Chapter 14
The Net and the Future of Politics:
The Ascendency of the Commons

by Michael Hauben

"What democracy requires is public debate, and not information. Of course, it needs information, too, but the kind of information it needs can be generated only by vigorous popular debate. We do not know what we need to know until we ask the right questions, and we can identify the right questions only by subjecting our own ideas about the world to the test of public controversy…."

(Christopher Lasch, "Journalism, Publicity, and the Lost Art of Argument," in Media Studies Journal Winter, 1995, Vol. 9 no. 1, p. 81)

"Throughout American history, the town meeting has been the premier, and often the only, example of 'direct democracy'…. The issue of whether the town meeting can be redesigned to empower ordinary citizens, as it was intended to do, is of vital concern for the future."

(Jeffrey B. Abramson, "Electronic Town Meetings: Proposals for Democracy's Future," Aspen Institute Communications and Society Program)

I. Introduction

Democracy, or rule by the people, is by definition a popular form of government. Writers throughout the ages have thought about democracy, and understood the limitations imposed by various factors. Today, computer communications networks, such as the Internet, are technical innovations which make moving towards a true participatory democracy more feasible.

James Mill, a political theorist from the early nineteenth century, and the father of philosopher John Stuart Mill, wrote about democracy in his 1825 essay on "Government" for that year's Supplement for the *Encyclopedia Britannica*. Mill argues that democracy is the only governmental form that is fair to the society as a whole. Although he does not trust representative government, he ends up advocating it. But he warns of its dangers, "Whenever the powers of Government are placed in any hands other than those of the community, whether those of one man, of a few, or of several, those principles of human nature which imply that Government is at all necessary, imply that those persons will make use of them to defeat the very end for which Government exists."[1]

Democracy is a desirable form of government, but Mill found it to be impossible to maintain. Mill lists two practical obstacles in his essay. First, he finds it impossible for the whole people to assemble to perform the duties of government. Citizens would have to leave their normal jobs on a regular basis to help govern the community. Second, Mill argues that an assembled body of differing interests would find it impossible to come to any agreements. Mill speaks to this point in his essay: "In an assembly, every thing must be done by speaking and assenting. But where the assembly is

numerous, so many persons desire to speak, and feelings, by mutual inflammation, become so violent, that calm and effectual deliberation is impossible."[2]

In lieu of participatory democracies, republics have arisen as the actual form of government. Mill recognizes that an elected body of representatives serves to facilitate the role of governing society in the interests of the body politic. However, that representative body needs to be overseen so as to not abuse its powers. Mill writes: "That whether Government is entrusted to one or a few, they have not only motives opposite to those ends, but motives which will carry them, if unchecked, to inflict the greatest evils…."[3]

A more recent scholar, the late Professor Christopher Lasch of the University of Rochester, also had qualms about representative government. In his essay, "Journalism, Publicity, and the Lost Art of Argument"[4], Lasch argued that any form of democracy requires discourse and debate to function properly. His article is critical of modern journalism failing in its role as a public forum to help raise the needed questions of our society. Lasch recommended the recreation of direct democracy when he wrote, "Instead of dismissing direct democracy as irrelevant to modern conditions, we need to recreate it on a large scale. And from this point of view, the press serves as the equivalent of the town meeting."[5]

But even the traditional town meeting had its limitations. For example, everyone should be allowed to speak, as long as they share a common interest in the well-being of the whole community, rather than in any particular part. One scholar wrote that a "well-known study of a surviving small Vermont town meeting traces the breaking apart of the deliberative ideal once developers catering to tourism bought property in a farming community; the farmers and developers had such opposed interests about zoning ordnances that debate collapsed into angry shouting matches."[6]

The development of the Internet and of Usenet is an investment in a strong force towards making direct democracy a reality. These new technologies present the chance to overcome the obstacles preventing the implementation of direct democracy. Online communication forums also make possible Lasch's desire to see the discussion necessary to identify today's fundamental questions. Mill could not foresee the successful assembly of the body politic in person at one time. The Net allows for a meeting which takes place on each person's own time, rather than all at one time.[7] Usenet newsgroups are discussion forums where questions are raised, and people can leave comments when convenient, rather than at a particular time and at a particular place. As a computer discussion forum, individuals can connect from their own computers, or from publicly accessible computers across the nation to participate in a particular debate. The discussion takes place in one concrete time and place, while the discussants can be dispersed. Current Usenet newsgroups and mailing lists prove that citizens can both do their daily jobs and participate in discussions that interest them within their daily schedules.

Mill's second observation was that people would not be able to communicate peacefully after assembling. Online discussions do not have the same characteristics as in-person meetings. As people connect to the discussion forum when they wish, and when they have time, they can be

thoughtful in their responses to the discussion. Whereas in a traditional meeting, participants have to think quickly to respond. In addition, online discussions allow everyone to have a say, whereas finite length meetings only allow a certain number of people to have their say. Online meetings allow everyone to contribute their thoughts in a message, which is then accessible to whomever else is reading and participating in the discussion.

These new communication technologies hold the potential for the implementation of direct democracy in a country as long as the necessary computer and communications infrastructure are installed. Future advancement towards a more responsible government is possible with these new technologies. While the future is discussed and planned for, it will also be possible to use these technologies to assist in the citizen participation in government. Netizens are watching various government institutions on various newsgroups and mailing lists throughout the global computer communications network. People's thoughts about and criticisms of their respective governments are being aired on the currently uncensored networks.

These networks can revitalize the concept of a democratic "Town Meeting" via online communication and discussion. Discussions involve people interacting with others. Voting involves the isolated thoughts of an individual on an issue, and then his or her acting on those thoughts in a private vote. In society where people live together, it is important for people to communicate with each other about their situations to best understand the world from the broadest possible viewpoint.

Public and open discussions and debates are grass-roots, bottom-up development which enable people to participate in democracy with enthusiasm and interest more so than the current system of secret ballots allows. Of course, at some point or other, votes might be taken, but only after time has been given to air an issue in the commons.

II. The NTIA Virtual Conference

A recent example and prototype of this public and open discussion was the Virtual Conference on Universal Service and Open Access to the Telecommunications Network in late November 1994. The National Telecommunications and Information Administration (NTIA), a branch of the U.S. Department of Commerce sponsored this e-mail and newsgroup conference and encouraged public access sites to allow broad-based discussion. Several public libraries across the nation provided the most visible public sites in the archives of the conference. This NTIA online conference is an example of an online "town meeting." This prototype of what the technology facilitates also demonstrated some of the problems inherent in non-moderated computer communication. The NTIA conference was a new social form made possible by the Net and actually occurred as a prototype of one form of citizen online discussion. It demonstrated an example of citizen-government interaction through citizen debate over important public questions held in a public forum with the support of public institutions. This is a viable attempt to revitalize the democratic definition of government of and by the people. This particular two-week forum displayed the following points:
1. Public debate making it possible for previously unheard voices to be part of the discussion
2. A new form of politics involving the people in the real questions of society

3. The clarification of a public question
4. The testing of new technological means to make more democracy possible.

Following is a case study of the archives of this prototype conference, including some analysis for the future.

David J. Barram, the Deputy Secretary of the U.S. Department of Commerce, closed the National Telecommunications and Information Administration's (NTIA)[8] Virtual Conference on Universal and Service and Open Access by stating the conference was: "…a tremendous example of how our information infrastructure can allow greater citizen participation in the development of government policies." To hear such a comment from a government representative is important. Such a statement indicates that many users of the Net have demonstrated to the U.S. government that they oppose the recent conversion of the communications-based Internet into the commerce-based National Information Infrastructure.

The goals of the two-week conference, were stated in the Welcoming Statement.[9] The Welcoming Statement promised to replace the one-way top down approach with a new form of dialogue among citizens and with their government.

Open discussion is powerful. Such exchange is more convincing then any propaganda. The forums on "Availability and Affordability" and "Redefining Universal Service and Open Access" demonstrated that the solution of the so-called "free market" is not a correct solution for the problem of spreading network access to all. Usually unheard voices spoke out loud and clear; there is a strong need for government to assure that online access is equally available to urban, rural, disabled or poor citizens and to everyone else. The government must step in to provide Net access in non-profitable situations that the so-called "free market" would not touch. Non-governmental and non-profit organizations along with community representatives, college students, normal everyday people and others, made this clear in their contributions to the discussion. Though the NTIA Virtual Conference was not advertised broadly enough, the organizers did establish 80 public access points across the U.S. in places like public libraries and community centers. This helped to include the opinions of people in the discussion who might not have been heard otherwise.

A. The Importance of the Internet to our Society

The Internet and Usenet represent important developments in technology which will have a profound effect on human society and intellectual development. We are in an early stage of the development and distribution of these technologies, and it is important to look towards the future. Some areas of human society which these new communications technologies are likely to affect include government, human communication and community formation. Democracy is government by the people, and both Usenet and mailing lists allow everyone to have speak out without the fear that their voices would not be heard. Individuals can still be uncooperative, but these new communications technologies make it possible to have one's voice presented equally. These technologies could be integrated with other online information and communication technologies to make possible a true participatory democracy. This potential excited several of the participants.

Many participants in the NTIA virtual conference recognized the value inherent in these new communication technologies and discussed the need for universal access to the technology. The Internet was identified to be a "public good," worthy and necessary to be accessible to all of the population and throughout the land. This led to the understanding that it was important to make access equal across all stations of society. Citizens living in rural areas, people with various handicaps, or of low-income should have equal opportunity with everyone else to access and utilize the Internet. These particular cases were described and explored as being unprofitable for businesses to provide equal access for equal payment. Businesses make profits off of the mass production of like goods or services. Parts of society which cannot use the common product wind up paying extra. This was seen as discriminatory by various participants. The problems described included the high prices involved with long distance phone rates which most rural inhabitants need to pay to communicate with most other people. These rates would have to be paid to connect to the closest Internet access phone number. Rural access would be costly, as would access from territories such as the Virgin Islands. Another concern was the extra cost to those with hardships to gain access. People with handicaps would need to purchase expensive input/output devices in order to compensate for their individual disadvantage. Access is expensive, but so are computers and training. Participants felt it important to make access to Internet accounts and computers easily available.

The number of subscribers averaged about 400 people per conference. The conferences sponsored a debate on the issues, and people with different ideas contributed. However, there was a clear cry by many participants that the U.S. government should stay involved with the U.S. backbone of the Internet to best provide equal access and service to individuals throughout U.S. society. One of the arguments in favor of this understanding was that it was vital for people from all walks of life and all possible backgrounds to be using the Internet. Only if there is access for all can the Internet work as a medium of communication and discussion, including all the differences, and diversity of the population. A network only connecting a few types of individuals together would not benefit society. The question was raised by one participant whether we as a society could afford being split into two distinct societies – those online and those not.

Following are general comments taken from the archives of the NTIA Virtual Conference about the importance of the Internet to our society. Subsequent sections will focus on particular topics discussed during the conference.

1. The Benefits of the Net
From: Randolph Langley

I agree wholeheartedly – the Internet costs so little, and benefits so many. As with the interstate highway system, it is a proper and effective activity for the federal government. I believe most of the citizenry would not care to see the interstate system given over to a few large toll companies, and I believe the Internet will be on the scale of economic and cultural benefit as the interstate system.[12]

From: Bob Summers

In order for the nation to access a common pool of information, such as the library of congress, an efficient system must be in place to handle the load of thousands of library's and other users to access the information. Yes, I believe that there will have to be an outlay of funds to provide such a system, not to mention the cost of putting the information online. These funds must come from the Federal government, since it is for the public.[13]

From: W. Curtiss Priest

Government should supply/support activities where there are public goods (public information) and when the benefits of this support exceeds the cost to we taxpayers.[14]

From: Wayne County RESA

The Net is certainly not free, I agree. We all pay to a certain degree for it. I am a little concerned about the commercialism aspect of it, though. I think if it is privatized we will see more ads. Seems logical. Why would someone pay good money to be on the Net and not advertise their wares. I imagine it is inevitable but I would like the inevitable forestalled or better yet somehow modified so that information and the kinds of information is not compromised.[15]

From: BNN Television

Public access is a 'public good', not only because it allows people from disadvantaged backgrounds the opportunity to use new technology, but also because it increases the collective pool of information from which even newer technology is born. Analyze this increase from a business perspective if you must – I'll keep on rooting for the future of my species.[16]

From: Brent Wall

The draft financial plan for the Leon County Free-Net project, while proposing a number of different financial opportunities to make universal service a reality to the community, will emphasize an old notion practiced for years in this and other countries: cross-subsidies. Based on the view that citizen communication and education are public goods and should not be constrained by cost of service pricing mechanisms, the financial plan proposes that business uses and enhanced services shall be charged a fee that underwrites the first Amendment communication functions of the Net as well as its educational employment.

This entire argument hinges on defining communication and education (and I recognize that there are grey areas that would need to be ironed out) as PUBLIC GOODS. This is not, in my judgement simply a matter of determining whether Net communication is "divisible" etc. as the economic profession would tend to analyze the problem. It deals with fundamental philosophies of the social value of education and communication in a democracy. If, to e-mail my County Commissioners on a topic that affects me, I have to pay a charge that I really can't afford, while Mr. Thickwallet has no such impediment, then this means something to democratic participation in an electronic world.

This is nothing new: witness C-Span, local access channels, and the like. If we adopt a concept and policy like the above, more and more citizens, over time, would be able to join the

virtual community as a full member. To have this membership driven by one's personal income will surely result in two societies that are separate and unequal. Can we afford this future?[17]

From: Stephen Brenner

We are dealing with a major paradigm shift when it comes to this lateral flow of communication and the kinds of community building processes and empowerment that this can catalyze. We need to put some thought into how a real democracy could function, given these new communication tools.[18]

From: Lew McDaniel

In my opinion, information access is sufficiently important to be a guaranteed right. By guaranteed information access, I mean for K-12, adult education, health services, and government access. Movies on demand, games, and electronic shopping (ala the shopping channels) should be charged at an additional rate.[19]

From: Dave W. Mitchell

I agree that the knowledge base of a society and the ability of its citizens to use it will determine the ultimate survival of free peoples.[20]

From: Daniel Lieberman

We are looking towards the future. Anyone who hopes to participate in the society will need to have access. Banking, schooling, books, its all coming very fast. Just think of the rate of change in the last five years or the last six months on the WWW. Voters handbooks, policy papers etc. How can one hope to be a knowledgeable citizen without access. The hardware will trickle down like automobiles. But the communication links must be available.[21]

From: Sean Connell

The Internet offers a chance for us to follow through on a promise of democracy that was betrayed over two hundred years ago. Our Constitution, clever as it may be, was written to *prevent* civic action. [Jefferson] was the first to recommend public education, because he knew that it was vital to a healthy democracy. We must all be informed and capable of contributing to the governing of our country. The public does not have the means to act in concert and it is not the interest of the current power players to afford us those means. The Internet…is a means to create vocal, active, communities that transcend race, geography, and wealth. It is entirely necessary that we recognize this fact and make a stand now to maintain this highway to real Democracy.[22]

From: Colette Brooks

And many of us feel that the Infobahn is not primarily a private preserve but a national/world resource which should be extended to all, for reasons already explored in other posts this week.[23]

From: Bill Russell

What SERVICES should be guaranteed to every citizen. The old definition of universal service has been called POTS: Plain Old Telephone Service. As I understand it, the NEED for this

service was so great that it is public policy that every one (hence universal) should have it. It has been also called "life line service."

IMHO universal service needs to be defined as a set of SERVICES that are so important to our civilization that they should be made universally available. Foremost among them is POTS. Next is access to a network that provides at least an e-mail bridge to the worldwide Internet at an equitable price. It is just plain not fair for urban cybernauts to pay zero while rural cybernauts pay ten cents per minute for telephone connection to the net.[24]

2. The Cry for Equal Access and Universal Access

Following are some messages from the conference demonstrating concern that access to the Internet be available universally, with respect both to access and to price.

From: Brent Wall

An early post to this group from an individual from the Anneberg NPR group suggested that, as a beginning, universal access, as defined from the consumer's and not the supplier's viewpoint, merely entails, at present, a phone line to every home. The implicit definition of availability in the Leon County library Tallahassee Free-Net adds one important dimension on top of the phone line notion. It is the expansion to as many homes as possible of the communication and educational benefits of a community Net over the phone lines.[25]

From: Harvey Goodstein

Taking into consideration the needs and rights of deaf and hard of hearing individuals in particular (and individuals with disabilities in general). That is, federal regulations on minimum standards are necessary to enhance equal access for all…. Thus, universal service provisions should not discriminate against individuals with disabilities (irrespective of their financial status) who invariably would have to pay abnormally high costs for technical connectivity.[26]

From: Ellen Davis Burnham

This whole segment of the conference is about "Availability and Affordability" to all NOT just some that live in a largely populated area. People in Mississippi NEED the Internet just like everyone, probably more so than people who live in large areas with ready access to libraries or any form of research. Should we teach just **SOME** of our children to read, maybe just a few should learn Algebra, and heaven knows no one needs to know grammar rules. We can't pick and choose who is allowed access we live in a democratic society that says everyone is equal and should receive equal access to schooling among other inalienable rights.

The rural area should be addressed first because we have such a hard time to find access (affordable access). If you could just go into a school one day and help students who are struggling to find the needed 12 sources for a research paper, students who know what they need is out there SOMEWHERE if only they had access to it.

YES, WE MUST PROVIDE INTERNET ACCESS TO **EVERYONE**, not just to those

who are easy to put on-line.

The competition may be greater in larger cities BUT the need is not. I don't mean to berate anyone but if you could only see first-hand the great need in our schools you would understand. I teach in a school that has only 3700 books total in the library. Our situation is extreme because the school burned a couple of years ago. I try to help the students by hunting for needed items on the Internet. Until I began teaching there this year *ONLY* one student knew about the Superhighway. What about…the children who have parents that have never heard of the Internet either. We have to start somewhere and I believe the population of America as a whole is as good a place to begin as any.[27]

From: Lucy Co

Hearing the real-life experiences of people like Ellen Davis Burnham, who wrote of introducing school children in rural Mississippi to the Internet – is one of the best aspects of this conference. Helps ward off the tendency to discuss concepts such as "availability" as though they were theoretical only. Keep up the good work, Ellen – and don't apologize for your "preaching."[28]

B. Government as Producer and Disseminator of Information

The U.S. government is a major producer of information in American society, most of which is public and printed on paper. As a distributor of that information, the government would save money if it distributed it electronically and let the user decide whether or not to print that information. Having handed over the Internet backbone to commercial entities, the U.S. government no longer has the capability of distributing that information without the increased cost of contributing to some companies' profit margins. A U.S. government-run backbone would have allowed the efficient distribution of governmental information without the increased cost profits requires. U.S. citizens will now have to pay a profit-making company overhead to access the very information we pay for with our taxes. In any case, if the U.S. government works towards providing governmental information and services online, more incentive will exist for more of the U.S. population to get connected to the Internet.

From: Carl Hage

Because the government would be the main beneficiaries of an *information* infrastructure. The government is a major producer and consumer of information, most of which is inaccessible to the public in practice.

Information without charge (other than low network charges). That means every public library, school, government office, business or home could have access to everything.[29]

From: Chloe Lewis

We might legislate that all public gov't information – stuff that The Public has already paid for and usually has a right to, if near enough a G-Doc depository – be made available to anyone with e-mail. This will, if done with common sense, reduce the expenses of both the government agencies involved and of anyone who needs frequent access to government publications. This is an obvious

reason for schools and libraries to have Internet access, and a reason for citizens and businesses to acquire it.

The U.S. has been subsidizing access to paper information, for the sake of knowledge and self-government; we have found a more efficient way to provide this information; where possible, we should subsidize this more efficient way instead. It isn't as whizbang attractive as giving everyone realtime video, but it would be useful immediately.[30]

From: Carl Hage

The largest single producer of information is the federal government, most of which is public. Although these days virtually all documents are produced in electronic form on a word processor, etc., very little of the information is available in electronic form. Nearly all information is distributed in paper form, typically obtained by calling over a telephone. A similar case can be made for state and local governments.[31]

From: Susan Hadden

If the federal and state government would announce a policy of making their services available in electronic form there would be a package of stuff…that should make the net worthwhile to most people. (Examples: Renewing drivers' license, hunting licenses, finding the right official for your problem the first time, getting on-line help on your income tax where you didn't just talk to someone but showed them the calculations in real time, etc.)[32]

C. Necessary for Knowledge of Why This is All Important

Early in the "redefining universal service" segment of the virtual conference, people started discussing how to determine access rates. One participant, Bob Johnson, proposed the starting point is to figure out first why it was important for people to have Internet access. His point is important, and others echoed it throughout the conference. It is necessary to understand why it is important for both individuals and organizations in our society to have access to the Internet for both its information and communication benefits. Another participant, Carly Henderson, raised a parallel question asking why access to public libraries is important. Part of the debate taking place publicly was over a difference in views. One view was that the USA is a democracy where everyone is equal and should receive equal opportunities versus the understanding that the USA is a nation of individuals and access should only be for those who strive for it.

From: Bob Jacobson

An appropriate question is not how much a particular individual or organization should pay for access to the Internet or its successors, but why they should have access, individually and collectively? Once you figure this out, and define access to suit, you can figure on pricing. Everything else is premature, unless people get out their basic premises on which they are operating.[33]

From: Carly Henderson

I agree with Bob; this is a very important question that deserves a well thought out answer.

Why should people have access to the Internet? In response, I pose the question, why should every community have a library and allow its citizens access to all that it contains?[34]

From: Robert J. Berrington III
        But what I'm willing to bet is that most of the people that we're talking about providing a service to haven't the slightest clue as to what the Internet is.[35]

From: Martin Kessel
        A final requirement for universal access is that people need to understand what the Information Highway can do for them – how it can benefit their lives.[36]

D. What the Internet Can Do for People
        The significance of Internet access for all in society is not obvious because it is a new way to think about communication between people. Before the Internet and Usenet, most broadcast forms of communication were owned and operated by large companies. Other more democratic forms of broadcast which provide one-to-many communication exist for small segments of the population in particular regions: public access cable, various self-produced newsletters or zines, "pirate" radio and so on. The Internet makes available an alternative to the corporate owned mass media and allows a grass-roots communication from the many to the many. As it has taken a struggle for an individual to be seen as a information provider, it is not immediately obvious to all that it is possible to speak out and have your voice heard by many people. It is also important that people could express their views and be in contact with others around the world who are expressing their views. Participants in the virtual conference were active in defining their interest in keeping the Internet protected from dominance by commercial interests. Commercial information and communication is vastly different from personal information and communication. Participants recognized this difference, and voiced their opinion on how it is important to keep the Net as an open channel for non-commercial voices.

        The picture of the Internet painted by the U.S. government has been one of an "information superhighway" or "information infrastructure" where people could connect, download some data or purchase some goods and then disconnect. This vision is one that is very different from the current cooperative communications forums on Usenet where everyone can contribute. Even worse has been the description by much of the news media where people's contributions are misportrayed as pornography or otherwise vice-related, such as bomb production or drug-related. The important aspect of the Internet and Usenet is that they provide a place where people can share ideas, observations and questions. The transfer of information is secondary.

From: R. M.
        Overlooked in the current free market vs. regulated access debate is any argument convincing me why the average American will want access to the net. Apart from the "information elite" (most already on the net), I don't know too many people interested in communications capability not already available using existing infrastructures. How many people do you know, not associated with research or education, who care about access to government information repositories? Or virtual conferences?[37]

From: Dr. Robert LaRose

In response to Woody Dowling's comment that the average American is not interested in advanced communications infrastructure, at least not those who don't already have it. Not so. We did a national survey a couple of years ago and asked about interest in videotex, ISDN, etc., found interest levels far beyond those of then-current penetration levels. Found the most intense interest among low income homes, in fact, suggesting that it is cost and not interest that holds them back. Want a killer application for low income households? E-mail. Many can't afford long distance rates, some move too often or have no home, can't keep a phone line…. The applications already exist, but the people who need them most can't afford them – or don't constitute an attractive enough market.[38]

From: Curt Howland

While the inverse relation between cost and pervasiveness is certainly true, I must take issue with comparing the Net to TV. Such comparisons allow for the taking of information, but not for the tremendous possibilities involved with ease of *providing* info. There is no reason to think that a future Stephen Hawkings isn't sitting right now in front of a boob-tube sucking down Mighty Morhpin Power Rangers because there is no way for his ideas to be expressed.

Without the facility to put ideas out, with each person acting as a information provider assumed from the outset, we are doing ourselves a great dis-service.[39]

From: Don Evans

A two way street for all Americans. Not only should they be able to receive from the net, but they also must be able to provide their unique information.[40]

From: Michael Hauben
 I. Universal Access Basic Principles

In order for communications networks to be as useful as possible, it is necessary for it both to A) Connect every possible resource and opinion, B) Make this connection available to all who desire it.

A and B call for Universal Interconnection, rather than Universal Access. The usage of "interconnection" highlights the importance and role of every user also being an information provider. The term "access" stresses the status-quo understanding of one-way communication, the user accesses information that other "authorized" information providers make available. This is the old model. The new model is of interconnection of many different types of people, information, and ideas. The new model stresses the breakdown of old definitions of communication and information. Diversity allows for both the increasing speed in the formation of new ideas, and the ability for previously unauthorized ideas to have the airing and consideration they rightfully deserve.

II. Definition of "Services" to be available on this Universal Interconnection

The new era of interconnection and many-to-many communication afforded by Netnews and Mailing lists (among other technologies) brings to the forefront a model of bottom-up rather than top-down communication and information. It is time to reexamine society and welcome the democratizing trends of many-to-many communication over the one-to-many models as represented by broadcast television, radio, newspapers and other media.

As such, I would say it would be important to highlight, discuss and make available interactive modes of communication instead of the passive transfer of information. Thus I am suggesting emphasizing of forms of multiple way of communication and broadcasting. Forms currently defined by newsgroups, mailing lists, talk sessions, IRC sessions, MOO experiences, and other forms of sharing and collaboration. These type of forums are where this new technology excels. Plenty of media exist which facilitates the passive transfer of information and goods. (Such as mail-order, stores, telephone orders, etc.) It would be best to explore and develop the new forms of communication which this new media facilitates, and which was less possible and present in the past.[41]

From: B. Harris
Summary of the Affordability and Availability Conference
The Internet and the Global Computer Network are providing a very important means for the people of our society to have an ability to speak for themselves and to fight their own battles to better the society.[42]

From: Eric Rehm
Conception of access, I would posit, demands a much more interactive use of the medium and perhaps the bandwidth needs are more balanced: This example can then be extended to any number of community organizations with members as avid information producers.

In other words, basic service based on enabling "many producers" might actually prompt a larger share to be allocated to bandwidth OUT of the home than that envisaged by the Baby Bells and cable companies.

It seems to me, in rural America, there would be even more fear of not having ample "basic" bandwidth to be a producer because the distance to such an "access point" might be enough to effectively deny community production.[43]

E. Efficiency of E-mail vs Video, etc.
In the discussion about universal and equal access to the Internet, access to live video and the problems it creates was introduced. Some participants argued that "video on demand" would be a resource hog, and again introduce inequality into the online world based on who could pay, and also creating a different priority in use of network bandwidth. One participant contributed a message titled "Net Economics 101" which gave tables showing the relative sizes of different forms of data. Carl Hage made his comparisons clear by writing, "A single video movie is equivalent to 6 million people sending a one page e-mail message." He concluded his message by writing, "Why should we

provide subsidized video access to a few when we could use those resources to provide textual information to millions?"

Another participant differed and stated that providing video is important so that access can be offered to the percentage of the U.S. population which is illiterate. A couple of other participants stated that video has enormous educational expressive potential. It was important that the virtual conference allowed for the presentation of different points of views, as that assists in figuring out the best way forward.

From: Debbie Sinmao
     On Tue, 15 Nov 1994, Richard Civille wrote:
>
> At 2:26 PM 11/14/94 -0800, Michael Strait wrote:
>
> >I think the simple answer to that is: single-line telephone
> >service capable of supporting touch tone and computer modem exchange.
> >Tomorrow is something else, but that should be the minimum today.
>
> What would a basic basket of services be in five years? In ten? And, by
> what process do we change our minds and expand our definition?

Whatever the basket will be in 5, 10, etc. years, it should not include Al Gore's idea of video on demand…unless it is for educational uses – if you want to see a movie, go to your nearest movie theater or rent a video from Blockbuster.[44]

From: Robert J. Berrington III
     I agree with Debbie. At the current date, we don't have the technology to support such things. It may be 50 years down the road before that technology is available. Why clutter up a system that can't handle such a load.[45]

From: Rey Barry
> Date: Thu, 17 Nov 1994 14:56:57 CDT
> From: gunzerat@vaxa.weeg.uiowa.edu
> To: redefus@virtconf.ntia.docgov
> 2) To debbie: I think it's shortsighted to equate "video on demand," or
> video in any form in the new age with what we can presently pick up at
> Blockbuster. For that matter, to think in terms of video as a passive,
> "something to watch" form seems to me to ignore its potential.
>
> That's why I don't think it's right at this point to dismiss Al Gore; video
> has the potential to allow for perhaps even greater educational and
> expressive possibilities than text. To limit ourselves at the outset could
> mean missing out on the greatest possibilities.

Creative video is a neat concept. Thanks for bringing that up. The fear that Gore is bursting with desire to sell out to commercial interests is the opposite of what comes through when you talk to him or look at the work he focused his life on.[46]

From: Ron Choura

Advanced telecommunications services should not be legislatively mandated for inclusion in the definition of universal service. Universal service funding of such services is not appropriate unless and until a critical mass of demand develops. Inclusion of such services in the definition would yield anticompetitive results, since services typically included in universal service do not have all relevant costs allocated to them.[47]

From: Carl Hage

One thing to keep in mind is that digital transmission of text, e.g. e-mail is very efficient. For each user who sends e-mail instead of fax or telephone call, hundreds of additional users can send e-mail in the transmission resource saved.

Access of gopher or www text is similar to e-mail in efficiency. Pictures, voice/audio and video are, of course, much more expensive.[48]

From: Carl Hage

But according to the polls, the public is skeptical about the ways in which the industry is touting the NII and they see other more important uses. With the focus on video entertainment, my fear is that the less glitzy uses will be delayed and left out. Also, the focus towards high-end technology is a diversion of resources which could be used to provide low end data communications to all instead of video for a few.[49]

From: Carl Hage

Here are some tables showing the relative sizes of data in different forms:
The following table gives a comparision of a page of text (obtained from an OTA report on the NII) in various forms, either in compressed or uncompressed ASCII text (averaged), as a page of fax, voice where the text was read aloud, or in video form where the speaker read the information aloud.

Relative Sizes for Multi-Media Information

Type	Text Pages	MB
Compressed Text	1	0.0011
Uncompressed Text	3	0.003
Fax Image	40	0.04
Fax Modem Transmission	270	0.27
Compressed Voice (8:1)	200	0.2
Compressed Voice (2:1)	800	0.8
Voice Telephone (64Kb)	1600	1.6
Low Quality VideoPhone (H.320)	3200	3.2
Commercial VideoConf	6400	6.4
High Q VideoConf (H.120 1.5Mb/s)	37000	37.5
Compressed Broadcast Video	167000	167
Uncompressed Video (currently used)	1100000	1100

The last entry of about one million to one is the size as used in an actual NII sponsored video classroom, <http://www.ncih.net/>. Access for schools costs $4000/mo for 1 video link or $8000/mo for 2, paid for by state grants.

An ordinary voice telephone call consumes more than 3000 times the data inside an email message (calls use 64Kb in two directions). Fax images are about 50 times more than the equivalent compressed text in disk storage space, but consume about 300 times the telecommunications resources when trasmitted via modem, or 100 times if the text is not compressed.

Comparisons of 1GB of Digital Information	Number/GB
1 page documents	1000000
100 page documents	10000
Kodak Photo-CD pictures	1000
JPEG Images (640x480 @ 10:1)	10000
Minutes of Voice Telephone	400
1.44MB Diskette	700
CD-ROM	1.5
2 Hour Movies	0.2
Purchase cost of hard disk	$500
Purchase cost of floppy disks	$250

```
Equivalent of a 2 Hour Digital Video Movie
---------------------------------------------------------
1 page documents                              6 000 000
100 page documents                               60 000
Kodak Photo-CD pictures                           6 000
JPEG Images (640x480 @ 10:1)                     60 000
Minutes of Voice Telephone                        2 600
Hours of Voice Telephone                             43
1.44MB Diskettes                                  4 200
CD-ROMs                                              10
GigaBytes                                             6
```

A single video movie is equivalent to 6 million people sending a one page e-mail message. Why should we provide subsidized video access to a few when we could use those resources to provide textual information to millions? For example, we could make the federal register and congressional record available to everyone for free rather than have to pay $375 per person/year to access any part.[50]

F. Libraries as Points of Public Access?

Libraries were proposed as a central public location where people could gain access to the Internet. This would be especially helpful to those who cannot currently afford to buy a computer. There was discussion about how the role of libraries might change from a location where information is stored, to one where information access is facilitated through training and individual help from librarians.

There were problems inherent in suggesting libraries be the public access point. First, library hours would limit when access would be available for those without computers and Internet accounts, and libraries might only be able to provide limited access to the Internet – if, for example, they could only afford the cheapest modems. One participant mentioned that his local library did not receive its latest funding, because the bond was voted down. This raises the issue of funding if libraries are to take on the role of Internet access provider. Another participant brought up the fact that since many communities do not have a local library, those communities would also not have any public access site if libraries were to be the only public sites for access to the Net.

FOR: Libraries as universal points of access:
From: Kathleen L. Bloomberg

Libraries are universal access points to information for school students, faculty at higher education institutions, and the general public. Not everyone will have a microcomputer and modem at home in the future just like everyone doesn't have plain old telephone service now. Librarians are trained in facilitating access to information and are an integral part of the emerging information superhighway.

According to a recent survey by the National Commission on Libraries and Information Science, 21% of the public libraries in the United States are accessing the Internet now. That number is growing monthly. Most academic libraries and many school and special libraries also are using

the Internet regularly to meet their patrons' needs.

From: Solomon Philip Hill

Until the time comes when everyone can afford a personal terminal of some sort, I think that the community center or library model of access works pretty well. This leaves open the question of training which seems to be the least talked about, but possibly most important aspect here.[52]

From: Dave W Mitchell

It is indeed true that the public library model provides a philosophical and structural underpinning, yet the immense popularity of talk radio (for example) shows a strong underlying hunger for communication of individual reactivity and creativity. In its satisfaction may lie the tool wherein we redefine the compact with one another on which this society was founded.[53]

From: Susan G.

I agree – the public library is definitely a good place to start for public access. It isn't the only solution, but there is rarely just one good answer to a complex problem. Rather multiple good answers.[54]

From: Carl Hage

Currently libraries pay substantial fees to obtain reference material in print or microfilm form. Actually, due to budget problems, many libraries, including my own, are cutting back on this material. If this material were available electronically, then purchases of microfilm, etc. could be discontinued and the money saved could be used for hardware and network access fees.

I believe that better dissemination of information could be used to provide more cost effective access for libraries, where the equipment, software, and methods of access can be tailored to the needs for libraries.[55]

From: Lew McDaniel

> I believe that better dissemination of information could be used
> to provide more cost effective access for libraries

The ideas which follow the above are good ones. To me, they show the concept of "library" evolving from common source of information and repository to "facilitator of access" in addition to today's functions. Particularly if all the have-nots are going to head for the library I-way access point.

I see libraries, K-12, and higher education all becoming significantly more competitive, more virtual, and less corporeal if the I-way reaches fruition. Even though each provides a great deal of value inappropriate to a telecommunications line – social interaction, community cohesiveness, etc.[56]

AGAINST: Libraries are not the solution of the access question:

Others disagreed that libraries could solve the problem of universal access. They presented some of the problems libraries are having even surviving and noted that there are many locations that do not have libraries.

From: mtn

Much as I'd like to believe it, I do not feel that libraries solve the access problem. First, access is already limited by the hours of the library. In a world where success and (em)power(ment) may hinge upon immediate access to information, it's tough to assume that people who must schlep over to the library and wait in line for a 1200 baud (when I last checked) modem and terminal are on an equal footing.[57]

From: Stephen Brenner

I like the library model as well. Unfortunately, our library bond went down to defeat in the last election and they aren't likely to take on this role without funding. In the meantime, providing free access to the Internet, including public access terminals, is part of Oregon Public Network's charter.[58]

From: Carol Deering

I just wanted to mention the large Indian reservation which surrounds our town. A great many people who live there have no telephones and some even no TV. I have seen mention in this conference of other rural situations, but I wanted to be sure to include this type of rural instance. There is no library service to this area, either.[59]

From: Marilyn Letitia Korhonen

I agree to the extent that schools and libraries will allow this. We do not have a library in my local phone exchange, so that wouldn't serve my area and many others. The schools would be an answer for some, but the school in my district is not interested, even if I'll write grants for them. They do not trust it, they can not see the usefulness in their day-to-day lives, and they are simply not interested.[60]

G. Debate Over the "Free Market"

A strong debate took place on both conferences over how Internet access could be best deployed throughout society. Some people argued the "market" would provide the best quality service to most people, while others challenged the notion that "the market" could provide such access. Therefore many said that it was important for government to play a strong role in making access available universally. Those encouraging a governmental role understood that the "market" would not work towards providing access to those living in areas where access would be harder to provide, or for those with special needs.

1. On the Need for a Government Role:

From: Ron Choura

Now, however, there is near universal consensus that opening up these markets to competition will lead to enhanced benefit for most consumers. But, can we be sure that market forces

alone will achieve the goal of widely available, affordable services for all Americans? Is action by state and federal governments needed? What should be done? States must have the ability to ensure that high quality service is provided in markets that are less competitive or attractive for investment.[61]

From: Frank Whittle

The term "economic development" has become prominent in state telecommunication policy during the last ten years as the states battle to retain and attract industry. It appears from the preliminary research that the issue of providing universal access (services) has become less prominent in policy documents.[62]

From: Brent Wall

If one reads the testimony given at the hearings conducted on the NII and the global infrastructure by the Dept. of Commerce, one can detect two sense[s] of the terms "universal access" at work. The Motorolas, with their pleas for a wireless world, and cable companies with their arguments for phone service, and phone companies with their exhortations for delivering cable service, one comes away with a sense that universal access means: supply access – or the ability of service providers to access the NII (whatever infrastructure this may turn out to be) and sell their wares.

Yet, there is a second sense ascribed to these terms, one often advocated by community-based advocates, almost invisible in the national dialogues of service purveyors. And this is that universal access refers to access to the net by all, rich and poor.

Given the tenor of the NII discussions I have monitored, there is a threat that the latter meaning is being absorbed by the former.[63]

From: Henry Huang

The idea that the "free market" is going to solve all our problems is a MYTH. Go back and look over the history of most of the major on-line providers PRIOR to the recent big Internet expansion, and consider their current policies regarding Net access. No one who values their time, money, or access would seriously consider getting on the Internet through ANY of the major services, be it Compu$erve, Delphi, Prodigy (HA!), or America Online.

The reason for this is simple: each one of these services has either restricted the Net services available (hence restricting your access), and/or charges you way too much for it compared to some of the other access providers currently around.[64]

From: Rey Barry

Provide any sort of datahighway with near-universal access and people will spend money developing ways to make a living from it. The glory of the system. Tailor the highway to commercial interests from the start and you surely build in roadblocks to pro bono services, the danger of the system.[65]

From: Paul Weismantel

Dr. Priest's observation regarding the Advisory Council is clear…. Business in general is frightened by the very underpinnings of Universal Access, because it amounts to a mandate, which is usually a drain on profits.

Unless we can approach the discussion so as to fit into the business scheme (and that does not necessarily mean full recovery of investment in all cases), some members of the council will prevail in pushing off this issue by a lowest common denominator solution.[66]

From: Martin Kessel

There was strong sentiment that the competitive market alone will not serve the nation's needs. As Steve Miller said, "The free market is like a ship with 100 sails blowing full blast and no rudder. Public policy provides the rudder."[67]

From: Richard M. Kenshalo

We can't be led to believe that market forces will eventually provide for the investments necessary for rural America, where loop costs remain extremely high. Without existing (and probably re-defined) price support structures, and an expanded definition of Universal Service to include guaranteed information access, we will truly develop a society of information "haves" and "have-nots".[68]

From: Jeanne Gallo

We would like to urge the administration and congress to pass legislation which mandates the setting up of community sites where citizens of all ages, etc. can have access provided. This will mean that funding will need to be available for setting up such centers with the technology that is needed to be on-line and that universal access will need to be built into any proposals, such as was done for universal access to the telephone. Subsidies may be a "dirty" word in D.C. at this moment, but they will be necessary if we are to include all of our citizens in the technology of the future.[69]

From: B. Harris

Summary of the Affordability and Availability Conference

The territories are not naive in insisting that the information infrastructure must accomodate both access and low rates. Without both, the territories will receive no benefit and will in fact find their needs increasingly marginalized.

General summary: Several people expressed concern that the development of the NII has focussed on business interests and economic development rather than on ensuring access for all Americans. The theme the economic development will not by itself bring universal service to reality surfaced repeatedly.[70]

From: Carl Hage

I certainly agree with your point, and I would use these examples as proof that a free market

does not exist. I don't think most people fail to value their money, just that the big advertizing machines, and the PC magazine-industrial complex have duped an uneducated public, and an uneducated government.

Yes, the free market will *not* provide equal access to rural areas, etc. However, the solutions for rural areas might be radically different. It is least likely that there will be much of any competitive market in rural areas, so co-ops, monopolies, etc. might be required.[71]

2. Opposition to Government Regulation
From: Viraj Jha

>>   While 'public access' is sometimes considered either a necessity or
>>   a public good, what effects will the above choices make on a market
>>   that is still in the early stages of development? Specifically, will
>>   public access stunt market and technological development in the long
>>   term?
>
>What does "stunt" mean in this case?

By 'stunt' I probably more accurately meant 'distort' – in other words, would the rate of technological development be slowed by such a policy? Certainly industry leaders fear that strict regulation would hinder their profit-maximizing activities; in high competition technology markets these profits are often linked to innovation. Congressman Boucher in '92 agreed with Bell Atlantic that its deployment time for fiber optic lines could be halved absent stringent line of business regulation. Might similar regulations/subsidies for universal access not cause technological stagnation?[72]

From: Christine Weiss
Another viewpoint to add to the discussion comes from John Browning in an article from the Sept. '94 issue of WIRED: "…universal service is a 1930's solution to a 21st century problem. ...the solution is Open Access." In a nutshell, it seems that Open Access would ensure a competitive marketplace, that would in turn keep costs low. Another option, for what its worth….[73]

From: Carl Hage
I believe we can use the free market and competition to significantly lower the cost to access the net and provide a wide variety of options. There are a number of things that the government could do to enhance the competition and available services which would cost very little.[74]

From: Stan Witnov
Dear Conferees,
Why are so many participants against unleashing American business (AND it's stereotypical greed)in order to let the invisible hand lead us to the most efficient use of resources. I certainly trust that our government regulators and court system will move in at the appropriate time and correct

some of the "wrongs" which are inevitable (whether we're under a government OR private enterprise umbrella).

I believe our great advantage here is to let venture capital risk itself for a profit but in so doing create and market services which increase user knowledge, accessibility, and the population of users.[75]

From: Jawaid Bazyar
In response to ab368@virgin.uvi.edu (Bruce Potter):
>To the NTIA, we ask careful attention to the equity issues of access, and
>a federal guarantee of access and availability.

Oh my, it looks like the Socialists have grabbed onto the Internet as their next great crusade. If you choose to live on an island in the middle of the ocean with a small population, you can expect to pay a lot for high-tech services.[76]

From: Curt Howland
There are left only the people making Universal Access in one form or another happen, and those that just talk, begging the Big Friendly Government to wait on them hand and foot.[77]

H. NTIA Conference as Prototype for Future Democracy

Some participants understood that the conference they were participating in could be seen as a model of citizen participation in government. They were thus thoughtful in considering the future and how these technologies could be used. A participant from Boston suggested it was important that permanent public access sites be established in order for any policy decisions to happen.

From: Martin Kessel
Some participants questioned whether it will be truly feasible to put a computer terminal in every home. However, there was strong agreement that access should be available at public sites, such as libraries, schools, and other community places. This would be an extension of the model used by the NTIA in holding this Virtual Conference, noted Michelle Johnson, a reporter for the Boston Globe. Federal help is needed to provide libraries with resources and technical expertise.[78]

From: Carl Hage
Thank you for the opportunity to participate in this discussion, and provide my input into the shaping of the future information age in America. I believe that using the Internet offers the potential to obtain high quality information needed for proper decision making, as well as improving the access of the government to the public.[79]

From: Hubert Jessup
Reading the discussion of the past two days about redefining universal access has confirmed our conviction that public access sites are not just important for this virtual conference but are

needed as a permanent aspect of the development of the NII. Typically, only universities and certain businesses have Internet access. For the average American, these forms of access are far too limited. Consequently, citizens have little experience with the net and understanding of what is at stake in its development. Also, basic computer skills – even as simple as logging on and typing a message – are lacking for most Americans.

What is needed in our opinion is on-going, institutionalized public access sites. We think these should be based in a variety of community based institutions, including the public libraries, public schools, and public access cable centers. These sites need equipment, Internet connection, staffing, and basic operating support. And, of course, these sites need funding….

If we as a country do not develop a permanent, institutionalized and consistently supported system of public access sites, the NII will develop quickly among the current information "haves" but will totally leave behind the vast majority of Americans who are information "have nots". Facing this same situation concerning literacy in the early part of the 19th century, the response by public spirited Bostonians was the development of funding for the first public schools and public library in America. Soon, these institutions were quickly adopted by every city and town in America. Now, with a new technology and a new type of literacy, we as Americans should strive to expand our democracy by developing public access sites on the NII.

I. Importance of Need for Time to Learn at Own Pace

Paying for access limits what someone will do online. First it limits how much an individual can care to learn, as the time spent will be costly; people will be selective in what they attempt to learn. Second, it is hard for people to take the time to be helpful to others when they are paying by the hour. The Internet and Usenet have grown to be such a cooperative community because there was no price tag on the cooperation. It will be a step backward to have to pay to access these communities. Individuals should be honored for their contributions to the Net, and not expected to pay.

From: A public access site in Seattle

Obviously, SCN (Seatle Community Network) has been wonderful, since it has allowed me to learn at my own (slow!) pace, without worrying about "wasting money". I am presently on NW Nexus, since I purchased the Internet Starter Kit which came with a coupon for 2 free weeks. I am continuing to pay for it, for a while, because it allows so much more opportunity to learn all the plusses of the Internet…. I am willing to pay the monthly fee for a short time, but unfortunately, I am not in a financial position to be able to continue at this rate for very long. It seems a shame that those of us who are not "well off" cannot reap the benefit of the whole Internet. I am grateful that SCN is there for us.[81]

From: Henry Huang

Hence, in limiting my time, you limit the quality of my posts, and hence the general quality of the discussion.

Many of the people who would want or NEED such free/cheap access are newbies – and hence EXACTLY the sort of people who WOULDN'T have the experience, knowledge, or time necessary to overcome the limits on their access. The less access you provide a person with, the more trouble that person has to go through JUST to get UP to a sufficiently useful level.[82]

From: Sean Connell

An open communication infrastructure will allow children ample opportunity to explore and increase their knowledge at a pace with which they are comfortable.[83]

J. Need for openness because of development via open and free standards.

The Internet has developed out of connecting networks together based on open and available standards. These protocols were developed by many people over the ARPANET and Internet. Commercial development is usually proprietary and closed. The Internet will develop much slower if the pressure towards commercialism is allowed to overwhelm the open and cooperative culture of the Net.

From: Henry Huang

The NII is NOT a harbringer of change…the Internet WAS – hence this conference (run using list server software on a UNIX box, and sent mostly over Internet links).[84]

From: Henry Huang

Now look at the development of the Internet. Even with the astonishing growth of the World Wide Web and Mosaic (and perhaps soon Netscape), much of the Net is STILL ruled by text-based standards first set down perhaps a decade or more ago. The vast majority of E-mail is STILL text In fact, E-mail and News are often cited as two of the most useful services offered by the Net, despite their clunkiness. As quirky and outdated as they are, they still WORK – more to the point, everyone HAS them. If everyone had a different format for E-mail messages, no one could communicate with anyone else – thus defeating the very purpose of E-mail!

Even more important, many of the standards adopted by the Internet are OPEN standards, freely available to anyone who's interested in modifying or improving them. Compare this to companies which charge you an arm and a leg for their proprietary code. Now, which one do YOU think people will be more willing to work with, and improve?

What no one seems to realize is that the Net is anything BUT a commodity – it's a means to an end. And that end is not profit, but *GLOBAL COMMUNITY*.

If we treat the Net as a commodity, then inevitably that's what it's bound to become – a balkanized, divided, proprietary collection of private networks which neither know nor care about the existence of the others. It would be like a giant version of Compu$erve, only many times worse. And in the end, by putting walls and barriers between the very users who need to communicate with each other, they will have eliminated the sole reason for their own existence – as a means to COMMUNICATE, quickly and efficiently. And when that happens, either they will die, or the future

which they (and all of US) sought to promote will be relegated to obscurity.

And that would be an absolute shame.[85]

From: Carl Hage
How can we devise incentives for investment in technologies for the "last mile" to the home?

The key to an investment in products needed and availability at a mass produced low price, is the establishment of standards and a detailed goal.

If there is an agreed upon standard and a large market, then a number of companies will build very low cost products designed for high volume sales. If the standard is not agreed upon, and/or deployment is uncertain, then there may not be cost effective products available.

The best way to establish standards and then insure there is a rich market of supporting products is to have open, public domain standards, with public domain reference implementations and test software.

The Internet standards established by the IETF are a good example. All the specifications are available electronically and free to the public. In order to be adopted, there must be a working implementation, and typically there was a public domain version available as a starting point and as a comparison.

Part of the research money for the NII could go toward producing some competing designs for these technologies, which could result in a public version of the specifications, and a sample reference design. Also, research money could go to produce testing software and an interoperability laboratory. Vendors who produce chipsets and boards can take the standards and reference implementation and use that as a basis for a specific product, and could then make use of the test suites and interoperability laboratory.

Public funding for the establishment of the standards, reference implementation, and test suite would eliminate many interoperability problems, and would yield low cost products very quickly, as each vendor would not need to duplicate this basic research. The money saved in lower cost product availability for the government's internal use would more than pay for the investment in a publicly available technology.[86]

III. Conclusion

Because the NTIA conference was held online, meant that many more points of view were heard than is normal. Prominent debates included that of encouraging "economic development" versus mandating "universal service" and depending on the "free market" versus recognizing the need for government regulation to make access available to all. Another issue raised was that the NII will be an extension of the Internet and not something completely new. As such, it is important to acknowledge the origin and significance of the Internet, and to properly study and understand the

contribution the current global computer communications network represents for society. Many who participated in the online conference expressed the hope that the government would be helpful to society at large in providing access to these networks to all who would desire this access.

Despite the many objections to privatization of the NSFNet expressed during the NTIA conference in November, 1994, the public NSFnet (National Science Foundation Network) was put to death quietly on May 1, 1995. Users heard about the shut down indirectly. Universities and other providers who depended on the NSFnet might have reported service disruptions the week or two before while they re-established their network providers and routing tables. No announcements were made about the transfer from a publicly subsidized U.S. Internet backbone to a commercial backbone. The switch signaled a change in priorities of what the Internet will be used for. May 1, 1995 was also the opening date of a national electronic open meeting sponsored by the U.S. government on "People and their Governments in the Information Age." Apparently the U.S. government was sponsoring this online meeting from various public access sites, and paying commercial providers in the process. Something is deeply ironic in this government-mandated change to increase government expenses.

But also, on May 1, 1995, there was a presentation at a branch of the New York Public Library which focused on the value of the Internet and Usenet as a cooperative network where people could air their individual views and connect up with people around the world. The Internet and Usenet have provided the means for new voices to be heard without being overwhelmed by the more established voices of society. This May First, traditionally a people's holiday around the world, the domain of the commons was opened up to the commercial world. But the commercial world already has a strong hold on all other broadcast media, and these media have become of little or no value. The Internet has been a social treasure for people in the U.S. and around the world. It is important to value this treasure and protect it from commercial interests. As such, this move by the U.S. government is disappointing, especially considering the testimony presented by many Internet and Usenet users who participated in the November 1994 NTIA Virtual Conference on Universal Service and Open Access to the Telecommunications Network.[87]

In order to make any socially useful policy concerning the National Information Infrastructure (NII), it is necessary to bring the greatest possible number of people into the process of discussion and debate.[88] The NTIA online conference is a prototype of possible future online meetings leading to direct democracy. There are several steps that need to be taken for the online media to function for direct democracy. First, of all, it would be necessary to make access easily available, including establishing permanent public Internet access computer locations throughout the country along with local phone numbers to allow citizens to connect their personal computers to the Net. Secondly, it is wrong to encourage people to participate in online discussions about government policy, and then ask them to pay for that participation. Rather, it would be important to be able to figure out some system of paying people who participate in their government. Payment for participation is not an easy issue to decide, but it is a necessary step forward in order to facilitate more participation by more people.

The online archives of the avail forum and the redefus forum provide very important reading. It would be valuable if they were available in print form and available to those involved with policy decisions on the NII and for people around the U.S. and the world who are interested in the future of the Net. This online conference was an important landmark in the study towards the development of the NII. However, it should not only stand as a landmark, rather it should set a precedent for future conferences which will hopefully start as the basis of a new social contract between people and their government.

Notes for Chapter 14

1. Essays on Government, Jurisprudence, Liberty of the Press and Law of Nations, reprint, Kelley Publishers, New York, 1986, p. 8.

2. Ibid., p. 6.

3. Ibid., p. 13.

4. "Journalism, Publicity, and the Lost Art of Argument," Media Studies Journal, Vol 9 no 1, Winter 1995, p. 81.

5. Ibid., p. 89.

6. Jeffrey B. Abramson's "Electronic Town Meetings: Proposals for Democracy's Future," prepared for the Aspen Institute Communications and Society Program.

7. The Net is the Internet, Usenet, Mailing Lists, etc.

8. The NTIA virtual conference was co-sponsored sponsored by the National Telecommunications Information Administration (NTIA) and the Information Infrastructure Task Force (IITF), as part of the Administration's National Information Infrastructure initiative.

9. The goals of the NTIA Conference were listed in chapter 15.

10. From: Sean <sconnell@silver.ucs.indiana.edu>
    Subject: Re: [AVAIL:41] my question
    Date: Wed, 16 Nov 1994 00:33:24 -0500 (EST)
    Message-Id: <199411160841.AAA27213@virtconf.digex.net>

11. From: James McDonough <epin@access.digex.net>
    Date: Wed, 16 Nov 1994 09:49:40 -0500 (EST)
    Subject: Re: [AVAIL:42] Re: my question
    Message-Id: <Pine.SUN.3.91.941116094225.11331A-100000@access2.digex.net>

12. From: Randolph Langley <langley@dirac.scri.fsu.edu>
    Date: Thu, 17 Nov 1994 09:27:51 -0500
    Message-Id: <199411171427.AA91585@dirac.scri.fsu.edu>
    Subject: [AVAIL:57] Re: my question

13. From: Bob Summers <bsummers@vt.edu>
    Date: Thu, 17 Nov 1994 17:27:09 -0500

Message-Id: <199411180135.RAA07684@virtconf.digex.net>
Subject: Re: [AVAIL:96] Re: my question

14. From: W. Curtiss Priest <BMSLIB@MITVMA.MIT.EDU>
    Date: Mon, 21 Nov 94 09:10:21 EST
    Subject: Re: [REDEFUS:189] REDEFUS digest 29
    Message-Id: <199411211811.KAA17129@virtconf.digex.net>

15. From: wc_resa@server.greatlakes.k12.mi.us (Wayne County RESA)
    Date: Mon, 14 Nov 1994 14:17:11 -0500
    Message-Id: <9411141918.AA07357@server.greatlakes.k12.mi.us>
    Subject: Re: [REDEFUS:17] Re: Public Access

16. From: BNN Television <bnn@world.std.com>
    Date: Thu, 17 Nov 1994 18:20:01 +0001 (EST)
    Subject: Re: [REDEFUS:37] Re: Public Access
    Message-Id: <Pine.3.89.9411171753.A23713-0100000@world.std.com>

17. From: Brent Wall <brentw@freenet.scri.fsu.edu>
    Date: Sat, 19 Nov 1994 11:22:46 -0500 (EST)
    Message-Id: <Pine.3.89.9411191130.C17368-0100000@freenet3.scri.fsu.edu>

18. From: Stephen Brenner <sbrenner@efn.org>
    Date: Wed, 16 Nov 1994 05:07:24 -0800
    Message-Id: <9411161210.AA17284@efn.efn.org>
    Subject: Re: [REDEFUS:31] Re: Public Access

19. From: Lew McDaniel <MCDANIEL@wvuadmin3.csc.wvu.edu>
    Organization: WVU Computing Services
    Date: Mon, 14 Nov 1994 14:55:34 EST
    Subject: Re: [REDEFUS:15] Pilot Projects
    Message-ID: <3A45E1049AE@wvuadmin3.csc.wvu.edu>

20. From: Dave W Mitchell <dmitchel@ednet1.osl.or.gov>
    Date: Mon, 14 Nov 1994 14:12:54 -0800
    Message-Id: <199411142212.AA12401@ednet1.osl.or.gov>
    Subject: Re: [REDEFUS:22] Re: Pilot Projects

21. From: Daniel Lieberman <danlie@ix.netcom.com>
    Date: Thu, 17 Nov 1994 14:11:03 -0800
    Message-Id: <199411172211.OAA24888@ix.ix.netcom.com>
    Subject: Competency and access

22. From: Sean <sconnell@silver.ucs.indiana.edu>
    Subject: A Plea
    Date: Thu, 17 Nov 1994 23:00:28 -0500 (EST)
    Message-Id: <199411180708.XAA21950@virtconf.digex.net>

23. From: Colette Brooks <crb@well.sf.ca.us>
    Date: Sat, 19 Nov 1994 09:30:16 -0800
    Message-Id: <199411191730.JAA19829@well.sf.ca.us>
    Subject: my 2$

24. From: Bill Russell <RUSSELLB@ext23.oes.orst.edu>
    Message-Id: <2ed3a9cf.ext23@ext23.OES.ORST.EDU>
    Date: 23 Nov 94 12:45:00
    Subject: Re[2]: [REDEFUS:68] Re: NTIA Virtual Conference universal access.

25. From: Brent Wall <brentw@freenet.scri.fsu.edu>
    Date: Sat, 19 Nov 1994 11:00:24 -0500 (EST)
    To: avail@virtconf.ntia.doc.gov
    Message-Id: <Pine.3.89.9411191018.A17368-0100000@freenet3.scri.fsu.edu>

26. From: HARVEY GOODSTEIN <HGOODSTEIN@gallua.gallaudet.edu>
    Date: Thu, 17 Nov 1994 14:18:52 -0500 (EST)
    Subject: Universal Service definition
    Message-id: <01HJL7LBBLQQ01ERLS@GALLUA.BITNET>

27. From: Ellen Davis Burnham<edb1@Ra.MsState.Edu>
    Date: Sat, 19 Nov 1994 22:09:22 -0600 (CST)
    Subject: Re: [AVAIL:124] AVAIL digest 29
    Message-ID: <Pine.SUN.3.91.941119212024.9892B-100000@Isis.MsState.Edu>

28. From: LucyCo@aol.com
    Date: Sun, 20 Nov 1994 15:09:31 -0500
    Message-Id: <941120150557_3543309@aol.com>
    Subject: Re: [AVAIL:137] AVAIL digest 37

29. From: Carl Hage <chage@rahul.net>
    Date: Sun, 20 Nov 94 18:52:16 PST
    Message-Id: <9411210252.AA20328@slick.chage.com>
    Subject: Glasnost for the Information Age

30. From: Chloe Lewis <chloel@microsoft.com>
    Message-Id: <9411222159.AA07745@netmail2.microsoft.com>
    Date: Tue, 22 Nov 94 14:00:29 TZ
    Subject: the Internet's other ancestor

31. From: Carl Hage <chage@rahul.net>
    Date: Tue, 15 Nov 94 05:21:42 PST
    Message-Id: <9411151321.AA18686@slick.chage.com>
    Subject: Redefining Universal Service and Open Access

32. From: Susan Hadden <shadden@mail.utexas.edu>
    Date: Thu, 17 Nov 1994 14:52:01 -0600
    Message-Id: <199411172052.OAA23573@mail.utexas.edu>
    Subject: Re: [REDEFUS:128] REDEFUS digest 14

33. From: Bob Jacobson <cyberoid@u.washington.edu>
    Date: Mon, 14 Nov 94 22:04:12 -0800
    Message-Id: <9411150604.AA25921@stein1.u.washington.edu>
    Subject: Re: [REDEFUS:19] Re: Public Accesss

34. From: Carly Henderson <cmh@lclark.edu>
    Date: Thu, 17 Nov 1994 13:36:33 -0800 (PST)

Message-Id: <Pine.OSF.3.91.941117131202.5097A-100000@sun>

35. From: Robert J. Berrington III <berringr@river.it.gvsu.edu>
    Date: Fri, 18 Nov 1994 11:11:42 -0500 (EST)
    Subject: Public awareness
    Message-Id: <Pine.HPP.3.90.941118104318.23355A-100000@river.it.gvsu.edu>

36. From: Martin Kessel <mkessel@world.std.com>
    Date: Wed, 23 Nov 1994 15:29:57 -0500
    Message-Id: <199411232029.AA16911@world.std.com>
    Subject: BNN Cablecast on Universal Access

37. From: <MAADR007@SIVM.SI.EDU>
    Date: Thu, 17 Nov 94 14:00:16 EST
    Subject: universal access but not ubiquitous use
    Message-Id: <199411172209.OAA20275@virtconf.digex.net>

38. From: Dr. Robert LaRose <LAROSE@tc.msu.edu>
    Date: Thu, 17 Nov 1994 15:03:37 EST
    Subject: Re: [REDEFUS:123] universal access but not ubiquitous use
    Message-ID: <224FE632CC5@tc.msu.edu>

39. From: howland@nsipo.nasa.gov
    Date: Wed, 16 Nov 1994 19:19:23 -0800
    Message-Id: <199411170319.TAA11501@noc2.arc.nasa.gov>
    Subject: Re: [REDEFUS:67] Re: Public Access

40. From: Don Evans <don@dcez.com>
    Date: Mon, 14 Nov 1994 13:25:42 -500 (EST)
    Subject: Universal Access...
    Message-ID: <Pine.3.89.9411141352.G26106-0100000@dcez.dcez.com>

41. From: Michael Hauben <hauben@columbia.edu>
    Date: Tue, 22 Nov 1994 01:54:36 -0500
    Message-Id: <199411220654.AA28036@merhaba.cc.columbia.edu>
    Subject: Need to stress concept of active communication and interconnection

42. From: BHARRIS@ntia.doc.gov
    Date: Mon, 21 Nov 1994 16:04:59 -0500
    Subject: Interim Summary for Availability List

43. From: rehm@zso.dec.com
    Date: Mon, 14 Nov 94 13:50:03 -0800
    Message-Id: <9411142150.AA09999@slugbt.zso.dec.com>
    Subject: Re: [REDEFUS:22] Re: Pilot Projects

44. From: Debbie Sinmao <debbie@harmony.cdinet.com>
    Date: Thu, 17 Nov 1994 13:17:18 -0500 (EST)
    Subject: Re: [REDEFUS:40] Re: NTIA Virtual Conference KeyNote Address
    Message-Id: <Pine.3.89.9411171341.A27812-0100000@harmony.cdinet.com>

45. From: Robert J. Berrington III <berringr@river.it.gvsu.edu>

Date: Thu, 17 Nov 1994 13:30:11 -0500 (EST)
Subject: Re: [REDEFUS:115] Re: NTIA Virtual Conference KeyNote Address
Message-Id: <Pine.HPP.3.90.941117132629.13213C-100000@river.it.gvsu.edu>

46. From: Rey Barry <rbarry@hopper.itc.virginia.edu>
Message-Id: <199411172219.RAA15419@Hopper.itc.Virginia.EDU>
Subject: Re: [REDEFUS:133] REDEFUS digest 15
Date: Thu, 17 Nov 1994 17:19:34 -0500 (EST)

47. From: Ron Choura 517-334-6240 <CHOURA%A1@COMMERCE.STATE.MI.US>
Subject: NARUC Comments D.J Miller
Posting-date: Mon, 14 Nov 1994 15:37:00 -0400 (EDT)

48. From:
Date: Wed, 23 Nov 1994 14:41:39 -0800 (PST)
Subject: What happens when usage expands?
Message-ID: <Pine.3.89.9411231431.A11463-0100000@netcom13>

49. From: Carl Hage <hage@netcom.com>
Date: Wed, 23 Nov 1994 16:33:17 -0800
Message-Id: <199411240033.QAA24975@netcom13.netcom.com>
Subject: Re: Comments to C. Hage concerns

50. From: Carl Hage <chage@rahul.net>
Date: Thu, 17 Nov 94 19:31:52 PST
Message-Id: <9411180331.AA19584@slick.chage.com>
Subject: Net Economics 101

51. From: Kathleen L. Bloomberg <bloomber@eagle.sangamon.edu>
Date: Tue, 15 Nov 1994 13:03:22 -0600
Subject: Universal access & libraries

52. From: Solomon Philip Hill <blast@leland.Stanford.EDU>
Date: Mon, 14 Nov 1994 13:51:04 -0800 (PST)
Subject: Re: [REDEFUS:17] Re: Public Accesss
Message-ID: <Pine.3.89.9411141310.A6158-0100000@elaine30.Stanford.EDU>

53. From: Dave W Mitchell <dmitchel@ednet1.osl.or.gov>
Date: Mon, 14 Nov 1994 08:17:20 -0800
Message-Id: <199411141617.AA25971@ednet1.osl.or.gov>
Subject: Statement

54. From: msyssft!microsys!susang@uu6.psi.com
Date: 16-Nov-94 11:35
Message-Id: E0E6C92E01B361E1

55. From: Carl Hage <chage@rahul.net>
Date: Thu, 17 Nov 94 14:14:54 PST
Message-Id: <9411172214.AA19457@slick.chage.com>
Subject: Re: [REDEFUS:19] Re: Public Accesss

56. From: Lew McDaniel <MCDANIEL@wvuadmin3.csc.wvu.edu>

Date: Fri, 18 Nov 1994 08:40:12 EST
Subject: Re: [REDEFUS:139] REDEFUS digest 16
Message-ID: <3FE206E223A@wvuadmin3.csc.wvu.edu>

57. From: mtn@mtn.org (MTN)
    Date: Tue, 15 Nov 1994 12:39:33 -0600
    Message-Id: <aaee6246010210049a8a@[198.174.235.202]>
    Subject: Re: [REDEFUS:19] Re: Public Accesss

58. From: Stephen Brenner <sbrenner@efn.org>
    Date: Wed, 16 Nov 1994 05:07:24 -0800
    Message-Id: <9411161210.AA17284@efn.efn.org>
    Subject: Re: [REDEFUS:31] Re: Public Accesss

59. From: Carol Deering <deering@odi.cwc.whecn.edu>
    Date: Fri, 18 Nov 1994 09:33:14 -700 (MST)
    Subject: rural areas
    Message-ID: <Pine.SCO.3.90.941118085624.725A-100000@odi.cwc.whecn.edu>

60. From: Marilyn Letitia Korhonen <korhonen@tenet.edu>
    Date: Fri, 18 Nov 1994 07:52:32 -0600 (CST)
    Subject: Re: [AVAIL:100] Re: Rural areas
    Message-ID: <Pine.3.89.9411180704.C27478-0100000@Gayle-Gaston.tenet.edu>

61. From: Ron Choura 517-334-6240 <CHOURA%A1@COMMERCE.STATE.MI.US>
    Subject: NARUC Comments D.J Miller
    Posting-date: Mon, 14 Nov 1994 15:37:00 -0400 (EDT)

62. From: Frank Whittle <WHITTLE@SMTPGATE.sunydutchess.edu>
    Message-Id: <9411150254.AA51246@admaix.sunydutchess.edu>
    Date: Mon Nov 14 21:53:09 1994

63. From: Brent Wall <brentw@freenet.scri.fsu.edu>
    Date: Wed, 16 Nov 1994 19:39:09 -0500 (EST)
    Subject: Universal Access--an Equivocation
    Message-Id: <Pine.3.89.9411161905.A19851-0100000@freenet3.scri.fsu.edu>

64. From: Henry Huang <hwh6k@fulton.seas.virginia.edu>
    Date: Wed, 23 Nov 1994 12:52:37 -0500
    Message-Id: <199411231752.MAA45745@fulton.seas.Virginia.EDU>
    Subject: Some Thoughts on Public Access (and this Conference)

65. From: Rey Barry <rbarry@hopper.itc.virginia.edu>
    Message-Id: <199411172219.RAA15419@Hopper.itc.Virginia.EDU>
    Subject: Re: [REDEFUS:133] REDEFUS digest 15
    Date: Thu, 17 Nov 1994 17:19:34 -0500 (EST)

66. From: Paul Weismantel <weismant@esd.dl.nec.com>
    Date: Wed, 16 Nov 94 13:31:46 -0600
    Message-Id: <E15CCA2E011C0000@smtp.esd.dl.nec.com>
    Organization: NEC America Inc
    Subject: Re: [REDEFUS:80] Re: NTIA Virt

67. From: Martin Kessel <mkessel@world.std.com>
    Date: Wed, 23 Nov 1994 15:29:57 -0500
    Message-Id: <199411232029.AA16911@world.std.com>
    Subject: BNN Cablecast on Universal Access

68. From: RICHARD M KENSHALO <PMRMK@tundra.alaska.edu>
    Date: Tue, 15 Nov 1994 08:16:08 -0800
    Subject: Universal Service
    Message-id: <01HJI2DC28PIHSJAJE@UA.ORCA.ALASKA.EDU>

69. From: Jeanne Gallo (using BNN Television) <bnn@world.std.com>
    Date: Fri, 18 Nov 1994 12:22:53 +0001 (EST)
    Subject: Community Centers
    Message-Id: <Pine.3.89.9411181228.A2135-0100000@world.std.com>

70. From: BHARRIS@ntia.doc.gov
    Date: Mon, 21 Nov 1994 16:04:59 -0500
    Subject: Interim Summary for Availability List

71. From: Carl Hage <hage@netcom.com>
    Date: Wed, 23 Nov 1994 18:27:53 -0800
    Message-Id: <199411240227.SAA08168@netcom13.netcom.com>
    Subject: Re: Some Thoughts on Public Access (and this Conference)

72. From: Viraj Jha <jhav@bcvms.bc.edu>
    Date: Wed, 16 Nov 1994 09:48:34 +0000
    Subject: Re: [REDEFUS:37] Re: Public Accesss
    Message-Id: <MailDrop1.0b13.941116094834@onra01p6.bc.edu.>

73. From: Christine Weiss <chrisw@muskox.alaska.edu>
    Date: Thu, 17 Nov 1994 09:28:56 -0900 (AST)
    Subject: Who will fund?
    Message-Id: <Pine.HPP.3.90.941117091241.9833A-100000@muskox.alaska.edu>

74. From: Carl Hage <chage@rahul.net>
    Date: Thu, 17 Nov 94 12:23:44 PST
    Message-Id: <9411172023.AA19431@slick.chage.com>
    Subject: Re: Cheap Public Access

75. From: Stan Witnov <74543.720@compuserve.com>
    Date: 18 Nov 94 02:33:42 EST
    Subject: FOUR DAY CONFERENCE THOTS
    Message-ID: <941118073341_74543.720_EHH62-2@CompuServe.COM>

76. From: Jawaid Bazyar <bazyar@netcom.com>
    Subject: Re: Need for Federal Oversight of Access and Availability
    Message-ID: <bazyarCzH7Lu.HoE@netcom.com>
    Date: Fri, 18 Nov 1994 18:34:41 GMT

77. From: howland@nsipo.nasa.gov
    Date: Wed, 23 Nov 1994 19:35:33 -0800
    Message-Id: <199411240335.TAA13844@noc.arc.nasa.gov>

Subject: Re: [REDEFUS:253] REDEFUS digest 56

78. From: Martin Kessel <mkessel@world.std.com>
    Date: Wed, 23 Nov 1994 15:29:57 -0500
    Message-Id: <199411232029.AA16911@world.std.com>
    Subject: BNN Cablecast on Universal Access

79. From: Carl Hage <chage@rahul.net>
    Date: Tue, 15 Nov 94 05:21:42 PST
    Message-Id: <9411151321.AA18686@slick.chage.com>
    Subject: Redefining Universal Service and Open Access

80. From: Hubert Jessup, General Manager at BNN Television <bnn@world.std.com>
    Date: Thu, 17 Nov 1994 11:20:11 +0001 (EST)
    Subject: Need for on-going public access sites
    Message-Id: <Pine.3.89.9411171052.A20944-0100000@world.std.com>

81. From: Public Access Site <vcavail@latte.spl.lib.wa.us>
    Date: Wed, 23 Nov 1994 12:46:30 -0800 (PST)
    Subject: Affordability
    Message-Id: <Pine.OSF.3.91.941121204346.1399A-100000@latte.spl.lib.wa.us>

82. From: Henry Huang <hwh6k@fulton.seas.virginia.edu>
    Date: Wed, 23 Nov 1994 12:52:37 -0500
    Message-Id: <199411231752.MAA45745@fulton.seas.Virginia.EDU>
    Subject: Some Thoughts on Public Access (and this Conference)

83. From: Sean <sconnell@silver.ucs.indiana.edu>
    Subject: Re: [REDEFUS:155] REDEFUS digest 20
    Message-Id: <199411182309.PAA21212@virtconf.digex.net>
    Date: Fri, 18 Nov 1994 15:01:16 -0500 (EST)

84. From: Henry Huang <hwh6k@fulton.seas.virginia.edu>
    Date: Tue, 15 Nov 1994 22:04:37 -0500
    Message-Id: <199411160304.WAA57037@fulton.seas.Virginia.EDU>
    Subject: Re: [AVAIL:1] NTIA Virtual Conference KeyNote Address

85. From: Henry Huang <hwh6k@fulton.seas.virginia.edu>
    Date: Wed, 23 Nov 1994 12:52:37 -0500
    Message-Id: <199411231752.MAA45745@fulton.seas.Virginia.EDU>
    Subject: Some Thoughts on Public Access (and this Conference)

86. From: Carl Hage <chage@rahul.net>
    Date: Thu, 17 Nov 94 23:00:22 PST
    Message-Id: <9411180700.AA19595@slick.chage.com>
    Subject: Comments on Susan G. Hadden Essay

87. The NTIA Virtual Archives are available via the World Wide Web at http://ntiaunix2.ntia.doc.gov:70/11s/virtual

88. See the opening speech by C. P. Snow in Management and the Computer of the Future, Martin Greenberger, MIT Press, 1962.