Nine questions for community networks

Presented by

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1. Are we ready for the knowledge democracy?

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1) Are we ready for the knowledge democracy?

Ray Connor, a good friend of mine and Member of Parliament in Queensland, Australia, has identified the knowledge democracy as a key issue to be addressed by community networks. Connor notes that once communities, regions, and countries have addressed basic human rights issues as identified by the United Nations, the key issues that must be addressed are:

- Increasing knowledge
- Dissemination of knowledge must be democratic

There is a divide, but it is not digital. Internet access in the United States is typically a third less costly that cable TV access, but we don't hear anyone talking about a cable TV divide. Most Americans do not have cell phones, but we do not hear about the cell phone divide. Most Americans do not have Caller ID, but we do not hear about the Caller ID divide. The divide is not about the stuff we own. The Digital divide is NOT about who owns computers and who does not. Or who has Internet access and who does not.

I do believe in a knowledge divide. I do believe in a democracy divide. 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 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 the community.

It is important to remember that humans create and use knowledge, the computers and 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. Connor lists a series of issues that communities must be prepared to discuss openly:

- The changing rights to information – who owns information and who can distribute it?

- The right to communication as a basic principle of citizenship.

- Privacy issues, especially as they relate to personal information and the needs of the community for open communication.

- Who should own telecommunications infrastructure, and how communities can ensure a sustainable future by prudent investment.

- Knowledge vs. Information and the ability of citizens to transform information to knowledge.

2) What is community?

Christopher Alexander is one of the most important architects of the 20th century because he is one of the very few designers who has taken the time to think about how buildings relate to both individual needs and community needs. In other words, he is an architect who does not build monuments to himself. To paraphrase Christopher Alexander:

- Even if you state clearly what a community has to do, there is still no way of finding out what the community must be like to do it.

- *Community is a matter of intuition*.

- Even if you state what a community has to do, it is very difficult to find out if this is what the community **ought to do**.

Alexander notes that needs tend to be vague. Instead, he says, we should state needs in terms of tendencies, or the behaviors that describe how people try to fill needs. We cannot "engineer" communities, though we try continually. Writing a set of specifications about what the community must be like cannot account for the behavior of the individuals in the community. We need to develop consensus-based processes that address not only problem identification and problem solving but also we need processes that allow communities to cooperate constructively over the long term. We need processes that get us beyond crisis-driven community management.

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 $5/foot for materials (or $2640/mile) if installed by the community itself.

If communities need funds to get started, 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.

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. In Texas, with statewide programs like TIF and access to organizations like TCRC, you have a significant advantage over communities in other states.

We talk about community a lot. At this conference, the word community is bandied about constantly. But what do we mean? In Blacksburg, as an example, community means different things to different people. There are some real estate developers in the Blacksburg area who believe that community is just the raw material of business deals, and even in remote Blacksburg, sitting astride the Eastern Continental Divide, we have developers busily developing our mountainsides with complete disregard for the effects of that development on schools, roads, the environment, and the quality of life. But these developers see themselves as prosperous and important members of "the community".

In the Blacksburg area, we have some senior citizens who think the community is there to serve only their retirement needs, and consistently vote down improvements to schools, even though we have schools with eight hundred children in buildings designed for half that many. But these citizens see themselves as important members of the community.

The first step in a technology project is to forget about the technology and develop a shared vision for the community, and to develop a consensus about how to respectfully and efficiently give everyone an opportunity to be heard.

My good friend Eddie Whitmore, the county administrator of a very poor, rural county near Blacksburg, says that in rural America today the biggest problem we have is the death of the merchant class.   Forty years ago, rural communities had prosperous downtown areas filled with

businesses owned by local people vested in the making the community a success. Today, all those businesses and businesspeople are gone, and have been replaced by the manager of Wal-mart or the manager of the local McDonald's. These new businesspeople don't own their businesses, and are not and cannot be vested in the success of the community in the same way our old Main Street merchants were.

What is more, these Main Street merchants provided role models for the next generation of businesspeople in the community. If you had a job in the local furniture store or the local drugstore, you saw the owner there every day, and learned that owning and running a business was within anyone's grasp if you were willing to work hard. Now our local businesses, if you can call them that, are owned by faceless transnational corporations and the local jobs provided by these companies are ruthlessly designed to weed out initiative and creativity; instead the jobs are designed to be support interchangeability of staff. This maximizes corporate profits but does not teach our young people how to succeed in the business world.

So when we talk about defining our communities, we have to think about new strategies to nurture and support local leaders, who in the past often came from the local business community.

When we talk about defining our communities, I believe the key advantage for rural communities is quality of life. In the forty years following World War II, we saw a steady emigration from rural communities to the cities of America. But that has shifted in the past ten years. There is now a small but clear trend of people moving back to small towns. What are they looking for?

They are looking for safer schools, short commutes, a real sense of place, a real sense of belonging. Yet these immigrants are also bringing city problems with them--sprawl is consuming our countrysides, destroying the very thing that I think most of us who choose to live in small towns value most--the natural beauty of where we live.

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, do not take the time to nurture leaders, and do not take the time to make thoughtful decisions, the technology will be all for nought.

3) Are we using technology appropriately? (or....Do we know what a network is?)

Sometimes. But most often we are allowing the technology industry to drive how technology is being used (or more often, mis-used). The technology industry has demonstrated very little interest in helping communities use technology to solve problems because that would mean actually taking the time to understand customer needs. And hardly anyone is doing this.

In Blacksburg, the most common refrain is "I love my email, and I hate my computer." This tells me that what is most important to people is the ability to communicate with others, and that they don't really care about the stuff. It is amazing to me that the technology industry--what we are calling the engine of the American economy--does not think that there is anything wrong with selling their customers stuff that is hated. Can we imagine saying that about any other consumer product? "I hate my toaster." "I hate my refrigerator." "I hate my car."

A key problem is understanding exactly what a network is. Networks are not just "stuff". But because it is easy to sell stuff and hard to listen, companies are busy promoting stuff without taking the time to tell us why we need the stuff. There are four parts to a network:

- **People** are the key component of any network. If people are not actively using a network to accomplish tasks (civic, business, personal), there is little point in having a network. Networks connect people to one another, and that is the only reason to have a network.

- **Content** consists of data and information created by the people using the network and accessed by other people on the network. Content takes all shapes and forms. Information sent by an email is an example of one of the most common kinds of content; the information found in a Web page is another example.

- **Services** enable the flow of content. An email server and a Web server are examples of information services. Servers require both hardware and software to work.

- **Infrastructure** is the cables and network electronics required by services to transfer content among people. The cable and electronics is what most people think of when one

mentions the word "network."

All four components are necessary to have a useful network, but note that infrastructure, the "stuff" of networks, is one part of a larger system that starts and ends with people communicating with other people.

4) Will technology (or community networks) solve our problems?

The answer is no. For now, for the future, for ever, people will solve problems. Technology can help people solve problems, but the technology by itself will not solve problems.

As an example, technology in the classroom has created little measurable effect on learning, primarily because schools don't, won't, or can't reform the curriculum. Without adequate training of teachers, without adequate technical support for those teachers, and without adequate classroom-ready content, every dollar spent on stuff in schools is wasted. Furthermore, the technology industry has shown little interest in the problems of schools, and so has been selling machines to schools designed for corporate use (with the exception of Apple Computer).

If technology is not going to solve our problems, then why are we even talking about community networks? I believe that community networks have important, long term roles to play in the community.

There are five 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.

- Provide training and skills development needed in the Knowledge Democracy. Local leaders, school teachers, librarians, businesspeople, young people, and ordinary citizens all

need help.

- 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. But 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. Communities must begin to invest in a community owned telecommunications infrastructure, and there are three key components:

  > Dark fiber leased out on a first come, first serve basis to anyone business in the community.

  > A community-owned co-location facilities where local ISPs and information businesses can rent space to put servers and network equipment.

  > A local network interexchange point designed to support very high bandwidth network services. We call this an MSAP, or Multimedia Services Access Point. We have had one operating in Blacksburg since early 1999, and for one ISP, it reduced traffic load on their regional backbone by 90%.

- 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.

5) Does technology have any value to communities and neighborhoods?

Absolutely. Early indications show that technology, used appropriately, can be a powerful agent for increasing civic engagement, increasing attendance at meetings, getting people out of their home and more involved in community affairs, and actually organizing to solve problems effectively.

In Blacksburg and other communities where there are active community networks, we see just the opposite of all the dire predictions that we see in the press.

The Internet does not make you lonely. It does seem to make people who were already lonely a little more lonely. Normal people are using the Internet in healthy, constructive ways, and are easily able to control their usage. I'm sorry, but if you start with a group of people who are spending several hours of their free time on the Internet every day, you have already, by definition, found people that could use some counseling. The Internet does not make you sit in the basement in the dark, peering at your computer screen. It does not make you wear thick glasses and it does not give you a bad complexion.

The Internet does not even make you stay home. In fact, we see just the opposite. A study in Blacksburg of a mailing list run by a local school board member for parents of school age children showed that

- 87% found the list "very helpful" or "extremely helpful" for keeping up to date with issues
- 82% felt more involved with school issues
- 13% increased participation at public meetings
- Spoken communications with public and school officials increased 31%
- Written communication increased 50%

Anecdotally, civic group after civic group is reporting to us that their attendance at meetings goes up after they began using a Web site and a mailing list to communicate with and organize members. And we are talking about very simple technology that costs very little to provide. This is where we begin to see the great disconnect between the "stuff" vendors and community needs.

Email, mailing lists, and the Web are mature technologies that can be used simply and effectively to create change in the community without spending a fortune. Communities don't have to start with expensive servers, high priced software, and hard to maintain systems offering glitzy but slow to download, information–poor eye candy.

We have only scratched the surface here. In Blacksburg, with most residents online, we are just now seeing fundamental changes in the way community and civic groups are thinking about the way they do things. This is a long process, and we need to set our own pace. We are embarking upon a change that I believe will take thirty or forty years to see through. We do not have to let the "stuff" vendors set the pace.

6) What works when trying to apply technology creatively?

What works is understanding the problem clearly first. It's important to note that this requires:

- recognizing that problem definition is very hard work,
- reaching a consensus among often disparate and polarized community groups,
- rethinking how we select our leaders,
- accepting that traditional, hierarchical, top down processes for community development don't work
- Creating a vision for the community that is not focused on technology but rather identifies what the community thinks is important to the long term health of the citizens, the businesses, and the local environment
- requires finding and using technologists who want to be part of the problem-solving process, not part of the "selling stuff" process.

Tips for moving forward

- Establish stable funding
- Hire expertise from people you can trust
- Plan lightly
- Distinguish between what you can do and what you want to do
- Do what you can first
- Don't buy more than you can use
- You don't need very much (don't worry about the stuff--worry about what you are going to do with the stuff)
- Committees solicit and organize community ideas
- Individuals write plans, committees approve plans
- Individuals execute plans, committees delay them
- Partner with the eager

7) How do we obtain the right information tools?

- We need to make the free market work for us instead of waiting for the government to fix monopolistic business practices
- We need to get off the technology train we are on, and start our own train.
- We need to understand better what problems we are trying to solve.
- We need to write our own specifications for hardware and software.
- We need to form buying coops that represent millions of users.

We can only do this by changing the dynamics of the marketplace. Today we must buy technology based on what the producers of that technology want to sell us. In fact, this flies in the face of four hundred years of free market development. The sooner we can effect a change to a user-needs driven marketplace, the sooner we will get the right information tools.

The technology industry in a very unhealthy phase right now where both software and hardware is often being deliberately and intentionally designed to force users to make expensive purchases constantly just to keep our current systems working. Even though the industry is in a phase of rapid innovation (which will eventually slow down), it is not unreasonable to expect that any particular combination of hardware and software should remain functional and productive for at least eight to ten years.

The key here is to exercise the power of the free market and move our technology base toward products that are:

- Less expensive to purchase
- Less expensive to operate
- Less expensive to update and maintain
- Products that scale gracefully to support additional functions and features

What does this mean? It means that we have to:

- Stop letting technical staff make technology decisions that affect the broader community. Psychologically, IT people tend to represent only about 5% of the population; the tools they prefer to use and are likely to choose are least likely to serve the rest of us.

- Stop letting technical staff pick solutions that encourage the "high priest of computing" complex. That is, technically complicated systems that are difficult to maintain increase our dependence on the high priests (the "kiss my ring" syndrome).

- Stop letting technical staff pick solutions that force rebudgeting of more and more dollars to IT departments to cover the cost of supporting poorly designed systems.

It means we have to:

- Hire technical staff with experience on more than one computing platform. Unfortunately, most of the programmers and system administrators in the world have never used Unix, Linux, or Macintosh systems, and are completely unqualified to make an informed decision about the best systems for community use. Insist on working only with

people with multi-platform experience.

- We have to pay more attention to the open source software movement. Linux is paving the way in this area, and Apple recently released key portions of their Unix-based systems into the open source system. The AFCN is beginning to look at how it can encourage the development of open source applications designed specifically to support communities. It is not necessary to use scarce community funds to finance $400,000 homes in Silicon Valley and Washington state, but that is what is happening today in many places.

- The open software movement, while very useful in some instances, will not solve this much deeper issue of getting the right tools. With respect to communities, a fundamental flaw in the open software movement is that it is producer driven, not user driven. So far, open software has tended to be developed based on the interests of the producers of the software. What we need is software based on the interests and needs of the users of that software.

- It means we have to start aggregating demand for information services in the community instead of building islands of inadequately maintained systems. It is much cheaper and much more efficient to run a single mail server for an entire region than to have individual organizations try to run their own mail servers, and probably do it very badly. I know of a community where teachers pay the local community network for email accounts with their own money because the local school system can't keep the mail server working reliably. This gets to the heart of the situation in which high priests of computing spend too much of an organization's money because they are more interested in building an empire than in doing the right thing for the organization. Community networks have a key role to play as the non-profit and local government provider of information services.

8) How do we ensure that communities can prosper?

When we talk about communities and prosperity, I think there are two issues we need to think about. The first is what we mean by growth. I am troubled by the adjectives that we are attaching to growth. We don't just talk about growth any more; rather we say "smart growth" or "sustainable growth." I'm sorry, but there is no such thing as "smart" community growth. There is a reason we stop growing when we reach the age of twenty. If there is such a thing as smart growth, I've seen only in nature, where every living thing, including our own bodies, knows exactly when to stop growing--now that is smart growth.

But calling growth smart does not make it less destructive, and calling it sustainable does not halt the changes it makes on our communities. Let me hasten to say that I am not some tree-hugging anti-growth nut. Blacksburg is located in coal country, where most smaller communities have suffered greatly as the coal business has evaporated over the past thirty years. Clearly these communities need to find new ways to grow.

What I am saying is that we need to better understand the effects of growth on the community, on our schools, on our quality of life before making decisions that are going to affect us so deeply. Even where growth is needed and important, I think we need to understand that growth is not the goal. Growth is a means to an end. So the question is what is the endpoint?

We should be aiming for communities where everyone can enjoy a prosperous and healthy life. Max Gail, the founder of the wonderful concept of the LAP, or Local Access Place, talks about the idea of communities that are committed to abundance--not the kind of dot-com abundance that makes a few people rich at the expense of millions of others, but the idea that communities can come together with a shared vision, a vision of balance and mutual respect, and that by doing so, there is enough to meet the basic needs of everyone in the community.

Second, when talking about helping communities prosper, I want to return to the notion of infrastructure.

In the 20th century, the prosperity of communities was defined largely by the proximity of an

interstate highway to the community. Communities near interstates prospered, and those too far away withered.

Today we are faced with a nearly identical situation. Communities with high bandwidth access within the community and to regional and national networks will prosper. Communities that lack that access will wither.

I do not believe rural communities can wait for transnational corporations to do this job for them. Instead, you must do exactly what our leaders did seventy years ago when it was impossible to get telephone and electric service in rural areas. You must do it yourself. Municipal electric utilities, telephone coops, and electric coops wired rural America in the 30s and 40s. It's time to roll up our sleeves and do it again.

In Abingdon, Virginia, the Blacksburg Electronic Village helped this little town of 7000 put in a fiber network. Today in Abingdon, any home or business in the downtown area served by fiber can get a fiber Ethernet connection into their home or business for $32/month. I'm not talking about fiber to the neighborhood, or fiber to the curb, or any other mediocre bandwidth solutions, I'm talking about fiber straight to the home, or even to the desktop if you want it.

This project is a perfect example of a public/private partnership. The town invested in dark fiber, and leases those fiber pairs out to a local ISP. The local ISP provides all the service, technical support, and customer billing, which creates high paying local jobs and returns taxes to the community. The town gets a lease check once a month for the use of the fiber, and they are doubling the length of the fiber network because it has been so successful. Any community in America that has the will can begin building an all fiber, community-owned network. You may have to start with one building, or one block of downtown, but I can assure you that it will spread as fast as you can install the fiber.

In Blacksburg, our target bandwidth to an individual home or business is 25 megabits. Not a shared 25 megabits, but a dedicated 25 megabit pipe--and even more important, with symmetric bandwidth. We think this will be adequate for at least the next twenty years, based on the use patterns we see in Blacksburg today. Fiber can deliver this easily.

Unfortunately, I don't see a single transnational telecomm company planning for this. What is

worse, none of them want to support symmetric bandwidth. Their vision is make us consumers of information...to pay them for every bit we look at. My vision is make all of us producers of information....and here we return to a core notion of the Knowledge Democracy. In the Knowledge Democracy, we all have the right to be knowledge and information producers, not just information and entertainment consumers.

9) Are we telling our stories?

I will close with one final thought--each of you should tell your own story. And I know that we all have stories to tell. We can tell stories of the work that we do, we can tell stories about our lives, our problems, and our successes. We can tell stories about our hobbies, our passions, and our loves. We can tell stories about our hates and fears in the hope that we reach a new understanding of ourselves and of each other.

I will caution you once again that you must not worry about the stuff. When you start thinking about the stuff, instead of the community, you are telling the story of the stuff vendor, and not your own story. When someone comes to tell you a story about their stuff, insist that they listen instead to your own story about the community. If they won't do this simple thing, throw them out. Grab them by the seat of the pants and show them the door.

The great power of the 'net is that it allows us to return to this most fundamental and important human activity of storytelling. Computers and networks will never tell stories, but humans can and will. Television and the movies are storytelling of a kind, but there we must listen to the stories of others. The 'net lets us tell our own stories, it gives us an audience, and it allows us to talk directly to our listeners in our own words.

This is why the 'net is important--it gives back to us the power that we lost during the Industrial Revolution when we began changing from rural economies based on small, tightly knit communities to what has evolved into the faceless global suburb. We must take our communities back, and we must do it by telling our stories, one at a time, to whomever will listen, and we will learn as we do.

For more information, visit the following Web sites

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

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.

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 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.

Cohill has an international reputation for his work 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 sustainability and health of communities. He is a member of the Association For Community Networks, and is currently serving (1999) 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.

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