

Finding the way: a perspective on the Knowledge Democracy and community learning

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I have a confession to make. There are no video games at our house—no Nintendo, no Game Boys, no Playstations. There are no televisions in the rooms of my children. We have one family computer, right out in plain view in a corner of the dining room, where it is easy to keep an eye on what our children are doing. None of my children have cell phones, beepers, or Palm Pilots. My oldest child occasionally does a book report using a four year old word processor that is not made by Microsoft.

To be honest, my children are not heavy users of technology. And frankly, I neither care nor worry. In this country today, I believe we have an unhealthy focus on technology without understanding how it should serve us, and I believe that we have an unhealthy focus on skills development as opposed to learning. I'd like to talk about the second issue first. When I mention skills development, I mean a preoccupation with which tool to use, rather than asking the more fundamental question of, "Do I have the right tools?"

I am approached constantly by educators, businesspeople, and parents who are worried that their students, their employees, or their children don't know how to use one tool or another. Not only that, it is often framed in the context of a discussion about one's religion. If we were talking about screwdrivers, the analogy would be having violent arguments about the relative merits of Stanley screwdrivers versus Craftsman screwdrivers, when the real questions should be, "Do

I have the right kind of screwdriver,” or “Is a screwdriver the right tool for this job?”

This becomes particularly absurd when applied to our K12 and higher education schools. When parents believe that their children are better people because they know how to use a 390 megabyte word processor to compose a 2 page book report, something is wrong. When schools cheerfully and continually spend precious dollars to upgrade and support hundreds of copies of that 390 megabyte word processor instead of paying our teachers a respectful salary, something is wrong. Children can learn all the word processing skills they need with much less expensive programs that are more appropriate for teaching and learning activities. Contrary to many parents fears, children who don't grow up using corporate bloatware will not be irreparably harmed.

Buying stuff without planning how it is going to be used is a waste of money. This worry over computers in the schools is, in part, just that--worry. Stuff is just part of the equation. There are four things that must happen in schools if our children are going to acquire useful technology skills.

- First, you do have to buy some stuff. Computers, network cabling, network equipment, and software.
- But once you have bought the stuff and dropped it in the classroom, we have a responsibility to train teachers how to use it. We are rarely doing this well, if at all. Today we fly over schools, drop computers in the classroom, and expect our teachers to become hardware troubleshooters, software installers, and operating system experts. In addition to all their regular duties. And at low pay.
- We need to supply proper technical support to teachers so they can teach. Remember, we are calling them teachers, not computer system

administrators. If we give them stuff, we need to do so in a way that helps them do their job. Too often, schools buy computers without putting the proper support structure in place.

- Finally, we have to supply teachers with classroom ready content. There is much evidence that if we give teachers good online materials--lesson guides, reading lists, work plans, and supplementary materials--they will use those materials and use them effectively. But what we do most of the time, to use a paper analogy, is to hand them a ream of blank paper and a pencil and tell them to write a book. While they are doing their system administrator chores and their teaching chores.

Schools will complain they don't have the money to do all these things, but while all those computers are sitting in classrooms, the same school may be spending a fortune on copy paper, copiers, copier maintenance contracts, and a staff of people and trucks to haul copy paper from school to school.

If schools get wired, paper should get fired.

If we are going to give people this great new communications medium, let's require a modest 15% a year reduction in paper use in schools, with the savings reallocated to proper technical support for teachers. Incidentally, wouldn't it be a good thing to stop cutting down all our forests for interoffice memos? Which, incidentally, we printed on our new computers.

America is an impatient country, and unfortunately, we seem to be becoming less and less patient as time goes on. We love what I call the atomic bomb approach to problem solving. When we identify a problem, we want to fly over it at 50,000 feet, drop a bomb, and fly home in time to eat dinner. Flying over America in B-2 bombers dropping notebook computers on our schools and neighborhoods is not

going to solve any problems. I'm sorry, but I've been deeply involved with computers and technology for twenty-nine years, and I have never seen a computer solve a problem yet. Computers do not solve problems. People solve problems. Computers can help people solve those problems, but in the end, if I want my kids to get a good education, I'll bet on one well paid schoolteacher over one overpriced computer any day.

Making good use of technology in the classroom is a long term effort that requires that we get out into classrooms and talk to teachers about their needs, rather than thoughtlessly buying whatever is offered in the marketplace.

What has happened in Blacksburg?

Since 1993, the Blacksburg Electronic Village has been helping people get connected; the BEV experiment was the first in the world to offer Internet access to an entire community. So we have a long history of working with ordinary people and trying to understand their needs. A 1999 survey indicated that more than 87% of Blacksburg citizens use the Internet. To me, the most interesting thing we have learned in the eight years of the Blacksburg Electronic Village experiment is that people are deeply dissatisfied with the technology. When we ask people how they feel about being "wired," they routinely make almost identical comments, no matter who they are or what they do.

I love my email, and I hate my computer.

What a stunning indictment of the dot-com economy. If consumers were making those kinds of comments about any other kind of household appliance, it would be receiving front page coverage in every newspaper and magazine in the country. Can we imagine saying that about a refrigerator? "I love cold food, but I hate my

refrigerator.” Or a toaster? “I love the crunchy toasted taste of my bagel in the morning, but I hate the wretched device that cooks it.”

If a manufacturer made a toaster that worked as poorly as most of our computers do, we would simply buy someone’s else’s toaster. But instead, we happily spend hours on hold waiting for toaster technical support, or timidly asking friends for help....”I hate to bring this up at lunch, but I’m really having a problem with my vegetable crisper bin; I can’t figure out how to set the temperature.”

I am not here to complain about the computer industry. We have a lot to learn about how to design and build humane computing devices. I am concerned that as a country, we seem to have relinquished common sense when it comes to technology, and I am particularly concerned about the effect on our children. If we find ourselves using a tool or a piece of software that does not meet our needs, we need to stop using it and find something that does.

And if we cannot find something that does, we need to create consumer coops and buying alliances that will hire manufacturers to build the computers and write the software that we need, instead of meekly accepting watered down versions of computers designed for corporations which have full time technical staff to keep the bloody things working. I call this approach “tough love” for computer companies; we need to let our technology companies know that we think we can do better.

We have this national obsession with stuff. We need more stuff. We are bombarded with ads to buy more stuff. We worry that we don’t have enough stuff. But not long after we buy our stuff, we often throw it out. And then complain that we don’t have enough landfills for all the stuff.

Technology has the potential to unleash human capital. By focusing on education,

not technology, community networks offer people new futures. This is not something that buying stuff will ever be able to do.

When we are considering the use of technology in the classroom and in the community, when we are considering technology to support learning and teaching, when we are considering technology to support administration and to enhance communications, there are some questions we should be asking:

- **What is the vision and purpose of the organization?** I am continually amazed at the organizations that cannot answer this question thoughtfully, dismiss it out of hand as irrelevant when buying technology, or simply look at me strangely when I ask this, as if I just arrived from another planet and need to be treated gently. Yet I will argue that organizations that can both answer this question and require that all technology acquisitions must support the vision and purpose of the organization will rarely make bad choices. Let me give you an example. If the vision is to help teachers communicate better with each other, with parents, and with administrators, I can tell you it will be very easy to ensure success in introducing technology in the classroom. But if the goal is simply to get a computer in every classroom and figure out later what to do with them, a failure to communicate will be the pre-ordained result.
- **What are the needs and constraints of the organization?** Unfortunately, a lot of organizations do not really know, and avoid the messy, difficult process of finding out. It's a lot more interesting to debate the merits of adding a 30 gigabyte hard drive and DVD player to the computer order.
- **What are the needs of the humans using the technology?** This is another hard question to answer. It means taking the time to listen to people, to think carefully and respectfully about their needs, and to do the very

difficult job of balancing individual needs with organizational needs. It's more fun to add a SoundBlaster card to the computer order.

- **Will we be able to serve our customers, clients, or students better with technology?** We all know the answer to that is, “maybe,” but for some reason we have all agreed never to say that out loud.

Blacksburg: research in action

We recently conducted the second of two surveys² we have done of a group of parents who subscribe to a mailing list run by one of our local school board supervisors. We have been trying to find out what happens when you diffuse technology widely in the community. This school board member sends out a thoughtful and lengthy note about schools issues every six weeks or so. The first time we did this survey, we found the results quite interesting, but were cautious about the findings because it was not a truly random survey. Parents were asked to fill out and return the survey, and those that do may tend to be more interested in technology or more interested in community issues.

But now that we have conducted the survey twice, we can look at the results between the two sets of data and have more confidence [1]. What we found was that:

- In 1996 79% of parents found the mailing list helpful in clarifying issues. In 1999, 88% found it helpful.
- In 1996 82% felt more involved in school issues because of the list. In 1999 91% felt more involved.

- In 1996, about 13% were more likely to attend a public meeting because of the list. In 1999, almost 21% were more likely to get out of the house and attend public meetings on school issues.
- In 1996, 53% of parents were more likely to write to a school official because of this list. In 1999, all of those parents were still writing to school officials.
- In 1996, only about 4% of parents said they had spoken at a public meeting because of information received on this list, but in 1999, 27% had not only gone to a public meeting on school issues but had also spoken at that meeting.

In 1996, when we conducted the first survey, 369 parents were on the list. In 1999, 860 parents were on the list. A simple mailing list is getting people involved in community affairs. I want to emphasize that this is twenty year old technology. Someone with an IBM XT could be participating this forum. Being involved in the online life of the community does not require next generation processors, Open GL graphics cards, multimedia sound, or any stuff we are always being urged to buy, lest we feel technologically inadequate.

Anecdotally, in Blacksburg and in other communities with community networks, we keep hearing the same story over and over again: When community and civic groups go online, attendance at their meetings goes up.

Despite the second study just announced that still claims that the Internet makes you lonely, I still don't believe it. I think we need more studies in communities like Blacksburg where nearly everyone is online, so that we can study how regular people use the medium. I don't think the Internet gives you a bad complexion and poor eyesight. You are not inclined to spend all your time in your basement in the dark hanging out in chat rooms, no matter what Ann Landers says. What we see in

Blacksburg is that people online tend to get more involved in community affairs, tend to get out of the house more, and tend to feel closer to other people in the community. Note that I said they tend to feel closer to other people, not other computers.

I mentioned at the beginning of my talk that I believe we have an unhealthy focus on technology without understanding how it should serve us. We hear much talk today about digital opportunities. As a technologist, most of what I do is help people understand the opportunities. But this digital opportunity, like all opportunities, can be pursued responsibly or irresponsibly. *Irresponsible* pursuit of digital opportunities means putting technology first. I'm not interested in what "the computer needs." I hear this over and over again as I talk to people about how technology has changed what they do. When I ask the very simple question, "Why do you do things that way?" too often the answer is, "Because that is what the computer needs." I'm sorry, but this is completely and utterly wrong—and I don't blame the user, who is probably just trying to type a two page memo.

A *responsible* approach is to ask what the users needs, and begin from there. We need to consider not only the needs of our organizations, but also the effects of technology on ourselves and our organizations. When we talk about "connecting" our organizations, too often it means, "What stuff should we buy?" Some of the questions we should be asking instead are:

- **What does being "connected" mean?** I would suggest that we have no idea whatsoever. We are in year three or four of a forty or fifty year cycle of dramatic change. This year's latest toy—some new PDA, an 800 megahertz processor, a DVD drive—is utterly and completely irrelevant. To find out what being connected means, we need to slow down, we need to get the emphasis off what brand of screwdriver to buy and starting asking if a hammer would not do a better job of driving nails.

- **What is the effect on individuals?** I have been talking a lot about organizations and organizational needs, but we need to remember that organizations are, ultimately, a collection of individuals working together toward some common goal. We need to be respectful of individual needs, and we need more investment in human capital rather than technology capital. If technology succeeds in making our organizations better, it will be only because, as Margaret Mead noted, a few dedicated individuals succeeded in bringing about that change.
- **What is the effect on the community?** The focus of my work has been primarily at the community level, and again, I will emphasize we hardly know what the effects are or are likely to be in five, ten, or twenty-five years. The research I mentioned provides just the barest of clues. I am continually astounded at the human creativity that can be unleashed when individuals are provided with a little education and a little encouragement. All of the really interesting uses of the Internet in Blacksburg came not from me, but the citizens of the community. More than three quarters of Blacksburg's forty churches are online—something I never imagined in my wildest dreams. When I ask the ministers and parish elders why their churches have Web sites and email addresses, they have a very simple and very direct answer. They want to keep young people coming to church, and the young take communication via the Web and by email for granted.

In Blacksburg, people are using to technology to reach out to other people, to meet, to play, to pray, to help solve community problems. In Blacksburg, we are all working together, neighbor helping neighbor, friends helping friends, and we are all part of one digital opportunity.

If we are to pursue this digital opportunity responsibly, I think we have to ask what

we mean by community. And I will note that schools themselves form a community within the larger geographic community. Laurence Boldt^[2] offers some ideas about communities and the individuals that form them.

- Out of many individuals, out of each of us stepping outside ourselves, a community is formed. Note that this is direct opposition to the too common question we hear today, “What’s in it for me?” Stepping outside ourselves is a conscious act that, for a moment, puts the community before individual or organizational needs.
- Within in the community, there are many individuals, participating in the community enterprise with the goal of meeting the common good.
- Every person in the community has a unique gift to offer. The challenge to the community whole is to find a way to put each person’s gifts to the best use.
- We are all part of the community whether we “choose” to or not. Our actions affect everyone else in the community. And I would add that technology affects everyone in the community, whether or not we are conscious of the effects.
- Real abundance in the community is inclusive. Community abundance must consider the common good, and no one person can enjoy abundance at the expense of others. Abundance must be a shared goal.

Let us engage in some word play. I just mentioned the ideas of the individual, the community, the common good, and abundance. What if we add one more word—technology? Should we be asking, “How does technology respect the individual and the community?” I think we should. Should we be asking, “How

does technology support the common good?" I think we should be asking that as well. And finally, I think we should be asking how technology supports the vision of a community in which there is abundance and prosperity for all.

The knowledge democracy

Ray Connor^[3], a member of Parliament in Queensland, Australia, believes the real issue is about knowledge. Ray believes that we should be preparing for the knowledge democracy. Owning a computer and having Internet access in the home does not automatically enable a person to find a better job, become more involved in the community, take a more active role in civic affairs, or to better participate in the practice of democracy. Connor notes that as the cost of computers continues to fall and more homes have computers, the real issues will begin to emerge:

- Knowledge Have/ Have nots
- Skill Have/ Have nots

In Connor's vision of the knowledge democracy, communities that are serious about solving the digital divide will focus less on acquiring "stuff" (i.e. buying computers) and focus more on comprehensive training programs at all levels, including K12 schools, higher education, and adult education. In the knowledge democracy, one's level of participation will be based heavily on one's ability to acquire information, turn that information into knowledge, and use that knowledge to improve one's own socioeconomic situation or that of someone else in the community.

It is important to remember that humans create and use knowledge; the computers and the networks are just convenient tools. Digital information systems store and manipulate data and information, but these systems cannot create knowledge--that is a uniquely human ability.

Community networks like the Blacksburg Electronic Village and the more than 200 other community network projects nationwide can play a key role in solving the knowledge divide problem by identifying new skills needed, developing training and learning programs, and delivering training to the community.

At a higher level, community networks can also play a key role in educating our political leaders, our business people, and our traditional educators (for example, our K12 teachers) about how to adapt and extend existing community systems in this time of change. Connor proposes a series of issues that communities must be prepared to discuss openly:

- Who owns information and who can distribute it?
- The right to communicate freely as a basic principle of citizenship
- Protection of personal information and the need for privacy
- Needs of the community for open communication
- Community investment in telecommunications infrastructure
- Who will teach citizens to transform information to knowledge?
- Changing relationship between government and citizens

Investing in community

We need to remember that computers are a means to an end. I do not believe the end goal should be....”have a lot of stuff.” When we decide to buy stuff for people without knowing clearly what people might do with the stuff, it denies the marketplace the opportunity to respond. I’m talking about the marketplace of human capital.

We talk constantly about “investing” in a community, but how often do we offer citizens the opportunity to actually do that? Often, investment means getting

someone or some organization outside the community to “invest”, in the belief that we cannot prosper without external help. Why not rethink the notion of “community investment” to include meaningful investment by residents and citizens?.

If we are serious about investing in our communities, I think communities need to realize that the one of the best strategies may be to simply do it yourselves. If communities need funds to get started, they can form a non-profit telecommunications business and sell shares to the community, for \$1/share--this will ensure that every man, woman, and child in the community can invest in and take ownership in this endeavor. When someone buys a share of stock, print out a stock certificate and give it them. Today, all we read about and talk about are Internet stocks. But buying an Internet stock often just ends up making someone else rich. If we are going to buy stock, let's buy stock in where we live, creating public/private partnerships that create locally owned and operated telecommunications systems and jobs--and keep our stock investments and telecommunications fees at home.

I categorically reject the notion that the purpose of the Information Age is to get us all to buy more stuff. The Information Age should really be called the Communication Age. For the first time in human history, we, as individuals, as people with valuable thoughts and ideas--human capital--can communicate directly with whomever we choose, without any intermediaries. My job, running a community network, is to teach people how to tell their own stories. Simply and directly.

Is there any stability in our lives?

I have talked about change a good bit, and of course, we hear that all the

time....things are changing, the technology is changing us, change is accelerating, get used to change, learn to change if you want to survive.....Survive what? What kind of life are we designing with technology if the goal is to merely survive?

I was in a meeting about a month ago when this very topic came up again. All of us were professionals that are reasonably comfortable using technology as part of the toolkit of our work, and yet we were all plainly exhausted by “change.”

I was sitting quietly, listening to the discussion about change, and how tired everyone is of it, when it occurred to me that if we must accept the notion that everything around us is changing, where is the stability in our lives? And I continued to sit and think about that question. I looked around the room at these people I knew, some for many years, and reflected upon the changes that had taken place in the years I had known them—changes to the organizations to which we belonged, changes to the communities in which we lived, changes to the tools and technology we used to communicate. And I asked myself again, “Where is the anchor in my life?” “Where is the bedrock that I can cling to in this storm of change?”

I continued to think about this as the conversation continued on without me. Then I sat straight up because the answer just popped into my head without any conscious thought.

In a world where change is a constant, the only things we can rely on are our relationships with others—our family, our friends, our co-workers, the people in our community with whom we live and work.

Suddenly many things became clear to me. First and foremost, all work is ultimately based on relationships, no matter what we do. Second, technology

should and must support human relationships. If we are going to use technology, then technology must make it easier for us to communicate with those with whom we have a relationship. This is the proper role of technology, in the classroom, in the family, in the workplace, and in the community.

References

- [1] Kavanaugh, A. and Klagge, J. (2000) *User's Perspective on School Board Mailing List*. Unpublished manuscript.
- [2] Boldt, Laurence G. (1999) *The Tao of Abundance*. New York: Penguin
- [3] Connor, Ray (1999) *Notes on the knowledge democracy*. Private communication.

For more information, visit the following Web sites

Blacksburg Electronic Village

<<http://www.bev.net/>>

Association For Community Networks

The AFCN provides peer support, technical advice, and other services to member communities starting or managing networks.

<<http://www.afcn.net>>

Community network design and development information

<http://www.bev.net/project/digital_library/>

<<http://www.bev.net/project/evupstart/>>

Communities of the Future

COTF is a nationwide organization focused on helping communities create transformational change, with a special focus on consensus decision making.

<<http://www.bev.net/cotf/>>

About the author

Dr. Andrew Michael Cohill is an information architect with an educational background in architecture, ergonomics, and computer science. He is the Director of the Blacksburg Electronic Village (BEV) at Virginia Tech and an adjunct professor in the Department of Architecture at Virginia Tech. He teaches courses on community networking and information architecture regularly.

As Director of the BEV, he is responsible for the design and development of electronic village services, supervises a research and development group, and oversees an operations group that manages the BEV office and administrative services. He also directs the long range planning effort for the group, and serves as an advocate for networking in the university and around the Commonwealth of Virginia. Cohill has served as Director of the project since July of 1993.

The Blacksburg Electronic Village, an outreach project of Virginia Tech, is designed to link Blacksburg's citizens to each other and to the world, through computers and networks. It is serving as a model community for the data "superhighways" being planned for the United States. A variety of innovative services and network access methods have been developed for the BEV. Applications include education, medical uses, government and general information, and other retail and commercial opportunities. Current BEV work includes the design and development of a community MSAP (Multimedia Services Access Point), and the development of a community fiber infrastructure.

Blacksburg has become widely known as the "most wired community in the world." In the fall of 1999, more than 87% of the town's residents were using the Internet, and over two-thirds of the town's businesses had made the Internet a regular part of their marketing.

Cohill has an international reputation for his work network design for communities, and spoke recently in Paris on his work. He is also a member of the National Advisory Board for Communities of the Future, a national coalition of thinkers and policy makers concerned with sustainability and health of communities. He is a member of the Association For Community Networks, and is currently serving (1999 - 2000) on the AFCN Board of Directors. He is the President-Elect for the AFCN, starting in 2000.

He has also published numerous papers and book chapters, and is an author and co-editor of the popular book about Blacksburg (*Community Networks: Lessons learned from Blacksburg, Virginia*), now in its second edition, and recently translated into Japanese. He is currently working on a new book on communities and technology that will be published in the spring of 2000.

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