and Blu-ray Disc, are looking to supplant DVD.  
[Next-generation DVD format war frustrates retailers](#) Reuters.uk  
[Gamers could decide format winner](#) Joystiq  
[New York Times](#) - [Australian IT](#) - [engadget](#) - [Telegraph.co.uk](#) - [all 138 related »](#)

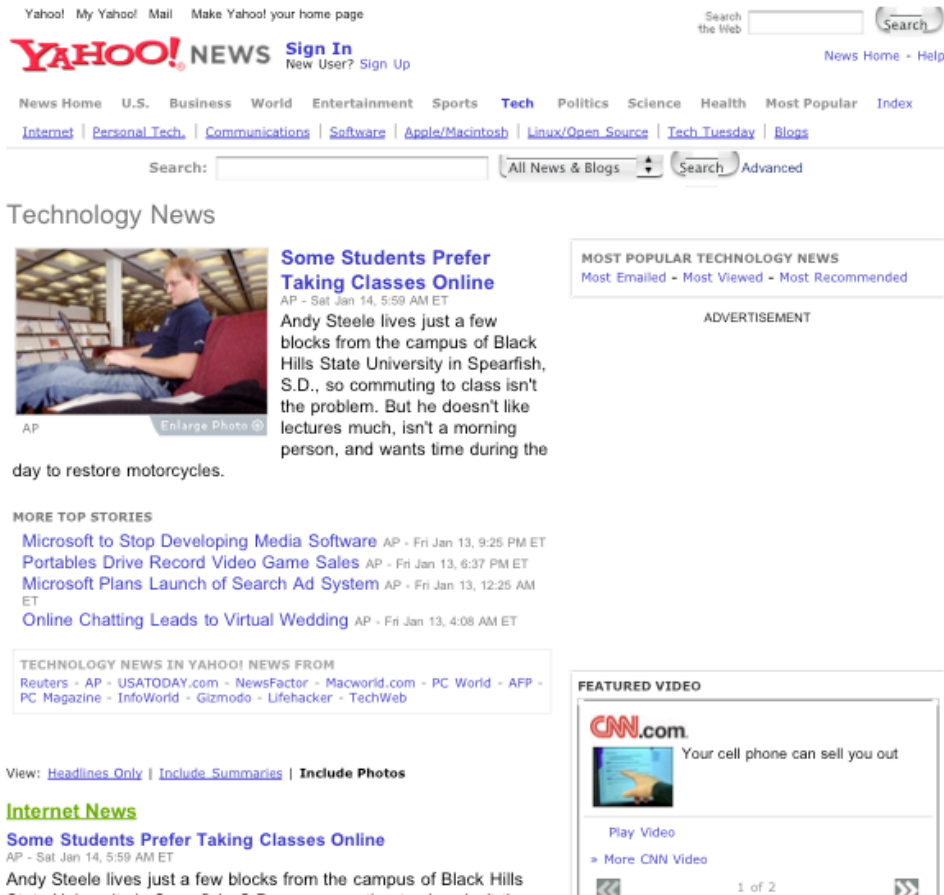
 [Google is more foe than friend](#)  
**MarketWatch - 7 hours ago**  
 SAN FRANCISCO (MarketWatch) - On the flight home from the Consumer Electronics Show in Las Vegas, I sat next to a woman who was excited about the possibility of charging people 5 cents to watch one of her home videos of her toddler.  
[Are we heading for a serious identity crisis?](#) ZDNet  
[Google's Page Unveils Video Download Service](#) Forbes  
[Light Reading](#) - [Silicon.com](#) - [Digital Media Asia](#) - [Mediapost.com](#) - [all 154 related »](#)

HEXUS.Lifestyle

Digital-Lifestyles.Info



*Figure 1: Screenshot of Google News Science/Technology section*



*Figure 2: Screenshot of Yahoo News Technology section*

On the Google site, the news category Science/Technology was visited. On the Yahoo site, the Technology category was visited. These pages included small thumbnail photos to accompany short introductions to each news story that could be read in full by following a link. The pages were saved in pdf format and later printed out in order to perform the analysis on the items indicated by the following hypotheses:

**H1:** Images of inanimate objects are used more frequently than humans on both search engines to represent technology, thus indicating the disembodied nature of society's view of technology.

**H2:** Of the images of inanimate objects, corporate logos will represent a significant percentage. This will indicate the power of corporate presence in media representations of technology.

**H3:** Images of individuals are used more frequently than groups thus romanticizing the idea of the lone inventor or programmer on the technological frontier.

**H4:** Images of men are predominant in representing Technology thus representing the male dominance of the technology field.

**H5:** While individuals are more likely to be used to depict technology, men will be more likely to be shown as individuals than women.

**H6:** Men are more likely to be depicted as technology executives or using technology; women more likely to be seen as objects, not engaging with technology.

**The following items were coded:**

1. Site – Google/Yahoo
2. Main Character – Human/Animal/Logo/Other
3. # People – 1/2/3/4+/na
4. Gender – Male/Female/Mixed/Undetermined/na
5. Use – Tech Exec/User/Non-User/na

After the 2<sup>nd</sup> variable was determined to be a non-human, all other responses received n/a. Data was recorded in an Excel spreadsheet and then imported into SPSS for detailed analysis. A second coder was used to code a sample of 20% of the images, and agreement was 90% or greater for all variables under study (see Appendix A). Chi-square significance results for each test are available in Appendix B.

*Results*

**Main Character as a % of Total Images**

			Main Character				Total
			Human	Animal	Logo	Other	
SITE	Google	Count	53	5	101	114	273
		% within SITE	19.4%	1.8%	37.0%	41.8%	100.0%
	Yahoo	Count	118	1	48	73	240
		% within SITE	49.2%	.4%	20.0%	30.4%	100.0%
Total	Count		171	6	149	187	513
	% within SITE		33.3%	1.2%	29.0%	36.5%	100.0%

*Table 1: Main Character as a % of Total Images*

The first hypothesis dealt with the predominance of images of inanimate objects used in depicting technology. On both sites, the main character of the image was usually an inanimate object including images of technology or corporate logos. Of the 513 images analyzed, 171 of those depicted people (Google – 53, Yahoo – 118). Yahoo had a higher percentage of people represented in their photos than Google.

In regard to the 2<sup>nd</sup> hypothesis, more than 1/3 of the images on Google and 1/5 of the images on Yahoo used a corporate logo as the main character of the image. This illustrates the prominence of corporate power in society and the strength of logos and other identifying corporate marks used to promote and illustrate technology. Apple and Microsoft logos were prominent, but a wide range of corporate symbols were found, including music sharing services, phone companies, and video game makers.

**No. of People in Images Containing Humans**

			No. of People				Total
			1	2	3	4 or more	
SITE	Google	Count	36	5	1	11	53
		% within SITE	67.9%	9.4%	1.9%	20.8%	100.0%
	Yahoo	Count	83	14	4	17	118
		% within SITE	70.3%	11.9%	3.4%	14.4%	100.0%
Total		Count	119	19	5	28	171
		% within SITE	69.6%	11.1%	2.9%	16.4%	100.0%

*Table 2: Number of People in Images Containing Humans*

The 3rd hypotheses stated that individuals would be presented visually more frequently than groups. In breaking down the images to only those representing humans, the most predominant display of people was a single person, with both Google (67.9%) and Yahoo (70.3%) having a strong percentage of its photos of single individuals.

**Gender in Images Containing Humans**

			Gender				Total
			Male	Female	Mixed	Undeterm	
SITE	Google	Count	27	14	8	4	53
		% within SITE	50.9%	26.4%	15.1%	7.5%	100.0%
	Yahoo	Count	91	15	8	4	118
		% within SITE	77.1%	12.7%	6.8%	3.4%	100.0%
Total		Count	118	29	16	8	171
		% within SITE	69.0%	17.0%	9.4%	4.7%	100.0%

*Table 3: Gender in Images Containing Humans*

The 4th hypotheses dealt with the predominance of men being depicted in images representing technology. Of the 171 images of humans, a majority of them featured males on both Google (50.9%) and Yahoo (77.1%). On the Google site, females were more likely to be found in images and were more likely to be shown in mixed groups.

**Gender of Individuals**

			Gender			Total
			Male	Female	Undeterm	
SITE	Google	Count	22	10	4	36
		% within SITE	61.1%	27.8%	11.1%	100.0%
	Yahoo	Count	65	15	3	83
		% within SITE	78.3%	18.1%	3.6%	100.0%
Total		Count	87	25	7	119
		% within SITE	73.1%	21.0%	5.9%	100.0%

*Table 4: Gender of Individuals*

The 5th hypothesis stated that men would be more likely than women to be shown as individuals in images. Since most images of humans depicted individuals, men were also more likely to be shown in this manner (Google – 67.1%, Yahoo – 78.3%).

**Usage of Tech by Humans**

			USE			Total
			Exec	User	Non-User	
SITE	Google	Count	6	11	36	53
		% within SITE	11.3%	20.8%	67.9%	100.0%
	Yahoo	Count	43	26	49	118
		% within SITE	36.4%	22.0%	41.5%	100.0%
Total		Count	49	37	85	171
		% within SITE	28.7%	21.6%	49.7%	100.0%

*Table 5: Usage of Tech by Humans*

On both sites, people were more likely to be shown not using technology than using it. Yahoo had a high number of tech executives used in the technology section. Usage was coded when a person was shown actually engaging with technology, like working at a computer or talking on a cell phone. In some cases, people were shown simply holding up a cell phone (or multiple cell phones as in Figure 3 below), or other technology and this was considered a non-user.



*Figure 3: Example of image with user displaying technology, but not using it. Coded as non-user.*

**Usage by Gender**

USE				Gender				Total
				Male	Female	Mixed	Undeterm	
Exec	SITE	Google	Count	5	1			6
			% within SITE	83.3%	16.7%			100.0%
	Yahoo	Count	42	1			43	
		% within SITE	97.7%	2.3%			100.0%	
	Total	Count	47	2			49	
		% within SITE	95.9%	4.1%			100.0%	
User	SITE	Google	Count	1	7	1	2	11
			% within SITE	9.1%	63.6%	9.1%	18.2%	100.0%
	Yahoo	Count	19	4	2	1	26	
		% within SITE	73.1%	15.4%	7.7%	3.8%	100.0%	
	Total	Count	20	11	3	3	37	
		% within SITE	54.1%	29.7%	8.1%	8.1%	100.0%	
Non-User	SITE	Google	Count	21	6	7	2	36
			% within SITE	58.3%	16.7%	19.4%	5.6%	100.0%
	Yahoo	Count	30	10	6	3	49	
		% within SITE	61.2%	20.4%	12.2%	6.1%	100.0%	
	Total	Count	51	16	13	5	85	
		% within SITE	60.0%	18.8%	15.3%	5.9%	100.0%	

*Table 6: Usage by Gender*

The 6th hypothesis dealt with the way that gender worked with usage in the images. On Yahoo, humans were more likely to be using the technology in the photos than on the Google site. Both sites used a reasonably high number of photos depicting corporate executives of tech companies and in most cases these were males (Google 83.3%; Yahoo 97.2%). Exceptions included images of Meg Whitman, CEO of Ebay. In an aberration to what might have been expected, Google had a high percentage of female users of technology depicted (63.6% of users). But, this is due to the small number of images depicting users of technology on Google (11 of which 7 were female). Of Yahoo’s 26 images depicting users, 73.1% showed males using technology. In the non-user category, both sites had a strong percentage of males depicted, thus representing both sites’ focus on males as the primary users and consumers of technology.

*Summary and Conclusions*

The results of this analysis suggest that symbolic annihilation theorized by Tuchman (1978) is still applicable to the issues of female representation in online news images, particularly in the Technology area. Symbolic annihilation states that there is meaning in absence, which trivializes women's issues and silences women's voices (Tuchman, 1978). Tuchman found that women were rarely portrayed on television in roles outside of homemaker, mother, and sex object. This study shows that even on the Web, which has been lauded as a democratizing medium with numerous sources and fewer gatekeepers, there is no visual diversity in terms of gender. While this study did not focus on the race of individuals in images (due to the difficulty of determining race in a small image), the general emphasis of these images is largely white and male.

The implications of this study show that even though women are using the Internet in equal numbers as men, women are being portrayed using technology less and with different usage patterns than men. The subtle stereotyping that occurs when media images don't portray women using technology can serve to discourage their usage. The roots of computer and Internet technology are based in male-dominated technoculture, and the increased usage of Internet technology by women has done little to change our perception of who uses technology and for what reasons.

Furthermore, by representing technology with inanimate objects and corporate logos, we depict a world that is disembodied and controlled by corporate interests. Technology is increasingly used as a way to make human connections, as opposed to the images of isolated programmers of the past. The advent of blogging, podcasts, personal Web sites, instant and text messaging, email and cell phones all attribute to technology as a communications medium. If



the media continues to depict users of technology in very specific ways, it runs the risk of misrepresenting the usage of something that is becoming more and more valuable to the human condition.

Further analysis in this area should include continued research on the ways that images of technology are used to influence our idea of who uses it and how it is engaged. Identification of alternate visual representation should be sought in publications and on sites that do not depict women in primarily stereotypical ways. Experimentation by engaging users with images and determining how one interprets these messages will be important to understanding the influence that news images are having on society. Additional studies should also analyze race, age, and other attributes in understanding visual representation of technology.

*References*

- Altheide, David L. (1996). *Qualitative Media Analysis*. Thousand Oaks, CA: Sage.
- Bell, P. (2001). Content analysis of visual images. In T. van Leeuwen & C. Jewitt (eds.), *Handbook of Visual Analysis* (pp.10-34). London: Sage.
- Berelson, B.R. (1952). *Content Analysis in Communication Research*. *The Free Press*. New York.
- Cooper, Joel & Weaver, Kimberlee D. (2003). *Gender and Computers: Understanding the Digital Divide*. Lawrence Erlbaum and Associates. Mahwah, NJ.
- Entman, R. (1993). Framing: Toward Clarification of a Fractured Paradigm. *Journal of Communication*. 43(4). p.53.
- Furger, (1998). Roberta. *Does Jane Compute?* Warner Books. New York.
- Goffman, E. (1974). *Frame Analysis: An Essay on the Organization of Experience*. Harper & Row. New York.
- Haraway, Donna. (1991). A Cyborg Manifesto: Science. Technology. and Socialist-Feminism in the Late Twentieth Century. in *Simians. Cyborgs and Women: The Reinvention of Nature*. New York; Routledge. pp.149-181.
- Herring, S. (2001). Gender and power in online communication. Center for Social Informatics Working Papers. Retrieved September, 12, 2004 from <http://www.slis.indiana.edu/csi/WP/WP01-05B.html>
- Holsti, O. R. (1969). *Content Analysis for the Social Sciences and Humanities*. Addison-Wesley. Reading, MA.
- Jansen, Sue Curry. (1989). Gender and the Information Society: A Socially Structured Silence. *Journal of Communication*. Vol. 39(3). Summer. pp. 196-215.
- Kouper, Inna. (2005). Still Not Newsworthy: Gender Bias in Images of Online Aggregated News. presented at the Association of Internet Researchers Conference, Chicago, IL, October, 2005.
- Krippendorff, K. (1980). *Content Analysis: An Introduction to its Methodology*. Sage. Beverly Hills. CA.
- Margolis, Jane & Fischer, Allen. (2002). *Unlocking the Clubhouse: Women in Computing*. MIT Press. Cambridge.
- Millar, Melanie Stewart. (1998). *Cracking the Gender Code: Who Rules the Wired World?* Second Story Press. Toronto.
- Pew Study (2004). The internet as a unique news source. PEW / Internet and American Life Project Retrieved December, 10, 2004, from [http://207.21.232.103/pdfs/PIP\\_News\\_Images\\_July04.pdf](http://207.21.232.103/pdfs/PIP_News_Images_July04.pdf)
- Pew Study (2005). How Women and Men Use the Internet (December, 28, 2005) PEW / Internet and American Life Project. Retrieved January, 14, 2006 [http://www.pewinternet.org/PPF/r/171/report\\_display.asp](http://www.pewinternet.org/PPF/r/171/report_display.asp)

- Reese, S., Gandy, O. & Grant, A. (2001). *Framing public life: perspectives on media and our understanding of the social world*. Erlbaum. Mahwah.
- Spender, D. (1995). *Nattering on the Net: Women. Power. and Cyberspace*. Australia: Spinifex Press.
- Tankard, James. (2001). The Empirical Approach to the Study of Media Framing. In *Framing Public Life : Perspectives on Media and our Understanding of the Social World*. eds. Reese, S., Gandy, O. & Grant, A. Erlbaum. Mahwah.
- Tuchman, Gaye. (1978). Introduction: The Symbolic Annihilation of women by the Mass Media. in *Hearth and Home: Images of Women in the Mass Media*. Tuchman, G., Daniels, A.K., & Benét, J. (Eds.). NY: Oxford University Press.
- Turkle, Sherry. (1995). *Life on the Screen: Identity in the Age of the Internet*. NY: Simon & Schuster.
- Van Zoonen, Liesbet. (1992). Feminist Theory and Information Technology. *Media, Culture, and Society*. Sage. London. Vol. 14. No. 9.
- Wajcman, Judy. (1996). *Feminism Confronts Technology*. Cambridge. England: Polity Press.

*Appendix A – Intercoder Reliability*

A second coder was used to code a sample of images (20%). The following table indicates the percentage of agreement:

<b>Variable</b>	<b>%</b>
Main Character	90%
No. of People	95%
Gender	91%
Usage	90%

*Appendix B – Chi-Square Analyses from SPSS***Main Character as a % of Total Images****Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	53.314 <sup>a</sup>	3	.000
Likelihood Ratio	54.461	3	.000
Linear-by-Linear Association	38.144	1	.000
N of Valid Cases	513		

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 2.81.

**No. of People in Images Containing Humans****Chi-Square Tests**

people ~= 0 (FILTER)	Value	df	Asymp. Sig. (2-sided)
Selected	Pearson Chi-Square	1.408 <sup>a</sup>	.704
	Likelihood Ratio	1.401	.705
	Linear-by-Linear Association	.532	.466
	N of Valid Cases	171	

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 1.55.

## Gender in Images Containing Humans

Chi-Square Tests

people ~= 0 (FILTER)		Value	df	Asymp. Sig. (2-sided)
Selected	Pearson Chi-Square	11.734 <sup>a</sup>	3	.008
	Likelihood Ratio	11.347	3	.010
	Linear-by-Linear Association	9.281	1	.002
	N of Valid Cases	171		

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 2.48.

## Gender of Individuals

Chi-Square Tests

people = 1 (FILTER)		Value	df	Asymp. Sig. (2-sided)
Selected	Pearson Chi-Square	4.541 <sup>a</sup>	2	.103
	Likelihood Ratio	4.287	2	.117
	Linear-by-Linear Association	4.374	1	.036
	N of Valid Cases	119		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.12.

### Usage of Tech By Humans

Chi-Square Tests

people ~ = 0 (FILTER)		Value	df	Asymp. Sig. (2-sided)
Selected	Pearson Chi-Square	13.209 <sup>a</sup>	2	.001
	Likelihood Ratio	14.410	2	.001
	Linear-by-Linear Association	13.053	1	.000
	N of Valid Cases	171		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.47.

### Usage by Gender

Chi-Square Tests

USE		Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Exec	Pearson Chi-Square	2.766 <sup>b</sup>	1	.096		
	Continuity Correction <sup>a</sup>	.316	1	.574		
	Likelihood Ratio	1.806	1	.179		
	Fisher's Exact Test				.232	.232
	Linear-by-Linear Association	2.710	1	.100		
	N of Valid Cases	49				
User	Pearson Chi-Square	13.886 <sup>c</sup>	3	.003		
	Likelihood Ratio	15.034	3	.002		
	Linear-by-Linear Association	7.758	1	.005		
	N of Valid Cases	37				
Non-User	Pearson Chi-Square	.898 <sup>d</sup>	3	.826		
	Likelihood Ratio	.890	3	.828		
	Linear-by-Linear Association	.187	1	.665		
	N of Valid Cases	85				

- a. Computed only for a 2x2 table
- b. 2 cells (50.0%) have expected count less than 5. The minimum expected count is .24.
- c. 5 cells (62.5%) have expected count less than 5. The minimum expected count is .89.
- d. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 2.12.