

Integration of Art, Language and Technology  
as a Vehicle of Change for the Internet

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Abstract

From its beginnings as a text-based system for communication among military and academic computers to its growth as a world wide source of information and force for social change, the Internet and its component aspects can be analyzed through the interdisciplinary examination of the disciplines involved in its construction, growth and use. This paper will focus on three specific disciplines: art, language, technology and communication, and their roles as catalysts to change the Internet and the way people communicate.

### The Integration of Art, Language and Technology as a Vehicle of Change for the Internet

The Internet: a cadre of disciplines blended to create a single, overwhelmingly powerful force used by millions of individuals and organizations for a myriad of purposes. Its uses range from sending 140 character Twitter messages to downloading music or viewing full screen video, from emailing a friend to fundraising, to purchasing a book or nearly any other product, to launching a political campaign or maelstrom of social activism. The Internet has changed the way business operates, destroyed some businesses along the way, and created altogether new businesses and business models. In short, the 'net has changed everything, from the way we live our personal lives, socialize, conduct business and participate in government, because it has radically changed the way we communicate with each other and with institutions. It has done so by facilitating the creation of networked communities of users with common interests, bonding together, empowering one another with their combined knowledge, beliefs, purchasing power and power to communicate. The power of the individual is multiplied by a factor equal to the number of members within a given community dedicated to specific purpose. Online retailers, working the system somewhat in reverse, create communities of loyal buyers, assuring financial success.

The Internet began, not with Al Gore<sup>1</sup>, but during the Cold War when the U.S. Defense Department created ARPANET, the world's first packet-switching network and the foundation on which today's Internet is constructed. Simple in concept, packet-switching allowed computers to network among each other on shared transmission lines by disassembling data into multiple packets of information, routing them to single or multiple destinations, then reassembling them into useful information. (Wikipedia, 2009).

Initially designed by private industry and deployed from computer installations at UCLA, Stanford, UC Santa Barbara and the University of Utah, ARPANET's use was confined largely to academics and the military until the military portion (MILNET) was split off in 1983 for security reasons. It was not until the early 1990s and the advent of the World Wide Web that the Internet "exploded," its use becoming widespread across demographic and institutional boundaries and its growth, geometric.

Contributing notably to the explosion were Internet giants to-be Yahoo!, HotMail, Amazon, E-Bay and E-Trade. Yahoo! began merely as a list of favorite Internet links created by two Stanford University graduate students in 1995. A billion pages and one year later, Yahoo! was the go-to search engine site of the 90s and its creators, millionaires. Hotmail, using the novel concept of giving away email for free, grew from no users in 1995 to 30 million subscribers in less than three years. About the same time, eBay went public with the fifth highest first-day gain in the stock market's history. The dot-com bubble was expanding. E\*Trade went public in 1996, raising \$46 million. Amazon.com got into the fray, turning the retail brick-and-mortar trade topsy-turvy by luring consumers not into real stores, but into virtual stores inside home computers. (Silicon Valley, 2009) Ever since, the web has been impacting everything in its path, sometimes facilitating and sometimes dismantling, and as well as spawning new entities.

For the interdisciplinarian an underlying question is: what disciplines brought the Internet to where it is today? While one can safely postulate that virtually every academic discipline has been impacted by the Internet, and that nearly every discipline has impacted the 'net, four disciplines stand out: language, technology, communication and art. Some obviously, some not so obviously, but each has played a major role in turning the web into to what the Santa Clara

Valley Historical Association calls “...a powerful, liberating force that brought people together and shaped new businesses.” (Silicon Valley, 2009)

### Technology

Just as technology was the discipline that created the Internet, technology has also been the discipline to broaden its scope, facilitating Internet use in greater numbers through increased bandwidth, increased access and reduced costs. In short, the easier and cheaper the Internet has become to use, the more users it has attracted. The more users available to participate, the more influential the power of the Internet over all it affects.

Bandwidth and ease of access are two of the most important considerations. The slow transmission of data over telephone modems connected to narrow bandwidth communication lines made the initial World Wide Web into what was often referred to as the “World Wide Wait.” For many, connecting to the Internet meant disconnecting the telephone and spending long waits watching text crawl across computer screens. Images and other media were even slower. The advent of broadband services over more sophisticated phone lines, cable networks and via satellite brought a geometric increase in both the volume and speed of data travel, enabling web-based software applications and richer media experiences replete with audio and video. Users flocked to the ‘net in even greater numbers. Broadband was also attractive because it was “always on,” with no need to disconnect another communication device to go online.

More sophisticated Internet software allowed increased Personalization of the Internet, providing users with more control over who they received communications from, when they received it, and what they received. This type of selectivity gave users more power over the

plethora of Internet offerings that had developed, allowing them to customize their experience for their specific interests.

Technology also resulted in the development of wireless connectivity. Portability allowed the Internet to find the user, rather than the user having to find the Internet. Again, another quantum leap in access resulted in another major increase in Internet use.

A fundamental rule with technology has been that as it advances, it becomes less expensive, not more expensive. As the cost of acquiring computer technology has dropped, the demographic base of computer users had broadened, reducing the so-called “digital divide.” Income, culture, gender, age, education and English fluency have become less of a factor, possibly non-factors, in determining who is connecting to the Internet. (Wellman, 2002). In this regard, the Internet is becoming the great equalizer among individuals of different backgrounds, nationalities and socio-cultural strata.

## Art

If the Internet was merely a text-based vehicle for communication, as it was in its military and academic infancy, it's doubtful it would resemble or have grown to anything close to what it is today. It is the inclusion of artwork, whether in graphic design or its ability to transmit photographic images, video, music and sound that the Internet has provided the rich media content needed to draw additional millions of users.

The advent of RealAudio 1.0 in 1995 at the National Association of Broadcasters convention changed everything. Rather than wait for plodding downloads, web users could listen to audio in real time - streaming onto their computers. Concurrently, Flash animation technology elevated the visual experience from text and static images to entertaining animations. Streaming

technology continued to develop to its next logical step - streaming video in 1997 - and the Internet as a Rich Media experience was legitimately in competition with television, cable and movie rental houses. Netflix, with full-length downloadable movies, took on Blockbuster and the rest is history. Millions of users are now hooked to and hooked on the Internet. (Shaw, 2004)

### Language

The impact of language combined with technology has produced a classic interdisciplinary impact on the web, through search engine optimization, or SEO, a phenomenon impacting advertising, marketing, social networking and other aspects of the internet.

SEO is the effort by web builders, marketers and others to achieve high page rankings in web searches done by users of Google, Yahoo and other search engines. Top rankings are highly sought after and can be worth millions in revenue or influence to those who achieve them, by virtue of the fact that they provide their owners greater online exposure.

Search engines collect data about web pages with “spiders,” web-based applications that “crawl” the web, analyzing page content. A web page with several mentions of the word “automobile” will be perceived to be about automobiles, and given a rank. But a page that not only contains several mentions of “automobile” but also has “automobile” in its page title, URL (uniform resource locator, the verbiage following the “www”) in headers and subheads, in source code not visible on the web page, and in other areas will likely rank even higher. Links to that page from other websites sharing common interests elevate the ranking still higher.

“How a search engine indexes its data is what counts,” says Greg Bennett of TSR Solutions, a Wisconsin-based provider of Internet websites and technology. Web developers like Bennett and others who are proficient at optimizing websites to achieve top rankings are highly

sought after. But SEO is as much a black art and intuition as it is technology. Bennett says the key to success is determining who may be looking for a particular type of website, product or service, knowing or intuiting the key words and phrases they'll use when searching, then proliferating your website with them appropriately. "Google spends millions of dollars developing the algorithms that determine how your website will rank in a search based on the keywords and phrases the user inputs," Bennett says. "They also have some of the smartest people in the world working for them and figuring out how to do this, as well as develop ways to keep others from figuring out their algorithms." (Bennett, 2009)

It's all very interconnected, according to Bennett. Even the rankings of other websites can raise (or lower) page rankings. "If you can get a site like Yahoo! to link to your website, your search index rises dramatically," he says. "Google sees you're linked to Yahoo!, it knows Yahoo! is an incredible website, therefore your website must be incredible, and it ranks you higher accordingly."

### Communication

More than anything the Internet has changed the ways in which we communicate with others, personally, socially, in business and in politics, as well as in myriad other ways too numerous to elaborate upon here.

The Internet has allowed us to become more connected more frequently with more individuals and more organizations through technology that is instantaneous and global. On my personal computer I can email or instant message a friend in England as quickly as my next-door-neighbor or an office colleague. We can also communicate in volume, thanks (or no thanks) to the web and its technology. Witness the volume of email - welcome and unwelcome - that

shows up in your digital “in” box every morning, and more commonly of late, after lunch as well.

We are not only receivers, but senders. One can type a quick note to a friend or relative, send a company memorandum to an entire department, knock out a complaint to your state congressional delegation on a particular political legislative issue, then finish up with an email to your spouse to pick up the kids after school - all in the time it takes for a morning cup of coffee and slice of toast. Likewise, a business owner can send a notice of a one-day sale on an item to all of his customers with a single keystroke. Politicians can communicate with constituents. Teachers can communicate with students, ministers with their congregations. Everyone can communicate with everyone. Nearly every organization has an email address posted on its website. A few key strokes can save both a trip to your phone book (or the library) and the post office to locate and communicate with nearly any corporation, association, group, club or other entity. The time saving impact of the Internet often results in more use of the Internet, hence, more communication.

Search engines are increasingly bringing websites and web surfers together in greater numbers. As more Internet users arrive, so do more web pages. (Note the ever-burgeoning number of pages one can browse on even a narrow topic. The author’s Google search for “fishing rods” turned up 1,790,000 pages in .22 seconds. A narrower search for “split bamboo fly rods” turned up a paltry 530 pages, still far too numerous to peruse in a single sitting.)

Increased Internet use increases Internet use. Improvements in technology have made the Internet faster, easier and less expensive to use, resulting in more people using the Internet more frequently, thus increasing communication with one another. Researchers have also found the longer people have been online, the more they use the Internet, primarily because experience

makes them better, more efficient users, as well as more knowledgeable about ways to use the internet. The same researchers have found that Internet use does not hinder, but rather, supplements face-to-face and telephone contact, and that frequent Internet contact is associated with frequent contact via others means, increasing the probability that people have more relationships because of the internet, and are also communicating more frequently in those relationships, also because of the Internet. (Wellman, 2002).

No where has this change in communication had more impact than in two areas: the ways in which we network and receive information.

An entirely new industry of online social networks has been spawned, with website giants such as FaceBook and YouTube becoming powerful forces affecting the way individuals - particularly young people - interact socially, by creating social media hubs around which they can network with chosen friends. The hub expands when my friend becomes your friend through linking and interaction. LinkedIn, a sort of FaceBook for business people desiring to network, follows a similar model to gather and link people with common professional interests. YouTube focuses on video as a means of networking. Individuals, groups and organizations utilize the technical and social aspects of the site to “calibrate” access to their videos as a means of socialization or commerce, political or social activism, or to support or promote other common interests (Lange, 2008). Where once networking may have been tightly restricted geographically for personal contact or through printed publications such as newsletters and journals for members with more disparate locations, online networks have closed the gaps of time and distance, allowing more people to be more “connected” to one another, individually and *en masse*.

Information reception has also undergone dramatic - at times traumatic - change, transitioning from a “one-to-many” media model (think broadcasting and publishing) to “many-to-many” or peer-media platforms. In short, society is transforming from one in which information is “pushed” out to many people from individual sources, such as television networks, newspapers, magazines and wire services, to a society whose members “pull” information from one another: their peers. Under the “one-to-many” model, a relative handful of individuals in the upper echelons of media (newsroom managers and editors) determined what information was valid or credible and worthy (“newsworthy”) of dissemination to the masses. The general definition of news included whatever was new and different. Audiences had little say about daily news content, though could exercise considerable influence through viewing and reading habits. Viewer ratings for television and circulation measurements of readers became the *de facto* standard for measuring the influence – and ad revenue potential – of the media. The Internet provides an alternative to the one-to-many model with peer media platforms including social networking sites, blogs (websites maintained by individuals, usually with entries pertaining to a single topic or type of information) and RSS feeds (Really Simple Syndication). On such peer media platforms, group discussions replace the “one-to-many” dissemination of information, trust replaces credibility and dialogue more akin to talking on the telephone or across the back fence with your neighbor replaces journalistic and corporate speak (Herrero, 2008).

This change in the way we communicate has been monumental, providing a new, more dynamic communication landscape where information *from individuals* moves on an equal par with that of the mass media: at near-light speed across vast distances to many and disparate locations. Local issues can become global spectacles in mere moments, based on the decision of

a single individual posting information in the right place. No one is immune. Businesses, sports organizations, governments and individuals have been impacted.

One of the most heartening moments for proponents of democracy - and journalists seeking a great story - came during the June, 2009 elections in Iran. With tight restrictions placed on foreign journalists by the Iranian government, reporters turned to Twitter “Tweets” from Iranian citizens to obtain eyewitness reports of the public protests over the Iranian election. The homogenous application of internet and cell phone technology illustrated how, combined, the two allowed information to leap physical and electronic barriers in a single bound, providing journalists with near real-time accounts of unfolding events. Other major events have also been “Tweeted.” When a US Airways plane landed in the Hudson River, the first images of the scene were transmitted via Twitter. When pop-star Michael Jackson died, fans knew of the death via “Tweets” before major news outlets broke the story. As New York Times reporter Miguel Helft wrote, “Twitter, FaceBook and similar services are increasingly becoming the nation’s virtual water coolers.” (Helft, 2009)

Indeed, journalists are becoming more reliant on web-based resources than traditional news sources for information. In July, a shooting in Washington, D.C. and explosions in Jakarta were Twittered first, broadcast second. (Kanalley, 2009)

In a “can’t fight ‘em, join ‘em” moment, Associated Press partnered with Yahoo! to Twitter its coverage of Senate Judiciary Committee hearings on Supreme Court nominee Sonia Sotomayor. (<http://www.niemanlab.org/2009/07/the-associated-press-tries-courtside-crowdsourcing-sotomayor-coverage/>)

### Summary

In two brief decades there has been a paradigm shift in human communication facilitated by multiple disciplines intertwined into the modern Internet. Call it the ultimate interdisciplinary tool: every existent and future discipline can or will use and impact utilization of the Internet and through it, each other. Compare that to most of the 50 to 100,000 years of human history, in which *homo sapiens sapiens* could instantly transmit information no farther than he could see until Samuel Morse invented the telegraph in 1838. From that point until roughly a century and a half later, instant, electronic communication across distances was one-to-one and one-to-many.

The advent of many-to-many, or peer media communication and its ability to amass great numbers of individuals for causes and purposes of every ilk – social, political, ideological, education, commerce or simply for entertainment - heralds a major shift in the way our world will operate. Isolationism becomes increasingly difficult for individuals, cultures and governments. Restricting information and the free flow of knowledge, thought and discussion—almost always a primary objective of totalitarian regimes and third world despots - becomes impossible.

The desire to gain Internet access has become nearly as formidable a force among humans as our instincts for food, shelter, procreation and survival. Today, even the poorest of the poor in the most underdeveloped of nations can – and have – attached hand-cranked generators to used laptops and pirated broadband connections to get to that great informational equalizer, the Internet. Hand-powered laptops have been designed specifically for third world users. (Higgins, 2008) And so-called “Drive-by WiFi” uses laptops strapped to Mo-Peds to wirelessly gather email stored on remote third-world village servers for later “dumping” into live Internet

connections in more urban areas. Response emails are also retrieved and returned this way, making the concept a sort of electronic version of the Pony Express. (Derene, 2008)

With information comes power, including the power for change, both good and bad. The Internet has enabled communities of like interests to mobilize their power and wield influence in ways never before possible. Its power was put to overwhelming success through the online fundraising skills of the Obama campaign team. Years before, lone blogger Matt Drudge beat the mainstream media and upended a U.S. president with his reporting of the Clinton-Lewinsky scandal and revelations that Newsweek had been sitting on the story. (Napoli, 1998)

What promises the future? Definitely the technical possibility of a true democracy: one person, one vote, on every issue. With adequate technology, it would be entirely possible for democracies to govern themselves as individuals, without benefit or detriment of a democratic republic in which individuals elect others to represent them in government, such as here in the United States. Whether elected officials would willingly give up positions of power and influence is another matter.

More likely is that government and other entities will continue to become more responsive to constituents and stakeholders. A fact of American politics is that politicians listen to voters; voters need simply let their voices be heard.

One thing that will not change in this scenario: the timeless adage that the squeaky wheel gets the grease. Those wanting to make their desires known, impact others and change their world will do well to learn the art of communication and the power of the Internet. To not do so may be to stand mute and moot, for from the Internet comes the power, for those who learn to use it.

Footnotes

1 Gore later helped facilitate development of the web through by crafting the High Performance Computing and Communication Act of 1991, also known as “The Gore Bill,” which led to the National Information Infrastructure, popularly known as the Information Super Highway. (Wikipedia, 2009)

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