Viewing Technology and Society

Looking Across the River of Life

• FOURTH EDITION •

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Communication in a Connected World

Holly Denney

Welcome to the Knowledge Age. Buckle your seatbelts - for we'll be communicating at the speed of light - we hope ... assuming all goes well ... assuming we're all living in the "First World" and have modern computers and super-fast Internet connections! Within this chapter many issues are raised — important issues that each of us will encounter as we adapt to living, working and learning in this new age. Questions will arise faster and have greater impact than ever before, because of the speed at which we communicate. This chapter does not pretend to provide answers - the questions and thoughts presented here are open-ended, so there are no right or wrong answers. Instead, I challenge you to think - critically - about them; to discuss them - in the classroom and in the corridors of your own life beyond; to begin to think about possible answers to these questions - and the impact that your proposals might have; and to think about new questions - which will arise even as we proceed through this course. I'll offer my thoughts, experiences, and opinions, and I expect all of you to do the same.

Communication has many faces and involves many processes. It's basically an interaction with others, involving give and take. Communication can be verbal, whether spoken or signed; written; or silent, as expressed through body language. When we communicate, it's to share ideas, information (Brown & Duguid, 2000; Postman, 1992) or feelings; it's also how we express our needs and wants.

Have you thought about the world in which you'll be communicating? Part of what we'll be doing in this course is giving you a glimpse of the world of *today*, and, we hope, laying a foundation upon which you'll be able to build as you prepare to communicate successfully within the world of *tomorrow*. The focus of this chapter is on-line communication, but I encourage you to think about - and, when appropriate, include in your assignments - all the other forms of mediated communication[1] that are a part of our lives. You'll find thought-provoking issues in Peter Golding's chapter, *Keeping Balance: Technology on the Scales.*

Throughout this course, please keep in mind the discussion of master student attributes presented by Peter Golding in Chapter 1. Within all of that excellent advice, I ask you to pay particular attention to the computer-mediated communication[2] that we'll be doing. Among your skills as knowledge workers must be an ability to use different learning platforms and software, and to use them as "second nature." Communication speeds won't slow down while your skills come up to speed. We'll mix things up throughout this course—consider this fair warning!

Part of what we'll begin to explore are the following topics:

—*Virtual communication* - no visual cues / clues; formal vs. abbreviations; friendly vs. stilted. How do we "deal" with all of these issues?

—*Ownership* - Who owns what you send in e-mail? - bet you thought you did! Next question: Who owns what you *receive* in e-mail? Hmmm…

—*Cyberlaw* - related to ownership issues: whose "intellectual property" is it? The "cons" of developing on-line courses.

—*Virtual teams* - they're everywhere, whether in the office or in education. We'll introduce you to working that way. And, we'll introduce you to the question of the "productivity paradox."

—*Cross-cultural issues* - the virtual world has been called a new form of colonialism. What does it mean when a smaller country is "invaded" by a larger one? Can we form a "global village," a way to share languages, cultures, and customs?

—*Multi-lingual issues* - English is the predominate language of the Internet. What are the benefits of a *lingua franca*? What are the downsides?

·*24/7* - the Internet never closes. What will this mean for face-to-face businesses of all sizes?

—*No geographical limits* - the Internet is everywhere. Yet, some nations are asserting their rights to control what crosses their borders.

·*Digital divide* - the have's vs. the have not's. Or is it a digital dividend?

—*Knowledge vs. information vs. data* - What are the differences? What is the impact on education?

—*Books vs. hypertext* - the book as revolution; ephemeral nature of the Web.

—*Libraries* - what impact on research (scarce vs. unlimited resources; authority).

—*Life-long learning* - how many career changes will you face?

—*Social* - can you fall in love over the Internet? Is it so different from the "mail order bride" tradition in the days of the "wild, wild West"? Or, more mundane, can you have "high tech and high touch"? (Naisbitt, cited in Green, 2001*)*). What about "social glue" (Brown & Duguid, 2000)? What about personalized news?

Virtual Communication

Many of our reactions are based upon "cues" that are sent and received - facial expressions, vocal inflections, and body language of the speakers. What happens when those "cues" don't exist in virtual space? One way to compensate in information communications is the use of "emoticons" - those smiley faces - like :) (smile), etc. Someone new to virtual communication won't understand the basic ones. Someone experienced probably doesn't know all of them. I don't know how many there are - search for "emoticons" at any search engine[3] yields dozens of sites. Here's a few more:

> :) Happy.
> :(Sad.
> :I Hmmm...
> :[Real Downer.
> :D Laughter
>
> http://paul.merton.ox.ac.uk/ascii/smileys.html

Internet communication has its own shorthand, too. Letters and numbers are combined, a reflection of our interest in efficiency. Some of the "emoticon" sites also list these abbreviations - f2f (face-to-face), LOL (laughing out loud), B2B (business-to-business), etc.

Written communication can become stilted, particularly when it's between people who don't know each other. Compared with traditional business communication, business e-mail has a less-formal tone and fewer words are used. In e-mail, the writer is *truly* the writer - s/he composes and types the message. Traditional business communication involves someone dictating and someone else typing. The number of people involved and the number of words used can measure efficiency.

I have two e-mail accounts, one for work and one for personal use. It was necessary to separate the two because I have friends who have infinite sources of jokes and lists and pleas and, sadly, virus hoaxes. What I find interesting is that those friends don't want an answer nor do they want to communicate. The Internet facilitates chain letters, but it doesn't necessarily facilitate communication.

As a student, I've often hesitated to speak up in class - it's that little issue of "fool factor" ("open mouth, change feet," as a good friend of mine said). One advantage to written communication is that I can think about what I want to say, re-draft as necessary, then, when I am ready, put it out for all the world to see. And - the whole world could end up seeing it. Maybe I think only my classmates and professors will see it - but what about the person who prints it out or the person who likes the thought and sends it on to some friends, who in turn send it on to more friends, ... ? That raises the next issue, ownership.

Ownership

How fast do rumors travel? In early 2001, a furor arose over reported changes to Australian copyright law, specifically a provision that would make forwarding private e-mail illegal. Is the report true? According to the Australian Attorney General's website, on March 4, 2001, the AG refuted that report: "Forwarding a personal e-mail is unlikely to breach copyright laws. A court would need to find that the contents of the e-mail were an 'original literary work'" (Williams, 2001). Yet, on March 19, 2001, David Cohen reported that the attorney general "warned Australians that they could even be breaking the law if they forwarded emails without the author's permission" (Cohen, 2001). What's your opinion? Once e-mail is sent to you, is it yours to use or to forward to people you know? Would you write things differently if you knew in advance strangers would be reading your private thoughts and feelings?

And, how private is e-mail? Most employers have rules regarding the kind of communication that can be transmitted over company-owned e-mail accounts. Most companies routinely back up everything on the main computers and servers. If you've received an unsolicited e-mail with questionable content, can you be given a warning ... or fired? A good friend of mine came close to being fired for this very thing. She argued, successfully, that the e-mail was unsolicited, that she deleted it from her account immediately, and that she did not forward it or respond. Or can you be held responsible if something you've said is taken out of context and posted across listservs? Can it impact your future career opportunities? (Schwartz, 2001) Certainly, concerns of this kind prompted me to establish the second, personal, e-mail account.

Closely connected are the issues of intellectual property and copyright[4].

Cyberlaw

Big issue. The courts are still out on some cases and have returned verdicts in others. Copyright laws are under review, intellectual property is being redefined, and new challengers arise before the ink is dry on the verdicts[5]. What are the points being discussed?
- Is putting something on the Web "fixed" in the same manner as if it were physically printed onto a page? Yes, once it's on the Web, it bears similarities - it could have text, graphics, or images, or some combination of them. However, unlike a printed page or photograph, the contents of that Web page can be changed, without notice and without cost. It's called "updating."
- The music industry is very protective of its artists' work. In the physical world, a businessperson who owns a collection of records cannot *legally* play those records in his or her place of business without paying a royalty. Technically, private individuals cannot sing "Happy Birthday to You" without paying a royalty to the composers. Businesses can be, and are, monitored, and that agency has the authority to impose fines on violators. It's never been feasible to "police" individuals. Until Napster.
- If I develop an f2f course, it's mine - content, presentation, everything. My use of others' intellectual property is covered under "fair use"[6] provisions, so it's permissible for me to make copies of articles or book chapters to distribute to the

students in my class. But, as soon as I incorporate on-line elements into that class, the ownership of my intellectual property changes hands. Why?

Maybe course content isn't much of a discussion starter. More relevant: let's talk about Napster. Let's talk about hackers. Let's talk about plagiarism. Is it easier to "borrow" someone else's creation once it's on-line ... or is it easier to *know* about it if you're the one whose creation is being *borrowed*? Photocopiers, tape decks, VCRs - who's hurt if I make a copy for my own use ... and share it with several dozen close personal friends, who copy it and share it further. Who knows that I've done it - "cookies"[7] aren't created when I use a copy machine (although video rental stores are looking at embedding technology that will either record that a copy has been made *or* prevent you from making the copy).

Believe it or not, hackers are asserting that *their* First Amendment rights are being challenged. There's a case, "University City Studios vs. Reimerdes," scheduled to begin on May 1 (Kaplan, 2001a). At heart is a "piece of software devised by a Norwegian teenager called DeCSS. The underground code, available on the Internet, decrypts or unlocks" encrypted information. Here's where the First Amendment comes in: is it legal to prevent copying under any circumstances? What about "fair use"? But ... is it "fair use" once the copying leaves an academic environment? Is copying *within* an academic environment always truly "fair use"?

Virtual Teams

I hope you've all had a chance to work as a team, whether at work or at school. Teams are an important part of how work *and* learning are done in this information age. Teams require skill to develop. The goal is that team members work together efficiently and effectively and produce results that are far better than anything that could come from the individual members working alone. That's why we have you in teams this semester. We'll help you find what is good about teams, how to develop the needed skills, and how different kinds of teams function. You'll be in base teams (a team that will last throughout the course), and you'll be formed and reformed into shorter-duration teams[8]. The base teams will be f2f, virtual, and, at times, f2f and virtual. The teams are an opportunity for you to practice involving all team members, establishing conventions, engaging in formal communication, and producing a final product.

On-line communication is largely asynchronous. As we move to virtual teams, all members of the team must agree to access the discussion and to participate actively in the work that has to be done. How do you "poke someone's 'virtual' ribs"[9] when s/he doesn't respond? It's not like you'll see each other at the water fountain or between classes. Calling an absent team member isn't always a solution - time zone differences may have you at work when s/he is at home. Voice mail? Equally easy to ignore. Peer pressure might work, particularly when a grade is involved, but even that isn't a guarantee. The skills needed to make virtual teams successful are an essential part of what you'll need for success in the 21st century. Included in those skills is the ability to communicate a problem ... when all you have are words[10].

But, the concept of a team goes beyond these special groups formed for a particular purpose. Any successful organization is a team - all of its people are united for a common goal

- winning, earning a profit, and being the best at something. Many of those attributes can be carried across into a virtual environment. But one thing is missing once we go virtual: f2f human contact. OK, maybe that's obvious, but think about it. Sometimes you just need someone else to help, and it's the kind of thing that is so easy when you can walk down the hall and show someone what's the matter. I've been trying to get someone to fix some hyperlinks that don't work in the on-line course I'm taking. Over the course of five days, I've talked with three different people, by telephone and by email. I've even attached screen shots of the problem area. No luck. But, if I could have sat down with one of those people, the problem would have been fixed within a matter of minutes. Or maybe your computer crashes. No biggie - go use Joe's; he's out of the office anyway. But, if you're working from a home office - or the front seat of your car! - virtual Joe is truly out of the office, and so is his computer. He's still your team member, and you're still working for the same goal, but sharing equipment is no longer an option. Unless you have spare computers at home, you're out of business until you get a new one or have yours repaired. The efficiency of not going to the office is suddenly less efficient. Brown and Duguid (2000) call that the "productivity paradox." It's amazing how quickly we can communicate - and how slowly things get done.

What is the culture of the Internet? Is it developing its own culture, much as it's developing its own language? Is it a correct assumption that just because we can transmit information quickly that everything else should move as fast? Maybe the culture that is developing is a combination of the best - or the worst! - of each of the cultures now connected in virtual space.

Cross-Cultural Issues

The concept of international students is nothing new - a fortunate few are able to travel to another country to learn at an institution of higher education. Some of those may elect to stay and work in that country, others will elect to return home to take back what they've learned. Either way, it's a win-win situation for the institution, the host country, the other students at the institution, and the international student.

But, what happens when one country's institution "exports" its methods of teaching and of doing business into another country? If that institution is there "virtually," is it an "invasion"? Suddenly, one nation's sovereign rights may have been ignored. This concern has been expressed by Caribbean and African nations (Watson & Marrett, 1999; Adekanmbi, 1999). In fact, they see it as a new form of colonialism. It's an interesting point.

However, if that institution has received permission to establish a campus in the "foreign" country, then there has proceeded a process of inquiry, negotiation, and agreement entered into by both sides. The institution is then faced with the issues of staffing, hiring faculty, enrolling students, processing payments (there may be issues of currency conversion and transferring excess currency back to the host institution), and all the aspects of conducting business, complicated by doing business in another cultural context. Not everyone lives on an international border, as we do. Yet, if we're honest, we'll admit that there are complexities as well as benefits to a bi-cultural city. A partnership or a consortium[11] agreement with institutions in the "foreign" country is one way to address these issues.

The partnership or consortium returns the win-win element. The members all share expertise and unite their strengths. Think of the possibilities - all students would have expanded course selections and students would have the benefit of communicating across national boundaries as they address issues. That communication among peers helps us to understand how a decision made in El Paso can have ramifications in China, in Germany, and in Brazil.

OK (or is it "okay"? That's another one of the rules of the Internet: all capitals equals SHOUTING. Yikes!) - we're all set to communicate across international lines. That communication will be in English, right? Oh, sorry, of course I mean "English" as it's spoken in my home area of Pennsylvania. It's pretty straightforward - we have some "low" German words mixed in, our slang reflects the reality of life there, but we'll all do just fine![12] Right?

Maybe. There's a great article, <u>Fixin' to Learn Localisms? Here's a Non-Spendy Way</u>, by Allan Metcalf. He spent two years traveling the U.S. doing research for his new book, *How We Talk*. No big deal, you say? Everyone travels for *that* kind of research. Nope - he did it all on the Internet! Can anyone create a "smiley" for Wilmington, NC, to say, "bless her heart"? Can you translate "spendy" and keep the slang? No fair using "expensive" instead!

Now that we've settled how easy this will be, let's go on to the small task of combining all the languages in the world.

Multi-Lingual Issues

What are the implications of one language predominating? Certainly, communication is in one sense facilitated - more people can participate in the mind-boggling wealth of information if there is a common language. For native-English speakers, there is nothing more to learn. For non-native English speakers, it's a matter of learning English, something that may be done anyway.

But, does learning English and *using* it in the pervasive atmosphere of the Internet provide insurmountable disadvantages? There is concern among anthropologists and among non-native English speakers that linguistic diversity is disappearing at a frightening rate - a concern not that different from that expressed by natural species conservationists. Language is intimately connected with culture - our language reflects where and how we live. That reflection includes nuances, those shades of gray that give richness to language and that add to the complexity of communicating in a common tongue.

We need a *lingua franca*, a common language, but I'm not sure that it will be "English" as we now know it. Instead, "Internet English" will continue to develop. Internet English will have the shorthand that we talked about earlier; and it will have it's own vocabulary, easily learned (the dictionary will be on-line, hyperlinked to words), and enabling communication across language lines. Initially, it will enable us to communicate the basics, much as we would if we were just learning a "foreign" language. But, our ability to use it and the complexity of meanings will develop rapidly. Words and meanings will be a blend, a combination of all the known languages, even those local dialects in danger of extinction. Why? Because we all need

to communicate with one another, and we all have our unique *something* to bring to the conversation. Internet English will be a living, evolving language. It has to be - once a language stops growing, incorporating new words and ideas, it dies. Hmmm ... what I've described is exactly what's happening with English and all the other "living" languages. We all speak polyglot languages without thinking about it. Flipping through an unabridged dictionary will show how diverse word origins are. Another point to ponder: if Shakespeare were able to time-travel to 1970, he would *comprehend* only about 250,000 of the estimated 450,000 "usable" words (Flexner, as quoted in Toffler, 1970). That number of comprehensible words is smaller by now.

Now, let's look at a "dark side"[13] of one language predominating. The FBI had information about the plot to blow up the World Trade Center - unfortunately, all that information was in Arabic. Can we be citizens of a global village and speak only one language? Or will the global village evolve so that only terrorists (and, hopefully, law enforcement officials) will communicate in non-English languages?

I hope our futures will contain a rich diversity of languages and cultures. It was boring when all the cars were black. No one language will ever contain sufficient richness to communicate everything that we experience. (If I move to Alaska, I'll have to know *how many* different words for "snow"?? Not a major issue in El Paso!) Yet, the implications of international communication certainly contain the potential of loss of differences.[14] This tendency to homogenize can be exacerbated by the global market of the Web. We can all buy the same thing without leaving home (but, please make sure you have your American Express or VISA card!), and we can buy it "24/7."

24/7

Not too long ago, a Wal-Mart arriving "in town" raised terror in the hearts of the "mom-and-pop" businesses. Suddenly, customers had the choice of shopping from 8 a.m. to 10 p.m. seven days a week, *at a minimum*, and no small businessperson could match those hours. Even worse, customers could buy almost anything legal and imaginable within the, admittedly huge, confines of four walls. And, despite hopes to the contrary, service wasn't all that terribly impersonal.

Now, let's take it one step further. "The store" is open 24/7 - and what can be imagined has been extended *virtually* without limit and the question of legality no longer applies. Maybe even Wal-Mart should be nervous in these times? Shopping on-line is one big catalog, except no one had to cut down trees. Imagine - I can have limitless choice, I don't have to hassle with parking at the mall, and I can have it overnight. Pretty cool. Oops - doesn't fit, wrong color, not my style. Do I hassle with packing it up, carting it to the post office or UPS, and wait for the *partial* ("Sorry, no refund for shipping and handling charges.") credit to be posted to my credit card account? Or do I drive to the mall, hassle with parking, and return it in person (still a partial credit, though). Suddenly, traditional stores with an on-line presence have an advantage.

A backlash is developing. On-line sales are declining - and some would say the Internet hasn't met its potential (I'll add *yet* - I don't think the jury is in). Why? Seems there's this little

issue of communication - we can't see or touch what we're buying, and we're increasingly skeptical about what we're being told (reading?) on-line. My father used to say, "Paper sits still for anything." Reading something doesn't make it true. In the paperless world of the Internet, the truth of what you're reading is even more questionable. And, like catalog shopping, returns and exchanges can be a hassle.

What's the future? Probably a hybrid - something that will provide unlimited choice, a combination of virtual and physical, one that will combine the best of both worlds. There will be a physical location, although it might serve multiple retailers; it will be open 24/7; it will have samples of the merchandise; and dressing rooms will provide a virtual experience of trying on the clothes, with the correct size selected by the computer, needed alterations will be marked, and the cost of the alterations will be figured automatically into your bill. The garment will arrive, tailored to fit, at your home.

There is also a "dark side" to this utopian vision. What about issues of legality? Those are defined locally. Can governments exert control over the Internet?

No Geographical Limits

Technically, the Internet is everywhere you - and your computer and your Internet service provider (ISP) connection - are. We'll assume that power is on hand or available for recharging of power supplies.

On the other hand, coming back to issues of legality, "no geographical limits" also means that you have the opportunity to purchase things that your government has declared illegal. Recent (as defined by the time in which this chapter was written) issues have involved the sale of Nazi memorabilia. Can a sovereign nation impose boundaries on the Internet? Certainly, those nations can control their physical airspace - can they control Internet space? As I understand the issue, France and Germany want all the ISPs to block transmission of such sites to their citizens. Think about the logistics - is it enough to restrict access based on "cookies"? Will "cookies" prevent French or German citizens living abroad from having access? Sounds like an exclusion based on national origin to me! Yet, I can understand their concern and their desire to let go of reminders of a painful part of their history. It's unfortunate that such a market exists, regardless of where in the world that market might be.

A company in California, called SafeWeb, allows Internet access to sites blocked by a government. Saudi Arabians found it, and used it - "Just a few weeks after Saudis discovered that back door, the number of page-views through the SafeWeb site by Saudi surfers had grown to tens of thousands per day" (Lee, 2001). Maybe this is the replacement for the Cold War - the weapons are computer code, although real lives also hang in the balance. There's also a human rights side to this discussion. Restrictive governments may ban access to sites with human rights advocacy material as well as pornography. It's a real competition - the governments are trying to find and block the "back door" sites; the creators of the "back door" sites are finding new ways to outwit the governmental censors. What wasn't known at the time of the article is

what happens to people who are using "back doors" to get past their government's censorship. Maybe their stories will be carried on the human rights advocacy sites.

Can we legislate morality? Better, can we *communicate* morality, through actions and words? Here's another utopia - a world without hatred and without the desire to profit from someone else's weaknesses. In my utopia, chocolate would be fine, even though it is addictive. At least, it's never been the subject of legislated prohibition, as have other drugs.

Digital Divide

The sides have formed, yet not everyone is aligned. There are those who are saying the Internet is the greatest social divide ever conceived. Third World nations can't afford the hardware, software, connectivity charges, etc., etc., etc. Yet, some of the residents of Third World nations are coming back and saying they can't afford to be excluded. It doesn't matter if the technology and the connection speeds are the newest and the fastest - but it is important that they have technology and connection. The longer they wait, the further behind they'll be. Thomas Friedman (2000), in "The Lexus and the Olive Tree," questions whether or not "third world" nations can afford to *not* be connected. He suggests they may be able to pay for their connectivity charges through their ability to earn higher wages.

Friedman (2001a) revisits the divide / dividend issue. In that column, he talks with an Alaskan woman who questions whether the digital divide isn't good. She worries about the loss of her native Eskimo culture. Yet, four young entrepreneurs are making it possible for customers to "visit" artisans and hear how the crafts are made. Michelle Long, Viatru's founder, comments, "We believe that through the Internet we can preserve culture by rewarding sustainable cultural practices and by creating a global market for them - a digital dividend."

Or are the "unconnected" further ahead? There's much to be said for not being connected, but it's not an option. In the second book for this course, "High-Tech Heretic," Clifford Stoll[15] discusses how much time we waste because of our addiction to technology. He cites a study by Robert Kraut and Vicki Lundmark that was published in the September 1998 issue of the *American Psychologist*. Seems people without technology have deeper, closer social ties than people with technology. To quote Stoll (1999), "This is the medium that we're promoting to expand our global community?" Yes, we are, and it's going to be up to all of us - and especially you, the leaders of tomorrow - to develop the skills needed to thrive and excel in an on-line world, connected by mediated communication.

What about digital divide issues within the U.S.? Not everyone is connected nor does everyone have high-speed access. I have Internet2 at work and a dial-up modem at home. Yes, there is a big difference in transmission speed. There are some files that I can't open or print from home. Thank heavens for that access at work! But, I'm also very lucky - I can afford to have access at home, and that access meets the vast majority of my needs. What options exist for those who don't have access at home - whether because of cost or because it's just not available? Those of you sharing this course with us have an advantage - there are seven computer labs on campus, all have employees who can answer questions, and two have laptop computers

that you may borrow. What if that weren't the case? How could we teach a course on technology and society without access to technology?

As I said earlier, and you might be starting to sense, questions just lead to more questions. Where will this chapter conclude? Will this chapter conclude in the traditional sense, where we come to a *conclusion*?

Knowledge vs. Information vs. Data

I suggested earlier that we're moving into the knowledge age. Some authors call it the information age. Brown and Duguid (2000) discuss the differences, as they see it. Information is something that can be shared, easily, among people. Information is what this chapter is about. I can state facts, hypotheses, reasoned conjectures, and wild ideas - and ask questions about all of them. No big deal. But, knowledge is much more. Knowledge is what you as an individual construct from all of my statements, your research, your critical thinking, and your interactions. Knowledge is something you own; it's very personal, and no one can take it away from you. Sure, you can share what you know, but what's the likelihood that anyone else will ever "know" or use it as well as you do?

How do you learn? Is it a matter of absorption, or listening, or reading, or watching? Or is it a combination of those, plus some thinking about and manipulating data? Stoll (1999) calls the Internet the data highway. Lots of bits and bytes, all jumbled together, and signifying nothing (my apologies to Shakespeare). Pre-machine cultures learn by doing. There's a natural pace and predictability to life. Authority is important, and from authority comes knowledge. The machine age changed that. Learning by doing was still important, but schools were "invented" to prepare children for the unnatural life they would lead. The rhythm of life changed from following the sun to arbitrary dictates of a clock. Reigeluth (1992) compares children in school to "little widgets on an assembly line."

As we've moved into the knowledge age, what has become most important is the ability to think - the ability to start with data, cull out what is important, transform the data into information, and connect various pieces of information into knowledge. External authority is less important. That process of accessing, culling, transforming, and connecting is what learning is all about, and learning to learn is the most important concept that each of you should carry from your education. And, that process must happen quickly.

In addition, you must develop the ability to *forget*. That's right. Not everything you read or hear is necessary to remember. Part of that process of accessing, culling, transforming, and connecting is the need to let go of things or ideas or beliefs that are no longer relevant. Think of how fast we're moving and how rapidly the world around us is changing. Toffler (1970), in *Future Shock*, refers to "transience" as a major adjustment to how we think about things.

Is the current educational system equipped to handle this paradigm shift? Probably not, but courses such as this one are a definite step in the right direction. The cost of education is a major issue. State and federal governments are providing less support at a time when enrollments

are increasing *and* when the need for education (at all levels) is increasingly apparent. How can these two opposing positions be reconciled? Maybe evidence that schools are preparing students for the world of change into which they will graduate is one way. Allowing students to take control of their own learning is an important step in that direction. You become your own authority - not in the sense that you know all the answers, but in the sense that you become accustomed to processing data into information into knowledge. You learn to question, and you learn to change.

Here's where the interest in including new communication technologies into education began. It was thought that correspondence ... no radio, ... no television, ... no satellite videoconferencing would replace the class instructor, so how is the Internet different? All have been communicated as an educational revolution, yet all have been found lacking, oddly enough, in their ability to communicate. Why?

Maybe its because we're trying to force the technologies into the existing mold. Instead of giving the students the authority to take control of their own learning, we're just adding in something. We're communicating one thing with our words (independent learning, team work, sharing of information) and another with our actions. Is this scene familiar?

> I stand in front of the class and lecture; I assign homework and research projects; and I have my own ideas of what the results should be. And the structures of required attendance still exist. Seat time is more important that what you're learning. I assign seats, which are carefully spaced so no one can see what anyone else is doing. (All of which means: "And, please, don't share what you know with your classmates! Only so many of you will earn an "A," so why build in the possibility of another competitor for that limited commodity.")

Don't you dare let that happen in here!

Books vs. Hypertext

Gutenberg's invention of the printing press opened up access to information in an unprecedented way. Book production skyrocketed - something like 1,000 books a year were printed within a few years of that invention. It was a technology with wide ramifications, not the least of which was the Protestant reformation. Imagine - you could now read the Bible for yourself and not be dependent upon an authority to tell you what it contained. You probably don't think of a book as "technology" - but it's one of the earliest forms of portable, mediated communication. The printing press made it possible to print lots of books - and lots of copies of the same book.

Books helped in the codification of knowledge. In an oral tradition, the story may change over time. A party game helps to illustrate this: sit in a circle, one person whispers something to his / her neighbor, who in turn whispers it to his / her neighbor, and on around the circle. The last person to receive the message repeats it out loud - and the originator says the original message out loud. Everyone laughs about how the message changed, yet it demonstrates a very real problem when information is not written. How much and how fast can knowledge develop and grow if there is not a solid foundation of what came before upon which to build?

Not to say that everything that is printed is correct - but what is printed becomes a part of the common lore. History is a great example of this phenomenon. S/He who writes the book says what happened. And that's what we learn - until someone comes along and challenges that conventional wisdom. Even after it's challenged and new history books are written, copies of the previous version still exist and provide material for scholarly research. Questions like, "How did the distortion happen? What can be done to prevent such distortions from happening again?" arise.

Enter the Web. Data is posted, some becomes information, and some becomes knowledge. It's there for anyone to read, assuming it's not password-protected. Conventional wisdom changes. No big deal - update the page! Remove the offending material and, *voilá!*, history is correct. Let's assume you're working on a research paper. You've done the research, you've documented your sources, and you go back to a particular site one last time. Whoa!! Suddenly the South won the Civil War!! OK, maybe that's a bit extreme, but it makes a point. What do you do? Your whole paper is centered on an analysis of why the North won the Civil War. That web site was a central part of your research and analysis. You have your notes, but you have nothing *in writing* from that site that would support what you've done. If anyone reads your paper and checks your sources .... Even worse, that *date* at the bottom of the page is still the same as when you'd first accessed the site: April 1, 1997. Is there a hidden significance to that date??

Yes, Web resources can be ephemeral. There are times when that's good - an excellent example is the genome project. The discoveries are happening so quickly that there's no time to have the research printed - and, because things are moving so rapidly, it may not be worth the investment that printing involves. Once things settle down in the area of research, someone who was involved will write a history of the project. In the meantime, who needs lots of books in a warehouse waiting to be remaindered for pennies on the pound?

Just like published books, reliable Web sites should have a valid "last updated" date displayed prominently on the front page. And, there should be publisher information so you know who is assuming responsibility for the content on the page. That kind of information communicates to all visitors that the contents have reliability. One more caution, though. Evaluate the site for indicators of commercial intent hidden beneath scholarly-sounding text. If the main message is the convenience with which you can be separated from your money, via credit card, for some doo-dad or miracle cure, you may want to be skeptical about the validity of the data, you can be pretty sure it's not really information, and you know it's certainly not knowledge.

We've come to associate the printed word with reliability. While that was never completely true, words "printed" on the Internet truly must be read with caution. There are useful guides for determining the reliability of Web sites, and they're available free from your library. Pay them a visit - on-line or f2f.

Libraries

Libraries are probably the last place you'd think to go for help with on-line resources. After all, aren't they the depositories of rows and stacks of dusty books and magazines? Yes, they are. But, their love of the printed word carries across to Internet resources as well. In fact, librarians were actually early in their recognition, and acceptance, of the possibilities of the Internet. Now, if only they could get it categorized within the Dewey Decimal System!

Unfortunately, the Web is too large and growing to rapidly for there to be any hope for an organized filing system. "Bots"[16] try to bring order, but they are limited in their ability to search and find. That's why it's a good idea to perform the same search on more than one search engine. One downside to a search engine is that, unlike Word, it doesn't have a built-in spell-checker. What you type is what the "bot" seeks[17]. There may be some serendipitous finds that way, but the odds are against you if you can't spell. And, it may mean trying several different words or combinations of words. "Bots" look for words; humans look for concepts that underlie the words.

Even with the limitations caused by the size and complexity of the Web, librarians have good tips for how to do research on the Web. And, of course, that information is available whether you visit the library in person or access the web site. If you still have questions, that's where reference librarians will help. There are also sites to help, but remember it's always up to you to evaluate the site for accuracy[18].

One limitation has been the time it takes to get prior resources digitized. Many newer publications are available in print and digital form, particularly magazines, although books are now available as e-books. One of the concepts of teamwork is that it's a way to use scare resources efficiently. Does "scarce" exist on the Web? It doesn't matter how many of us want to read a particular article in a particular magazine - it's there. No waiting (im)patiently for whoever got there first to get finished and return it.

Yet, if some of the copyright issues being discussed in Australia become law, the concept of sharing will be severely limited. Only one copy of a licensed educational work could be on line at a time; anyone wanting to use it in another course would have to wait (Cohen, 2001). Scarcity comes to the Web! Maybe teamwork will be even more important - could two professors work together to have their students access the document at a single site?

Life-Long Learning

Very likely, your grandfathers learned a trade or a profession and made that their life work. They may have learned to do that work better, and they may have learned to use new tools to make it easier - but it was still the same career. What about your fathers? Are they still doing the same job now as when they started work? Are they still working for the same company? Or, have they learned new skills? How will work and opportunities be different in your career, compared with those of your grandfathers and father's? What part will the knowledge age likely play in all this?

The rate at which jobs are "invented" and ended has increased dramatically over the past twenty-five years, and there are no indications that either change or the rate of change will stop. It is estimated that today's employees will hold a particular kind of job for about four years - then, something external will cause the worker to find a new position doing something very different. Or, maybe, you'll just want a new challenge.

The skills you learn while you're in college will be very important as you follow your career path. One of those skills must be learning to learn, to accept change, and to keep your options open. On-line research and learning will play an increasingly important role as the way to keep skills current and to learn new skills. Consider the pros and cons of f2f and on-line learning. For f2f, it most likely involves travel (transportation, lodging, meals) and time away from work (not only the time for the actual training but also the travel time). Worse, that f2f training is done at the convenience of those who schedule and instruct, not at times that best suit your needs. Not only is your work not getting done, but also you're missing one child's soccer play-offs and another child's first spring concert performance. Or, you'll miss the local opera company's performance of *Aida*. (OK, so you didn't really want to go to *Aida*, but you still have to find a way to "make it up" with your spouse.) For on-line, there's no travel, and you can do the studying and take the test at times that suit your schedule (work and personal). Even better, if you prefer to study at night rather than during the day, you can do it. Which leads me to the matter of social skills.

Social

What kinds of relationships can be communicated over the Internet? Can you have "high tech and high touch" (Naisbitt, cited in Green, 2000)? Statistics don't support it. To return to Kraut and Lundmark's study, they found that "(f)or every hour each week spent on-line, (their nearby social circle) shrank by about 4 percent" (Stoll, 1999). Remember, it doesn't matter how much time you spend chatting with someone at a distance or how close you may feel, if you need help, that person can't be there.

Brown and Duguid (2000) talk about "social glue." It seems that communities can and do form around shared documents. It's nothing new, and actually predates the printing press. It's the basis for religion, for political ideologies, and for scientific communities. Certainly, the Internet has been of great help for the scientific communities - they're able to share documents and see each member's contributions, literally, as the changes are being made. And what about Paul's letters to the early Christians? They provided "social glue" that kept the communities together. Lenin used the written word to stay in touch with his followers during his exile from Russia.

Is "falling in love" with someone you've met on the Internet comparable to the tradition of the "mail order brides" in our own Wild West days? Certainly, the women traveled long distances to meet, and marry, men they knew only on the basis of one or two letters.

The concept of "copy and paste" predates computers - it's a tradition dating from the early days of newspapers. With today's on-line newspapers, you can pre-select what kind of

news stories you want to receive. No more flipping through an entire newspaper looking for only those stories of interest to you. What is communicated to you is what is of interest - kind of a niche-publication to the *nth* degree. The downside is that it's a further distancing of any sense of community. Time was, we had the same newspaper to read, and we could discuss the same points. Now, with my "Daily Me" (Negroponte, 1995), that may no longer be possible. Hmmm ... is this the end of the f2f *coffee klatch*[19] at the corner store? Ah, yes, memories of home and an example of that "English" we'll be using as we communicate!

Conclusion

What is important - *what* you communicate or *how* you communicate it? MIT announced that it would post all course content to its web site within the next 10 years, and it would be available free to whomever wanted to access those documents. MIT's position is that it's not the course content that is important; rather, it's the person behind it - the professor who shares what s/he knows through interactions with his/her students. It comes back to communication.[20]

I think the future, living in a connected world, holds much promise. Think of a world where humanism is the norm. I think it will be more difficult for nations to hate each other just because their governments have different agendas. And, it will be harder for governments to have secret agendas and to control the press.

In July 2000, a colleague posted a comment to a listserv. Included in her signature block was the following. Unfortunately, the source is unknown.

> "I fully realize that I have not succeeded in answering all of your questions.... Indeed, I feel I have not answered any of them completely. The answers I have found only serve to raise a whole set of new questions, which only lead to more problems, some of which we weren't even aware were problems. To sum it all up...In some ways I feel we are confused as ever, but I believe we are confused on a higher level, and about more important things."

Any questions? Are you confused? I sincerely hope so. This journey should not end just because the course is ending. It's my wish that your inquiry into the issues of communication will continue and will expand beyond the few topics included in this chapter. I'd enjoy being a part of your journey - I'm holly@utep.edu.

How are those seat belts? Thanks for sharing the ride, but don't unbuckle yet! - because you have just entered the Knowledge Age, and this is what will transform the world. We'll see more change in the next 50 years - or less!! - than has been seen in the preceding 5,000 years. And communicating in a connected world will be at the center of all of it. This is your world. Make the best of it!

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[1] "Mediate" means to be in the middle. A letter is mediated communication - the letter is between the sender and the receiver and carries the message.

[2] Using computer technology to carry the message, whether between two people, a designated group of people, or, potentially, to everyone with Internet access.

[3] Some of the more common are: Yahoo! http://www.yahoo.com, Google http://www.google.com/, Excite http://www.excite.com/, AltaVista http://www.altavista.com, and HotBot http://www.HotBot.com. There are more - search for "search engines" at any of these sites. As you explore the Web, you'll find that some search engines are specialized - and that some "work" better for your particular style of searching. Experiment and have fun!

[4] United States Code, Title 17 - Copyrights - http://www4.law.cornell.edu/uscode/ is one site with the full code, linked directly from the US House of Representatives site.

[5] Napster lost its case and appears to be complying with the court order. Aimster offers a different product - no central directory of files and a "swap" among friends who use AOL's "buddy list" service. Here's a thought: "Under federal law, an Internet service provider is liable for contributing to copyright infringement only if the infringement is brought to the provider's attention and it fails to act (Harmon, 2001)." Interesting - the only way the infringement can be reported is if the "reporter" violates the laws that prohibit eavesdropping!

[6] "Fair use" allows a third party to use a copyrighted work without specific permission from the copyright holder if it's for educational purposes, it's a fairly small part of the total work, and the use doesn't impact the potential market for or value of the copyrighted work.

[7] For a great definition of "cookies," visit http://www.cookiecentral.com/content.phtml?area=2&id=1 . Or, find your own site!

[8] Trust is a crucial component of any successful team effort. Base teams will help you develop the skills of building trust because you'll be together for the entire course. However, at work, you will find yourself in teams of shorter duration that are charged with a specific project. It's important to know how to form quickly, to establish working rules - and trust that each of you will fulfill your obligations.

[9] In one of my own on-line courses, Alan took charge of our first team project. He had experience with virtual teamwork from an earlier semester - and he's a career military officer. His initial comment was, "Anyone who doesn't report in at least once a day is subject to a poke in his/her virtual ribs!" We pretty-much saluted (virtually), clicked our (virtual) heels, and said "Yes, sir!!!" It worked. A later team where that ground rule was not established had lots of problems with team members "going AWOL."

[10] That's why your base group will do part of its work "virtually." It's one thing when you can look a non-participating team member in the eye - its quite another situation when you're relying on mediated communication!

[11] A consortium is an international combination of entities with a common purpose. In education, it could be all institutions of higher education or it could include some for-profit entities. Here's a couple examples: Western Governors University http://www.wgu.edu/wgu/index.html and Universitas21 www.universitas.edu.au

[12] Before I moved to El Paso, I thought I understood and spoke Spanish. Wrong! My one Spanish professor even accused us as a group of speaking "Spanglish." What do you mean - "sopa" isn't "soap"!?! Each area takes on its own flavor, and it's taken me years to rebuild confidence that I can - sort-of - speak Spanish.

[13] *Star Wars* has made its impact on the language. "Dark side" is a common phrase when Internet issues are being discussed.

[14] Here's another challenge building - natural selection. We read about it as plants and animals face extinction. It's not nice, but can we keep everything "alive" forever? And, what is the definition of "forever"? None of us are immortal.

[15] Keep in mind that Clifford Stoll is extremely connected - he's had computers as a major part of his life since the 1970s. I think his points are well taken as long as you keep them in context and accept them as a challenge for your future lives. You won't stop the rate of change - how can you make it exciting to be at the leading edge for more of us?

[16] http://www.botknowledge.com has resources. "An Intelligent Agent, or bot, is a piece of software that can autonomously accomplish a task for a person or other entity...once triggered."

[17] I typed "studnet" as a search word on Yahoo!.com. I did get one match, and it illustrates one feature in how HTML can be coded. Note that even though the site is about "student" issues (which is what I was trying to search for), there is code in that descriptor that picks up the search word. That's how you can get to some really strange sites!

809 Projects Lab - The Student Run Projects Lab located in 809 EERC, home to the MTU branches of IEEE, IEEECS, AES, HKN, Mobile Robotics Team, and parts of FutureCar as well as assorted independent **studnet** projects.

[18] I did a quick search - I found the best results on Google (Yahoo!, Altavista, and HotBot didn't "get the concept" of what I was asking). Here's one site that looks promising, and there's a book available that contains the same information. It's a large file (660K) - http://longman.awl.com/kennedy/research_online.rtf

[19] Google "searched the web" for this word - there's at least 10 pages with that term. What is it? It's a get-together just to talk and catch up on what's happening in everyone's lives.

[20] Here's a fun look at on-line education: http://www.rpi.edu/~winner/apm1.html What do you think?

Questions

Define "mediated." Write a brief history about one form of mediated communication that is not on-line.

2. Is communication easier on-line? Are you more willing to "speak up"? Why or why not?

3. Why is e-mail not private?

4. Who owns what is posted on the Internet?

5. Define "underground code." Define "encrypted."

6. Define "asynchronous." Describe at least one form of asynchronous communication.

7. How would you bring a missing member into virtual team participation? Remember, you won't see him/her f2f.

8. What are the advantages to a consortium for international business arrangements?

9. Define *"lingua franca."* Is there a common language on the Internet? What is it? How do you know?

10. Is on-line shopping better and easier than going to the store? Why? Defend your answer.

Should "back doors" be legal? Defend your answer.

12. Define "digital divide." Is it an issue here in El Paso?

13. Distinguish among "data," "information," and "knowledge."

14. What problems can occur if a Web site is a part of your references?

15. Define "spiders." List several search engines.

16. Does the Internet strengthen or weaken relationships? Why?