# Networks and the knowledge democracy: Nine challenges for communities

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We hear a lot today about digital opportunities. I think we need to think about this notion carefully. I do not believe buying books or a CD online represents a digital opportunity. I don't think hanging out in a chat room talking about TV shows represents a digital opportunity. I don't think the opportunity to buy more stuff is digital at all, but there are a lot of companies which seem convinced that the appropriate role of citizens today is to get wired and then buy something. The real issue is whether or not we know what to do with the stuff.

People always ask, "What is like to live in Blacksburg, where 87% of the residents have Internet access?" The interesting thing is that very little has changed. We still leave our homes to work, to play, and to participate in the life of the community. No one has sprouted antennas behind their ears like Ray Walston in *My Favorite Martian*. But the way we think about communicating has changed.

America is an impatient country, and unfortunately, we seem to 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.

In Blacksburg, we recently conducted the second of two surveys[2] 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. 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 nearly one thousand people involved in community affairs.  I want to emphasize that this mailing list is twenty year old technology.  Someone with an IBM XT could be participating this forum.  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 making 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.

We have a very active BEV Seniors group in Blacksburg, and what I find fascinating is that most of these people did not know each other before they got online, even though many of them had  lived in the community for thirty or forty years. Today, BEV Seniors use the Internet to organize a busy social calendar that makes me exhausted just to read it--BEV Seniors are out and about, organizing tennis matches, scheduling charitable work, registering for exercise classes and canasta, and even more astounding, and teaching young people in the community how to use

the Internet.

More than three quarters of Blacksburg's forty churches are online as well. 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 continuum.

## *The knowledge democracy*

If there is a disparity, I do not believe it is digital. My good friend 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 gaps will begin to emerge, between the knowledge have/ have nots, and between the 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 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 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 (e.g. K12 teachers) about how to adapt and extend existing community systems in this time of change. Based on Connor's concerns, I believe that there are  nine challenges that communities must be prepared to discuss openly:

- ***The changing rights to information – who owns information and who can distribute it?*** We have all heard of Napster, the software program that has, depending upon who you believe, is freeing musical artists from the tyranny of record company contracts, or crushing the music industry and any incentive musicians have to create music.  Right now, the Napster debate has touched few of us.  Unless you are a recording artist or a college student, you are not likely to have a strong opinion about Napster.  But Napster is only the start of many such struggles, and each struggle will draw nearer and nearer to our own lives and livelihood.  Today, there are companies that provide "free" online forums and other services, but only after you agree that

anything you write or express in those forums becomes the property of the company. As we speak, people's rights to their own thoughts and ideas are being transferred to companies far from where they live and work.

- **_The right to communicate as a basic principle of citizenship._** In the past, the great fear of censorship was directed toward the government. Today, I no longer worry about that. I do worry about companies that are willing to provide us with Internet access only after we sign contracts that greatly restrict our freedom of speech. Companies like AOL and Time Warner routinely place restrictions on what you can say and do on their services. This is their right as private companies, and I have interest in restricting that right. But if that is the approach they intend to pursue, then we need alternative, community–managed networks to provide public forums for community and civic discussions.

- **_Privacy issues, especially as they relate to personal information and the needs of the community for open communication._** Privacy is another issue, where, in the past, we were concerned about what the government knew about us. But today, things have again shifted; I worry now about what companies know about me, about my family, and about my community. And I believe there is a role for government here. I do not believe voluntary industry controls on personal information will work, and we do need laws that prescribe what companies can do with personal information and how it is used.

- **_The issue of who should own telecommunications infrastructure, and how communities can ensure a sustainable future by prudent investment._** For the past hundred years, we enjoyed the best telecommunications systems in the world because we awarded private companies public monopolies for those services. But those times have past; the world has changed. In a competitive telecommunications marketplace, who is considering telecommunications

services for the common good?  Can we imagine what traffic would be like in our communities without stop lights and traffic laws?  Can we imagine what travel in our communities would be like if roads were not managed by the community?  The private sector does not have an inalienable right to dictate the level of services provided to communities without regard to the common good. If we truly believe that every person in our communities should have reliable, affordable, high speed telecommunications services, then communities must begin making modest investments in telecommunications to create competition in the marketplace.

- ***This confusion over knowledge vs. information and the ability of citizens to transform information to knowledge.***  Today, we see a tremendous emphasis on skills development rather than critical thinking.  Unfortunately, this trend is most pronounced in the the technology sector.  If we were talking about mechanical skills, the discussion would center around what brand of screwdriver you owned rather than whether or not you really understood how to use various kinds of screwdrivers. The fact that most people use Windows does not mean it is the best choice, or the only choice. And the idea that our kids won't be able to get jobs if they don't know how use Microsoft Word is just silly.  I am more concerned about their ability to write and think.  I have great faith in our children: if they can learn one word processing program, I am quite sure they can learn another, or even learn to use three or four, if they need to, just as most of us can use both flat head and Phillips head screwdrivers. Judging a person's abilities by what brand of software they use is wrong, just as wrong as judging them by what designer name appears on their clothes, and just as wrong as judging them by the color of their skin or by their religion.  In a world drowning in information, rote learning is less important than being able to transform information into knowledge.  I do not think we are teaching our children that very well.

- **_Changing relationship between government and citizens._** We hear about and read about e-government constantly, but do any of us really know what we mean by that? I think e-government is more than sending out water bills by email (even though that can save government and taxpayers a lot of money). I think it is more than having a local government Web site.  In the past, information was scarce and expensive; as a citizen, it was often difficult and time-consuming to remain informed and engaged in governance issues like zoning, growth, and the environment. And it was easy for government to hide the decision-making process behind the high cost of disseminating information. But things have changed.  Today, the Internet makes it affordable for governments large and small to reveal completely the workings and activities of government to citizens.  This means citizens no longer have an excuse for not being informed, and it means that local leaders no longer have an excuse for not informing.  This is a radical change.  We do not fully understand the implications yet, but we must begin to experiment and to try new ways and approaches to local governance.

- **_Leadership crisis._**  Today, at every level of government, we read about the people we call leaders doing things we are ashamed to discuss with our children.  Graft, embezzlement, bribes, mismanagement, and worse.  While there are still many good people serving as our leaders,  I think we all have the same uneasy feeling that something is not right. Part of the problem is that in an increasingly complex,  fast-paced, and interconnected world, our leaders do not have the the experience and knowledge to lead effectively. There are many reasons for this, but in local communities, I believe one key factor is the death of the merchant class[4].  As transnational corporations like Wal-Mart have driven locally owned businesses out of communities, we have lost our many of our local leaders.  In the past, local business people often played a key role in local community development as well as provided

important role models for our youth.  In the past, as young people worked in the local drugstore alongside the owner, they learned not only how to work responsibly but also learned that it was possible to grow up to own your own business and to take an active part in community affairs.  Today, our youth are not learning that at Wal-Mart and Burger King.  What they learn is that they are interchangeable, replaceable cogs in a global corporation that is barely aware of their individual contribution.  If we have youths that perform well in those jobs, they are often moved away and out of the community.  These corporations are mining our communities for intellectual and social capital, without any reimbursement for the loss suffered by the community as our youth keep moving away, never to return. Where will our next generation of local leaders come from?  What are we doing to help our youth become the leaders of the future?

- **Decision-making crisis.**  In this interconnected, global society, the old top down hierarchical decision-making systems no longer work.  When everyone has complete access to any and all information, it becomes important to find new ways to enable citizens to play a broader role in discussing community issues and challenges, and then to reach a consensus in the community on how to meet those challenges.  We must move away from "I win--you lose" adversarial decision-making, and embrace new approaches that can be "I win--you win" for all parties.

- **Futures orientation.**  Too often, communities know they must change, but continue to look backward to the ways and systems that worked twenty or thirty years ago.  The second half of the twentieth century was remarkably stable with respect to how things were done in communities.  But we must now accept the notion that we have entered a new era in which the rules of the past no longer fit.  Communities that want to thrive in the new Information Age economy must adopt a futures orientation that encourages

citizens and local leaders to look forward rather than backward.

## *Communities and relationships*

I was in a meeting a couple of months ago when I had a kind of epiphany. A group of us were meeting to discuss a new project. Everyone at the meeting was a professional that is 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 neighbors, and the larger community of people with whom we live and work.*

Suddenly many things became clear to me about myself, about my work, about my role as a person who encourages the use of technology. First and foremost, 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.

## *What does this mean for communities?*

It means first and foremost that communities must stop worrying about what stuff to buy and start paying more attention to relationships. Permit me to pose a very simple question: "How does your community get along with the surrounding county?" Or vice versa: "How does your county get along with local communities?" One thing that is critical to understand: the network simply does not care about geographic boundaries. Let me say that again: the network ignores boundaries. To put it another way, the network loves aggregation. Or, finally, regions that collaborate constructively on technology issues will prevail. What does collaboration mean? It is all about relationships, and valuing them above stridency, valuing the relationship above proving yourself right, and valuing the relationship enough to give as well as to take.

The chief challenge of the Information Economy and of the Knowledge Democracy is not, and again, IS NOT, understanding and using technology. The chief challenge over the next forty to fifty years is to be able to reach consensus on key issues. Communities that learn how to do this will flourish. Communities that do not will wither away.

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.

And I am not talking here about the Silicon Valley marketplace, which has an obvious conflict of interest when it urges the federal government to buy computers for school children. I'm talking about the marketplace of human capital.

I said that we need to let the marketplace of human capital work. In Orange, Virginia, Hornet Technologies, a non-profit project, has high school students building brand new computers from scratch. Once built, they sell them to the school district for use in the classroom. As they expand, they are beginning to sell computers to the county government and local libraries. All of sudden, this tiny rural area has a computer manufacturer in its midst. This is what I mean by letting the marketplace of human capital work.

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. Community networks 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.

## *The roles of community networks*

I believe that community networks have important, long term roles to play in the community. There are six key roles played by community networks.

- Create and maintain public spaces in cyberspace. There is a reason why the Boy Scouts hold meetings in local schools or the local library instead of the local pizza parlor. We need commercial-free space in cyberspace just as we need public, commercial-free space in our physical communities. In fact, communities have a long tradition of funding parks, libraries, rec centers,

and other public spaces. Community networks provide the same kinds of public spaces in cyberspace.

- Provide training and skills development needed in the Knowledge Democracy. Local leaders, school teachers, librarians, business people, young people, and ordinary citizens all need help. Community networks can play a key role in offering short courses and seminars, and also acting as a clearinghouse for other institutions offering technology training.

- Support community economic development initiatives focused on the Information Economy. Communities need to adopt a more diversified economic development strategy that recognizes 90% of the job creation in this country comes from small business. Unfortunately traditional ED initiatives are often just chasing the elusive car manufacturing plant. The jobs of the future look nothing like the jobs or businesses we have today. In Blacksburg, we have a successful Web designer who three years ago was making $6/hour reading water meters part time. Today this single mother makes $25/hour designing Web sites. That kind of micro-business is the economic development of the future. And community networks will play a critical role in transforming work and business.

- Develop a community-owned telecommunications infrastructure to support the Information Economy. Inner city and rural areas of the country are not getting the high bandwidth infrastructure they need to compete in the Information Economy. Communities must begin to invest in a community owned telecommunications infrastructure, and there are three key components: telecommunications duct, dark fiber, co-location facilities, and a local data exchange point, which we call an MSAP.

- Community-based information technology consulting and information

resource.  Community networks can play an important role by providing local government, schools, and non-profits with high quality technical support, system administration, and information services like email.  It makes no sense at all to have a half dozen organizations in the community all trying to run a mail server.

- Design, develop, and support widespread use of publishing in the community, at the personal, organizational, and community level. Publishing includes Internet-based broadcasting and distribution of printed text, voice, video, radio, and other multimedia contexts.

## *Investing in community*

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. Fortunately, the roads of the 21st century are built of fiber.  An interstate highway typically costs about a million dollars a mile.  A mile of fiber, of the kind that might be used to wire up a downtown area, can cost as little as  $15,000/mile for materials if installed by the community itself.

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 and give it them.  Today, all we read about and talk about are Internet stocks.  But buying an Internet stock usually 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.

There is ample precedent for this kind of enterprise in the community-owned electric and telephone coops that were started in the early twentieth century because the large electric and telephone companies would not provide services to rural areas.  Every community, no matter how small, has the human and financial capital to start now. Abingdon, Virginia, a small town of 7000 in southwest Virginia, followed this model, and today in Abingdon, you can get a fiber connection to your home for $35/month.  And this not fiber to the neighborhood or fiber to the curb--the fiber comes right into your home or business.  The county government cut their telecommunications costs in half by moving county offices onto the fiber backbone. You can stand in the middle of Main Street in Abingdon, and as you look down the street, nearly every single business is connected by fiber to the Internet. In the twentieth century,  communities that were not located near public highways had great difficulty participating in the economy.  In the twenty-first century, communities that do not build public information highways will have great difficulty participating in the Information Economy.

Communities should be thinking about creating Internet Enterprise Zones (IEZ) as part of a comprehensive plan to revitalize downtown areas and to create high tech jobs in the community.  An Internet Enterprise Zone would have:

- Cheap, ubiquitous dark fiber available for lease to businesses and telecommunications companies.
- Co-location facilities for telecommunications service companies.

- An MSAP in the co-location facility with high bandwidth connections to regional and national networks.
- Tax credits for businesses that locate in the IEZ.
- A variety of training and management programs to help start-up and microbusinesses enterprises grow quickly and efficiently.
- A community network to spur the broad use of technology by citizens, business, and government.

But as communities do this, it is important to have the end goal in mind. And once again, the end goal is not to buy a lot of stuff and hope something good happens. Defining community, defining what it is we think we are trying to save, is critically important. If we do not take the time to define our communities, do not take the time develop a consensus decision-making process that gives everyone an opportunity to speak up, if we do not nurture the next generation of leaders, and if we do not take the time to make thoughtful decisions, the technology will be all for nought.

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.

We all have stories to tell. But today, communities and citizens are being challenged by a new breed of transnational corporations that want to strip away both our privacy and our right to publish our stories online. Instead, they want us to buy more stuff. We need to stop worrying about what stuff to buy, and think more about teaching ourselves and our children how to use the stuff we already

have.

I believe that as individuals, our wealth and our abundance is rooted in our ability to tell our stories. Small business entrepreneurs have a story to tell. Neighborhoods trying to regain a sense of community have a story to tell. Senior citizens and second graders have a story to tell. Local government has a story to tell. Community networks help everyone in the community--regardless of who or what they are--tell their story without needing permission from someone else. If we believe in the vision of the knowledge democracy, we must know how to tell our stories.

### Acknowledgements

# References

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[2] Connor, Ray (1999) *Notes on the knowledge democracy*. Private communication.

[3] Whitmore, Ed (1998) *The death of the merchant class*. Private communication.

[4] Smyre, Rick (1997) *Rearranging the deck chairs*. Charlotte: Communities of the Future

# 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.communitiesofthefuture.org/>

**The New Democracy Center**
The NDC has a special focus on communities, technology, and local governance issues.
<http://www.newdemocracy.org/>

# 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.  He is a widely published writer,  and author and co-editor of the popular book about Blacksburg (***Community Networks: Lessons learned from Blacksburg, Virginia***), now in its second edition.  He was recently appointed co-chair of the Governor's Task Force on eCommunities for the Commonwealth of Virginia.

Cohill has an international reputation for his efforts in network design for communities. He is a member of the National Advisory Board for Communities of the Future, a national coalition of thinkers and policy makers concerned with the sustainability and health of communities. He is a member of the Association For Community Networks, and is currently serving on the AFCN Board of Directors. He is the President for the AFCN  through 2001.  He is a founding member of the International Community Learning Centers group, and is a member of the International Futures Network. He is currently working on a new book on communities and technology that will be published in the fall of 2000.  He is works as a consultant to communities and is in wide demand as a speaker on technology issues.

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 75% of the town's businesses had made the Internet a regular part of their marketing.  More than 60% of residents are estimated to have broadband access at home, at work, or at both.  Cohill has served as Director of the project since July of 1993;  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.

It is serving as a model for "smart communities" being developed  across the country. 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.

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