Thinking Chaordically:
The future of communities and technology

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Design Nine

> *We have to look for power sources here, and distribution networks we were never taught, routes of power our teachers never imagined, or were encouraged to avoid...We have to find meters whose scales are unknown in the world, draw our own schematics, getting feedback, making connections, reducing the error, trying to learn the real function...[1]*

In the 20th century, economic development and community development reflected the nature of of manufactured goods--all were rooted in physical places. Manufactured goods, compared to the weightlessness of information, are difficult and expensive to move. Collaboration and cooperation across regions and across political boundaries was, like moving manufactured goods, hard to do and hardly seemed necessary.

The Internet has created a new and difference economy, in which goods and services have no weight, and are not tied to place. Political boundaries are invisible to the Internet. Does this mean that political entities no longer have relevance? Just the opposite is true, but in a way that most of us do not yet understand fully.

Thomas Jefferson's original vision for democracy in the United States was that most power and influence would be concentrated at the local level, with limited roles for state government, and an even smaller role for the federal government. In fact, Jefferson would be depressed and dismayed at the growth in state and federal governments; it is neither what he envisioned nor what he planned.

Both in the United States and in other countries, telecommunications and related information services are provided and regulated by a confusing array of public and private entities, with pricing structures that are more reflective of the cost of government regulation than the actual cost of delivering a particular service like voice telephony or Internet access.

As deregulation of the telecommunications becomes more common, the potential exists for local and regional collaborative efforts in telecommunications that returns much control to local communities, and out of the hands of national regulators and large telecommunications conglomerates. The current situation in most countries, in which these providers offer services countywide or across multiple regions, leave local communities with little control or influence over the kind of services they receive or the cost they pay.

Community networks (CNs) and community technology centers (CTCs) have evolved over the past fifteen years to provide a wide variety of services, ranging from training classes in neighborhood access centers (relatively low tech) to providing sophisticated networks that include Internet access and commercial quality information services (e.g. email, Web hosting, database design, network management, etc.). For many years, these organizations (CNs and CTCs) were largely ignored, but the rise of the digital divide as a political issue and the changing landscape of

the telecommunications industry have led to an interesting set of interlocking and conflicting challenges and opportunities.

- CTCs and CNs now find themselves competing for funds from a wide variety of organizations with little background or expertise in technology, but with more sophisticated fund raisers and better political connections.

- As more users become connected to the Internet, demand for services and network access often increases, especially in rural areas and urban inner cities that are often underserved by the private sector--creating opportunities.

- As some CTCs and CNs expand their service offerings and provide more and better services, criticism from the private sector that they are "unfair competition" increases.

- An increasing base of users is steadily driving down the cost of network access and information technology. But the lowered costs of technology has been accompanied by a parallel increase in overall complexity in the network, in hardware, and in software. CTCs and CNs that rely largely on volunteers are struggling to provide the systems and services that users are demanding.

- Even CNs and CTCs that are operating successfully as nonprofit businesses face the same technology challenges--to be a full service provider requires expertise in depth that may be difficult for any single CN or CTC to maintain over the long term.

- CNs and CTCs that operate in the same geographic region may offer overlapping and duplicate services, raising costs for all of them, and by extension, limiting service offerings.

- CNs and CTCs are in a double bind because of the failure of the hardware and software industry to provide technology solutions that are more suitable for small organizations and personal use. The majority of companies in the technology industry continue to provide watered down corporate "solutions" that are very expensive to support and maintain over the life cycle of the product. Large corporations (who are also ill-served) have large support staffs and large technology budgets that hide the problem. But CNs and CTCs end up trying to support costly and completely inappropriate systems that users expect because they are not aware of the alternatives.

The challenges focus on competitive pressures, a changing regulatory climate that continually redefines the "rules," and the need to constantly extend technological expertise. But opportunities also abound--increasing demand for services and a fragmented private sector that leaves many communities without adequate access and services.

Telecommunications Infrastructure Issues

> *To compete and thrive, the nation needs ubiquitous broadband, or high-speed, data connections. Yet the evidence is growing that market forces aren't going to provide them either quickly or universally. So it's time to bite a national bullet. It's time to run high-*

capacity glass fibers to every home [2].

In the United States, the 1996 Federal Telecommunications Deregulation Act has had mixed effects. The law provided legal deregulation, but many confused that with marketplace deregulation, which the law was never intended to address. The United States government expected that legal deregulation would be followed swiftly by marketplace deregulation (i.e. a competitive marketplace for services), but the telecommunications services market has changed much more slowly than anyone hoped.

To confuse things further, some states attempted to preempt the Federal law with state laws that limited the ability of communities to enter the telecommunications marketplace. Virginia's HB335 effectively ended innovation in community-managed networks until 2001, when the law was struck down by a Federal Circuit Court, which clarified the Federal law by strongly stating that any entity, public or private, has the right to offer telecommunications services [4].

The rise of the "digital divide" as a political issue in 1999 after the release of the United States Department of Commerce report Falling Through the Net [5] tended to focus attention on racial and socioeconomic "divides," but by late 2000 growing numbers of communities began to recognize geography as a valid determinant of a service and access divide. In particular, rural communities, because of the low population density, tend to have the fewest number of service providers and the highest cost of service. The 2000 Commerce report showed that urban areas were almost twice as likely to have broadband access as rural areas [6].

These disparities offer incredible opportunities to community networks and partners of community networks. Internet access fees offer regional and community network projects the consumer demand and cash flow to underwrite not just access but related no fee and low fee service offerings. The difficulty is that network access services require a level of network expertise that most CNs and CTCs currently lack; although the cash flow potential is high, so is the initial capital investment and ongoing operational expense.

Networks are most cost effective when designed on a regional basis; this means that collaboration and partnerships are critical, not just among CNs and CTCs, but also with local governments and economic development agencies.

A Chaordic Alliance

> *We now live in a world of such complexity, diversity, and multiplicity of scales that there is little possibility of achieving constructive, sustained governance with existing concepts of organization. People, everywhere, are growing desperate for renewed sense of community. Shared purpose and principles leading to new concepts of self-governance at multiple scales from the individual to the global have become essential. [3]*

Dee Hock, the former CEO of VISA International, the multinational credit card company, coined the term *chaordic alliance*. A combination of the words *chaos* and *order*, Hock's vision is to create a new kind of organization that is based not on traditional, hierarchical, top-down decision-

making, but rather on shared purpose and consensus.

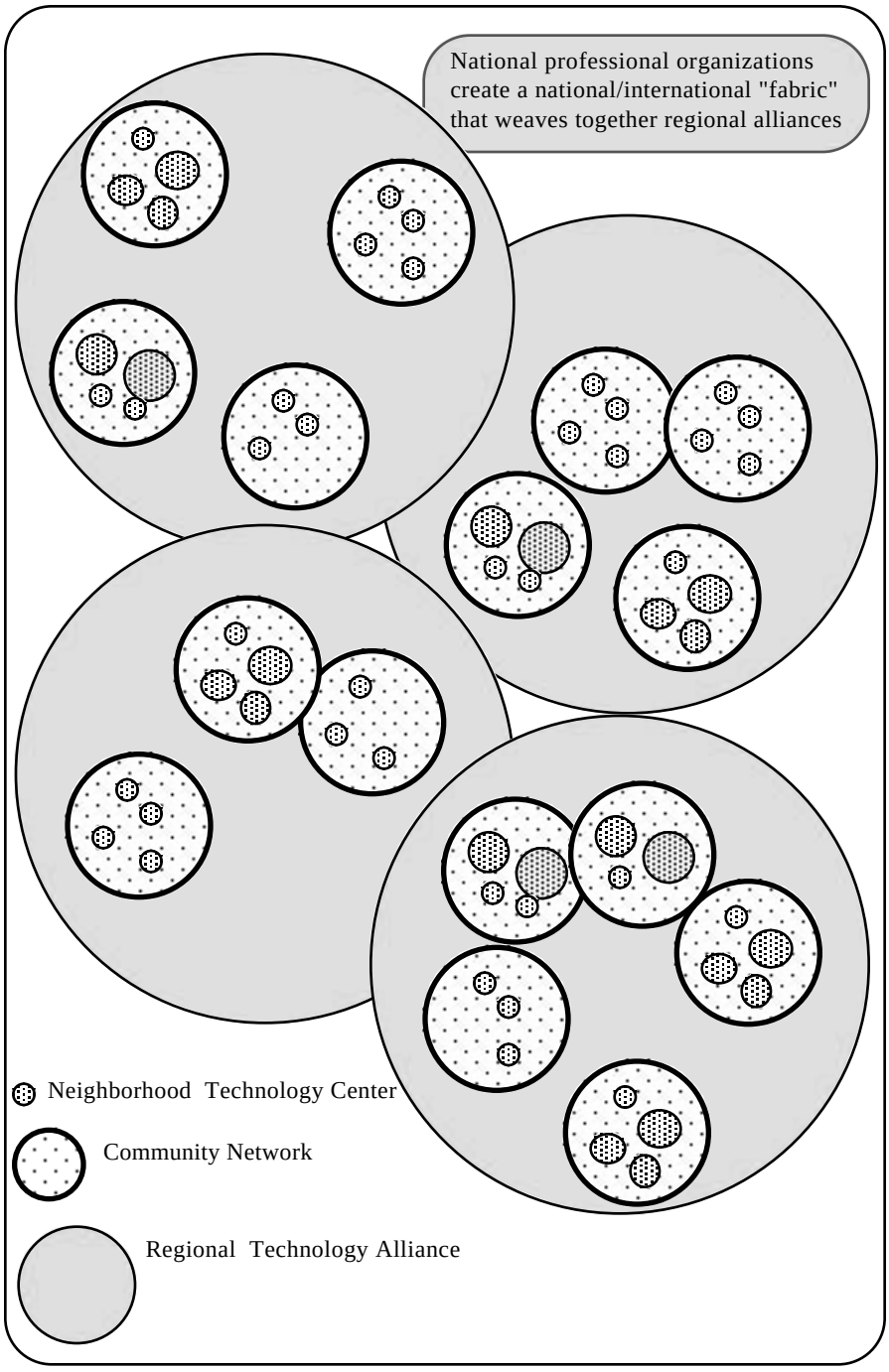

Figure 1: Chaordic Alliances in the National Organization Context

A chaordic alliance does not rely on heroic leadership to make decisions (and having the organization blindly follow), but rather the alliance does only those things that all the partners agree to in advance--that is, the organization initiates actions and activities only when all members

of the alliance agree. This is a fundamentally different approach that discards the I win--you lose antagonism for a collaborative model based on I win--you win. Consensus is most likely to be reached when all parties find something of value in the outcome.

Figure 1 on the previous page illustrates chaordic technology alliances, with four primary, equal, and autonomous organizations, each with its own goals and services. These four organizations are:

- The Neighborhood Technology Center (NTC) which provides intra-community services. There may be one or more NTCs in a community, and the NTC is functionally equivalent to a Community Technology Center.

- The Community Network (CN) provides services across an entire community, and may collaborate on programs and services with local NTCs.

- The Regional Technology Alliance (RTA) provides services across an entire region, and works collaboratively with CNs and NTCs on service and infrastructure projects too large for any individual CN or NTC to handle alone.

- National organizations provide services to all three community service groups (the NTCs, the CNs, the RTAs) as well as individuals and other interested organizations.

Readers may be tempted to view Figure 1 as a hierarchical diagram, in which NTCs are "less than" CNs and in which CNs are "less than" RTAs. But there are no lines of command and control between these entities. NTCs would continue to be independent organizations, but they find it in their self-interest to collaborate with the local community network on projects or to share service costs (e.g. a community network may run a mail server for several NTCs). Similarly, CNs may collaborate with NTCs and other CNs as needed. The Regional Technology Alliance provides an organizational mechanism to facilitate the "coming together" of individual projects.

As an example, an RTA might purchase backbone Internet access wholesale and resell it to several community networks and NTCs in the region--reducing costs for all who collaborate in the arrangement. RTAs could also play an important role in helping to develop regional infrastructure projects (like inter-community, long haul data networks) require extensive coordination among multiple political entities. Regional infrastructure projects offer communities and citizens the ability to declare independence from cost and service manipulation by the large telecommunications companies.

Neighborhood Technology Centers

Neighborhood Technology Centers, which are also referred to as Community Technology Centers or Community Access Centers, are an important of the four groups, for it is at the neighborhood level that people actually touch and use the technology. NTC staff provide the essential human contact that is so important. It is also important to note that I am intentionally decoupling NTCs from CNs for the sake of discussion; most successful community networks run NTCs--indeed, it is a large part of the reason for their success. Neighborhood Technology Centers usually offer two or more of the following activities [7]:

- Public Access to computers, related information technology (e.g. digital cameras, video equipment, etc.) and Internet access.

- Preschool and family activities, including after school activities and elder services.

- Adult education, including technology training, literacy classes, GED programs, and distance learning programs.

- Career development and job preparation, along with assistance in finding work.

- Electronic publishing, including Web site design, writing classes, online news site management, video, and multimedia production.

- Small business support, including training on electronic commerce, management seminars, and micro-business and home-based business support.

NTCs may benefit the most from a chaordic alliance by being able to reduce the costs of providing technology, which would allow them to spend more on delivery of services directly to neighborhood organizations and citizens.

Community Networks

Community networks provide citizens, businesses, local governments, and public institutions like schools and libraries with technology services and expertise affordably. The work of the community network is to listen to the community, work collaboratively to identify needs, and to provide the technology expertise and services infrastructure to apply technology creatively to meet needs and help solve community problems. Community networks play several roles:

- Support the "knowledge democracy" and create public spaces in cyberspace. In the past, communities have routinely invested in public spaces like town halls, recreation centers, parks, schools, and libraries. Communities need the equivalent in cyberspace.

- Act as a community technology resource and provide a source of unbiased technical expertise and advice for local governments, schools, libraries, and civic groups trying to understand how to apply and use technology.

- Support technology education and training efforts in the community. Identify training and education needs, partner with NTCs, schools, colleges, and libraries to teach citizens about technology. CNs can provide NTCs with Internet access and core services like Web hosting and email accounts.

- Help communities develop a 21st century network infrastructure that will enable them to participate in the Information Economy. In this role, CNs would rely heavily on collaborative efforts with the Regional Technology Alliances, which would assist with regional network design and development.

- Assist a community shift its economic development focus to the new information economy. Traditional economic development approaches may not meet the need of high tech companies, and CNs would again work closely with the area RTA to spur economic development that is respectful of traditional community life, fits in with local transportation infrastructure, and does not degrade the environment and the quality of life.

Community networks, by joining in regional alliances with NTCs and other CNs, would be able to offer a wider array of services, more sophisticated services, reduce the costs of service delivery, and could introduce new systems and services more quickly. Community networks have great potential to be self-sustaining by providing technology design and consulting services to local government and non-profits, but only if they can offer a level of service and sophistication that maintains a close parity with (more expensive) private sector services. The RTA can provide the technical expertise and systems needed to remain viable over the long term.

Regional Technology Alliances

The RTAs could play many important roles, limited only by the interests and needs of the participating partners.

- Regional network access and network administration--network access and administration is most effective and efficient (i.e. lowest cost) when aggregated over a large area (ignoring political boundaries). RTAs can act as brokers to purchase Internet access and provide a Network Operations Center (NOC).

- Server and services administration and support--most services (e.g. email, Web hosting, etc.) also benefit from aggregation. By spreading the cost of the most expensive technical support across many organizations, costs for all are reduced and the local organizations have more staff time and budget to spend on delivering core services and avoiding much of the expense of back end systems.

- Research and development--RTAs could provide R&D support for member organizations, helping to push more sophisticated services and support out into user hands more quickly.

- Training--Support and training/education of staff who would work on the local level in CNs and NTCs. RTAs could provide less expensive and more frequent training opportunities.

- Infrastructure development--Telecommunications infrastructure development (fiber and wireless transmission, colocation facilities, etc.) is also best done at the regional level, and requires technical expertise than most individual CNs and NTCs lack.

Each RTA might have a staff of 7-8 people plus a director. As the service arm of the chaordic alliance, the RTA would be dedicated to the success of the community networks and neighborhood technology centers. The RTA would never initiate projects on its own; it would always provide services and support to projects started by the member organizations of the alliance. These services and systems would never be forced upon a member of the alliance; a consensus would be needed before the RTA initiated an effort.

It would be essentially "invisible" to the public, because it would have no public mission. The community networks and neighborhood technology centers would work on behalf of the public common good; the RTA would work on behalf of the common good of the chaordic alliance.

National Organizations

National and international organizations like the Association For Community Networks (AFCN) and the Community Technology Center Network (CTCNet) would still play important roles, including:

- Professional development--By providing professional development training, handbooks, and seminars, the national organizations enhance the skills of existing managers and staff, and provides learning opportunities and support for the next generation in the field.

- Human networks--The national organizations provide a wider lens of experience for all members by linking together geographically diverse people and projects. The informal learning and sharing facilitated by newsletters, Web sites, and mailing lists is extremely valuable, and one best done across regional and/or national boundaries.

- National policy development--National organizations provide a unified voice that represents the interests and beliefs of their members. This can be an important influence upon legislation and national policy.

- Member services--The national organizations, like the RTAs, provide services and functions done best by spreading costs and benefits across the largest possible number of people.

National organizations also play a critical role by reaching across national boundaries to work with other national organizations on international projects, human networking, information sharing, and policy development. There exists enormous differences in the ability of the people of the world to purchase, access, and use technology. Today, technology is designed primarily for "first world" countries with high standards of living and large disposable incomes.

Oddly enough, the technology industry seems indifferent to the fact that most potential users of technology are not likely to be able to afford and use the current generation of technology--ever. This is even more peculiar when one considers that by designing computers for the world's poor, the market for technology could expand by six fold and corporate profits could increase as well.

Efforts like the Simputer in India (an inexpensive, portable computer) or the Global Computer proposed by Cohill [8] point the way toward new opportunities for regional and international collaborative efforts to change the way we think about acquiring and using technology.

Summary

> *If one is to properly understand events and to influence the future, it is essential to master four ways of looking at things: as they were, as they are, as they might become, and as they ought to be.[9]*

As Dee Hock notes in the quote above, we (as individuals and as members of organizations) need to look at things in four ways. Unfortunately, we often become experts at looking at the past and at maintaining how things are--we stay in the comfort zone of our own egos and expectations. The purpose of a chaordic alliance--in which all members participate as equals-- is to help us consider how things might become and how things ought to be. It is this last view--*how things ought to be*--that is most important and is currently asked least frequently.

We live in a time when technology is becoming not just ubiquitous but pervasive--nearly every device we touch at home and at work may be "wired" in just a few years. Most of this wiring is being done by transnational corporations with little or no thought about the consequences and effects on individuals, communities, and the common good.

Is this how things ought to be?

The work of neighborhood technology centers and community networks is to ensure that technology supports human goals and aspirations, and that technology supports the growth and development of human relationships (not machine relationships).

Dee Hock insists that is is critical to have a clear sense of purpose [10]. Chaordic alliances organized around technology should have four simple principles.

- Technology serves humans; humans do not serve technology.
- Technology should be simple to develop.
- Technology should be easy to use.
- Technology should be affordable for every human on the planet.

If we ask how technology "ought to be," a simple analogy serves us well: Technology ought to work in the same way that pencils "work."

- Pencils serve human needs well--no one complains of difficulties caused by pencils that crash, break down frequently, or require changes to the way we work.
- Pencils are easy to make, using a variety of systems and technologies.
- Pencils are very easy to use, even for young children and people with disabilities.
- Pencils are affordable--virtually everyone everywhere can acquire pencils.

Some may complain that this comparison is too simplistic, that it does not reflect the way things are, or the way that things seem to be going. But that is exactly the point--we do not need to meekly accept the technology given to us today. We need to create new organizational structures that allow us not only to ask, "How technology ought to be," but these new organizational structures--the chaordic alliances--should give us the liberty to pursue the answers that arise from asking those questions.

The chaordic alliance, rooted in mutual respect, equality of representation, shared vision, a common purpose, and action by consensus provides a new framework for community technology centers and community networks to work on behalf of the good of the community and for the common good of human on the planet.

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About the author

Andrew Michael Cohill is an information architect and a community networking and telecommunications consultant. He served as Director of the Blacksburg Electronic Village <www.bev.net> from it's start in 1993 until June of 2002. Blacksburg has been widely hailed as the most wired community in the world, with more than 87% of the residents online by late 1999 , and more than half of those users have broadband access--the highest per capita use in the world.

The Blacksburg Electronic Village is a model for the development of community networks around the country, and much of Cohill's efforts are related to teaching others how to create healthy electronic communities. He was co-chair of the Governor's Task Force on eCommunities for Virginia while the task force was convened, in 2000 and 2001.

Cohill is on the Board of Directors of the Association For Community Networks, and completed his second term as President of that organization in 2002. He has published numerous papers, articles, and book chapters, and has spoken widely on networked information systems, the Internet, and software systems design. He is an author and co-editor of *Community Networks: Lessons Learned from Blacksburg, Virginia*, now in its second edition. He is in wide national and international demand as a speaker and consultant on community use of technology because of his effectiveness in speaking clearly and simply about complex technology issues, and his shrewd insights on the future of communities. Cohill is an expert on the planning and design of community networks, and has worked with more than 100 communities around the world.

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