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244 W 72nd Street Apt 15D
New York, N.Y. 10023
May 10, 1996

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Office of the Secretary
Federal Communications Commission
1919 M Street, NW
Washington, D.C. 20054

Dear Sir:

Enclosed is my submission in CC Docket 96-45. I am including
I - Comment
II - Additional Comment
III - Appendix

I am filing this as a formal submission. It was submitted before the May 7 deadline to the FCC via email and I am requesting that you accept it as a formal submission so it can become part of the formal record. I document in the submission that I was not able to learn what the appropriate procedure was for a submission before May 7 and did not get the needed information to make the formal submission till this morning May 10, 1996.

Sincerely,

Ronda Hauben

Ronda Hauben

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MAY 15 1996

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Before the
Federal Communications Commission
Washington, D.C. 20554

Comments on the Universal Services Provision of
CC Docket No. 96-45

Submitted by

Ronda Hauben
244 West 72nd Street
New York, New York 10033

Submitted to

Federal Communications Commission
Office of the Secretary
1919 M Street NW
Washington, D.C. 20554

with copies to
International Transcription Service
1919 M Street, NW
Room 246
Washington, D.C. 20554

Ronda Hauben
244 West 72nd Street
New York, N.Y. 10023
rh120@columbia.edu

Submitted via email by May 7, 1996

Part I - Comment

This is being submitted to the FCC as input into the Universal Service Proceeding in CC Docket No. 96-45 prior to May 7, 1996.

I - Introduction

Following is a response to some of the discussion initiated by the Benton Foundation regarding how to look at the question of Universal Service toward the FCC procedings on input for the Universal Service definition to function under the Telecommunications Act of 1996.

The following is from a post on the Netizens Association Mailing List. Kerry Miller posted the Benton Foundation excerpts which are indicated by the > and I responded to them.

May 7 was the deadline for fcc comments on the comments previously submitted to them and I am submitting this and also posting it as a way to try to open up the discussion on the principles that should guide a definition of universal service regarding online access.

Also, after several efforts to try to determine if comments could be submitted via email, I was told that comments could be submitted to ssegal@fcc.gov via email, but they would be considered informal comments. I am submitting these comments to the fcc via email, but hope that they will be considered as part of proceedings, as there isn't much point in saying one can submit something via email if they aren't taken seriously.

II - Comments

On Fri, 3 May 1996, kerry miller posted the following from the Benton Foundation postings about universal service:

```
>  http://www.benton.org/Goingon/advocates.html
>  Public Interest advocates, universal service, and the
>  Telecommunications Act of 1996
>
>    The questions public interest advocates should be asking themselves
>    and the FCC include:
>      * How should the discussion of Universal Service be framed? Is
>        Universal Service about connecting phones? Connecting people with
>        phones? Or connecting people with people? How can the discussion
>        center around the people who need to benefit from the policy most?
```

This is worth considering. But it is hard to understand how the question can be framed adequately if the folks for whom this is important have no way to be part of the discussion.

That is why there is a need for universal access to Usenet newsgroups and email so folks can have a chance to speak about what the real problems and needs are.

>

> * How is the value of a network-any network, phone or
> computer-diminished as fewer and fewer people have access to it?

The question seems as if it is phrased backwards.

The issue is how does the value of any network increase as more and more people have access to it and are able to contribute to it. The ability to contribute is crucial with regard to a network like the Internet and Usenet.

> What can be done to identify the communities and individuals most
> at risk of falling off the networks that will make up the National
> Information Infrastructure? What strategies can be employed to add

Again the questions seems backwards.

First there is NO National Information Infrastructure (at least not in the U.S.).

There is an Internet that people have built over a period of several decades. The work has often been funded by research institutions or government, but people have contributed to the content and technical needs and development.

The question that needed to be raised was What was the value of this development and how to extend access to it?

Since this development was not the result of commercial enterprises, but of people contributing, made possible by academic and government support and sometimes also support from companies who benefitted from their participation, it has been inappropriate to set commericalization and privatization as the first goals of the policy, without allowing public discussion into what the policy should be and why.

> people to the networks and keep them on? How can the voices of the
> people who have fallen off the networks be included in the
> rulemaking?

It is good to see that the question is being raised of how to have the voices of people included in the rulemaking.

The problem right now is that the voices of those on or off the Internet are basically excluded from being heard in the rulemaking procedure since the deadlines have been so quick and the means of even getting the law or the submissions have been basically beyond most people (one has to be able to download things that are in wordperfect it seems). In any case, it has been made very difficult to even access the material at the FCC www site and it has been made virtually impossible to have any contact with anyone at the FCC to ask about the process or get help in knowing how to deal with it all.

Thus though business interests and self appointed "public service advocates" may have access to the process, the public is denied access and thus has no way of making the crucial input that the FCC needs to make regulations that can be helpful.

>
> * What telecommunications services should be "universal" in the
> information age? What flexibility should people have in picking

On the Netizens Association list we have discussed the need for the Net to be a means for communication. Thus we have identified text based email, Usenet, and lynx as a basic need to have universally available. It is interesting that the Nov. 1994 NTIA online conference on the future of the Net which included discussion of universal service and access identified a similar set of needs.

That is the basic set of what would make it possible for the public to be able to participate in the FCC process if that process was an open and participatory one, rather than an exclusive and closed one.

> the services they need? How might Universal Service be defined so
> that recipients of the services do not have to pay to protect
> certain rights (such as privacy)? What good is a wire without
> connections to the hardware, training, and support that are
> essential for effective use?

I don't see privacy as a crucial right. I see access as the crucial right, and as someone early on on the Netizens list said, that email is a basic right.

The Freenets and community networks that have developed around universities and libraries in some areas made a beginning of offering a minimal kind of access and having the help needed for people to utilize this access. Yet these examples have been left out of the Telecommunications Act of 1996. Also, universities often have established a way of having computer centers with some staff who are available to help people who come to the centers, and they often have some minimum set of classes available to introduce those new to the technology how to use it.

Thus again, there are models that could be examined.

But in the process of this it would also be important to examine the problems that these models have had or that people have had trying to get some basic services in these situations.

There is a way to get real information about the problems and needs, but once again the FCC process doesn't seem to provide any mechanism for this to happen.

>
> * What role can nonprofit organizations and other community-based
> institutions play in delivering access to basic and advanced
> services? How could centralized delivery centers reduce the costs

It's not clear to me who these nonprofit organizations and other community-based institutions are that are being proposed here. This leaves out the community networks that have developed. It also leaves out

academic institutions, such as universities and colleges and community colleges. And it leaves out the experience of the NSF in helping to connect these institutions.

So instead of building on what has been developed and learning from it, it is substituting a new set of institutions.

In NYC these institutions have not been helpful in promoting email for all and thus to rely on such as the mechanism for the future seems to ignore what the obstacles are.

> of providing basic and advanced services in both urban and rural
> areas? What role could existing community-based
> organizations-schools, libraries, community centers, and so
> on-play in managing these new telecommunications centers? Also in

I don't understand why this is discussing "basic and advanced services". It seems there is a need for basic communication media to be available such as email and Usenet and lynx, in addition to basic phone service, at a low or minimal cost.

Some of the problem with all this is that these questions seem to be proposing relying on these organizations to do something, rather than looking at what has been able to extend access to the online world and build on the lessons.

> a more complex technological environment with numerous carriers,
> providing universal access may not be enough to facilitate

One of the problems with the Telecommunications Act of 1996 is that it is fundamentally changing the way basic telephone service is to be provided from a way that has proven to function in the past in the U.S., i.e. a regulated utility, to one that has never proven to work, i.e. the so called "market", aka the corporate monopolies being given unfettered right to fleece the public for basic telephone service.

> | widespread use of telecommunications. The public may need ongoing
> | consumer education so that individuals and organizations are aware
> | of the options available to them, are able to make informed

The public doesn't need "consumer education". We need regulation of the monopolies. This is saying the corporate big boys can do whatever they want and we the public need education so we know how to pick among them.

We can't pick among them. The whole experiment with monopolies over many years has shown that the public is hurt by them and that is why there is a need for government to regulate the monopolies, not to provide so called "consumer education"

> | decisions about these options, understand the pricing of the
> | services, and know how to get assistance if they have difficulties
> | with service reliability, bills, privacy, and other problems. How
> | might nonprofit organizations provide these educational services

> | as well?
>

So the corporate horror is to be unleased and the nonprofits are to be given a piece of the action?

Instead of the so called "nonprofits" opposing the unleasing of the corporate fury, they are being encouraged to line up for their share of the pie.

Meanwhile the public is to be the victim of both the unfettered corporate grab of our communications infrastructure, and of the "nonprofits" reaching for their share.

This is what the closed process creating these laws and regulations results in.

It isn't that the email and Usenet and lynx are being provided on a universal basis, but that basic telephone service has been removed from being a public right to being a corporate right to make profit.

One of the important issues left out in the above discussion of Universal Service from a posting by the Benton Foundation is that the Internet and Usenet arose from a technical and social need. That need was that as computers develop people need to have a means of remote support to get the technology to function. As computers play an increasingly important role in our society, it will be necessary for an ever growing number of people to be able to deal with computers.

The technical problems haven't been solved.

Those who are working at University or community sites where email or Usenet or www are being provided to 30,000 or + people notice that there are difficulties in making this all work.

As the Net is to be spread there needs to be the technical support to make this all function. Since it isn't that the commercial world has made this all work to begin with, it isn't that they can be relied upon to build the future.

Thus there is a need for the Net to spread to make it possible for computer use to spread, and there is a need for a social policy and program to guide how this is done.

The Telecommunications '96 Law fails to provide for any of this and even fails to safeguard the telephone system in the U.S.

It seems there is a need for the discussion of these issues to be opened up among people on the Net, which is one of the reasons for the Netizens Association Mailing list.

Ronda Hauben

Ronda Hauben
rh120@columbia.edu

ronda@panix.com

Ronda Hauben
P.O. Box 250101
New York, N.Y. 10025-1531

Part II -- Additional Comment

Part III - Appendix

Following is an additional comment I would like to submit into the Universal Service Hearing process responding to the disadvantage represented by not being able to get adequate clarification early enough from the FCC and thus resulting in my missing the May 7 deadline for paper submissions. I am requesting an extension of the May 7 deadline for paper submissions since I didn't find out till May 7 in the email below that the May 7 deadline meant that paper filings had to be at the FCC by May 7, rather than postmarked by May 7. I am requesting an extension of the May 7 deadline so I can mail the paper copies to be included in the formal proceeding. I am requesting that the deadline by extended till May 21 so that I can mail them as soon I hear I have received an extension and that there will be enough time to send them by postal mail for you to receive them.

Following are the reasons for requesting the extension:

After three weeks of trying to find out how and when comments needed to be submitted to the FCC for the May 7 deadline (i.e. did they have to be postmarked by May 7 or into the FCC by May 7, could they be submitted email etc) I finally got an answer to my questions.

Since it is clearly too late to get 5 paper copies to the FCC by today, May 7, it seems that it is impossible to send paper comments for input into the process. Also, I was surprised that the May 7 deadline wasn't a postmark deadline, but an actual deadline for receipt of paper submissions, since for most folks it is a hardship or an expense for some form of special delivery to guarantee when the mails will deliver something by.

The legal sitautions I was aware of previously required something postmarked by the date it was due so I was surprised to receive the following reply. I had been planning to try to send off the 5 paper copies and have them postmarked today May 7, but I have now been informed that this will be useless.

This process was not designed, it seems, to encourage input into it. And if it is so hard to get some clarification about how to make submissions, it is clear that that is another stumbling block in having any input from the folks that the FCC needs to hear from if they are to have the information and feedback needed to make decisions that will be able to be helpful toward making some form of worthwhile universal service regarding both phone and Internet access possible. It does seem that the FCC internal structures, as well as the rush required by the mandates of the law, make the forming of any meaningful regulations providing for universal service basically impossible. A comment on the Netizens list that the whole process needs to be stopped and some form of public process like town meetings around the country set up to take input into the process, is helpful. Responding to the Benton Foundation question posted to the Netizens Association list by Kerry Miller, about "How can the discussion center around the

people who need to benefit from the policy most," Peter Moulding wrote, " (My 2 centsworth) By widespread public meetings in every town hall each with links to the internet, so that people can raise their hands and their question or viewpoint will be keyed in to the discusison. This is the first step and will take time and organization, so it is vital that the discussion on universal service is not rushed through."(Netizens Association Mailing List, May 5, 1996) I would add that a process like the NTIA online conference on the future of the Net, such as was held in Nov. 1994 about the questions of universal service, and of access, needs to be examined and learned from by the FCC and Congress so that they can structure a process appropriate to the problem.

I did send off the email comments, but it is hard to expect they can be taken seriously if they are considered to be informal comments

Following is the email I got today, May 7, telling me that the paper comments had to be in the FCC offices by May 7.

Also, I am sending, as an appendix, a summary I did of the NTIA online Nov. 1994 conference, which was presented as a talk at the NYPL and in Canada at the Telecommunities '95 conference and included in their conference proceedings.

Please let me know as soon as possible if there is an extension possible regarding getting my comments into the FCC.

Sincerely,
Ronda Hauben

Ronda Hauben
rh120@columbia.edu
ronda@panix.com

Ronda Hauben
P.O. Box 250101
New York, N.Y. 10025-1531

---------- Forwarded message ----------
Date: Tue, 07 May 1996 09:32:04 -0400
From: Sheryl Segal <SSEGAL@fcc.gov>
To: rh154@columbia.edu
Subject: Re: Submitting comments by May 7, 1997 on Universal Service -R

Informal means that you did not follow the rules for formal comments and did not send in 5 paper copies to be distributed as a formal comment in the proceeding. Informal comments are scanned into our official record and are included in the Bureau's and the Commission's considerations in the decision making process.

The NPRM (notice of proposed rulemaking) on electronic filing of formal comments has not yet been issued, it is in the process of being drafted. When it is issued, it will be announced in the Daily Digest and on the Internet.

The comments must be received **in the FCC by May 7**, and this may be

accomplished for informal comments by email.

I received your comment by separate email, and I have sent it to the docket for inclusion.

Sheryl Segal

Appendix: Summary Paper on the NTIA Online Conference

An Online Prototype for Policy Decisions

by Ronda Hauben
au329@cleveland.freenet.edu

[Editor's Note: The following article, with small changes, was delivered as a talk at the Telecommunities '95 Conference, Victoria, BC, August, 1995.]

PART I

In spring, 1995, a special issue of Scientific American appeared, exploring the advance that the computer and communications revolution is having for our times.(1) In the introduction to the issue was a cartoon. The cartoon shows several paleontologists on the trail of a major new discovery. The caption reads: "Well, I don't see any point in looking any further. It was probably just one of those wild rumors." They are about to turn back as they feel they aren't finding what they are looking for. The cartoon shows they are standing in the midst of a huge footprint. However, because it is so large, they don't see it.

This cartoon is a helpful analogy to our situation today. There have been very significant computer networking developments in the past 30 years, but these advances are so grand that it is easy to miss them, and to begin to turn back, just like the paleontologists. It is important to understand what these advances are, so we can recognize them, and learn in what direction the footprints point, rather than turning back.

Today we are at a turning point in terms of what the future direction of the Global Computer Network will be. Changes are being made in U.S. policy and in the policy of countries around the world regarding the Net and Net access and thus there are important issues being raised about what the new policy will and should be.

In response to criticisms in the U.S. that the online community was not being involved enough in the setting of the new policy, an online conference was held November 14-23, 1994, by the U.S. National Telecommunications Information Administration the NTIA. The NTIA virtual conference was co-sponsored by the National Telecommunications Information Administration and the Information Infrastructure Task Force (IITF), as part of the U. S. government's National Information Infrastructure Initiative. The conference gave people both in the U.S. and around the world a chance to discuss their concerns about government policy on

expanding access to the Net.

People needed a computer to take part or could participate at a limited number of public access sites that were set up around the U.S. in public libraries and other public places. The online conference was available via a mailing list, where all the posts were sent to the subscriber's e-mail mailbox, or as a Usenet newsgroup on a limited number of sites. Also a World Wide Web site was set up so one could read the posts, without being able to participate. There were several conferences on different topics, two of which discussed increasing access to the Net to a broader sector of the U.S. population.*

One paper posted to the online conferences described the social and technical advance that the Global Computer Communications Network makes possible. The author of the paper wrote: "Welcome to the 21st century. You are a Netizen, or a Net Citizen, and you exist as a citizen of the world thanks to the global connectivity that the Net makes possible. You consider everyone as your compatriot. You physically live in one country but you are in contact with much of the world via the global computer network."

"The situation I describe is only a prediction of the future, but a large part of the necessary infrastructure currently exists... Every day more computers attach to the existing network and every new computer adds to the user base -- at least twenty five million people are interconnected today...."

"We are seeing a revitalization of society. The frameworks are being redesigned from the bottom up A new more democratic world is becoming possible."(2)

This paper was one of the many contributions in response to the NTIA statement welcoming participants to the online conference. The NTIA listed several purposes for the conference. Among those purposes were:

"1) Garner opinions and views on universal telecommunications service that may shape the legislative and regulatory debate.
2) Demonstrate how networking technology can broaden participation in the development of government policies, specifically, universal service telecommunications policy.
3) Illustrate the potential for using the NII to create an electronic commons.
4) Create a network of individuals and institutions that will continue the dialog started by the conference, once the formal sponsorship is over."

"This conference," the NTIA explained, "is an experiment in a new form of dialog among citizens and with their government. The conference is not a one-way, top down approach, it is a conversation. It holds the promise of reworking the compact between citizens and their government."(3)

What was the response to the call? In the process of the week long discussions a number of voices complained about the commercial entities that were slated to take over the U.S. portion of the backbone of the Internet. Many expressed concern that government intervention was needed to make access to the Net broadly available in the U.S. They gave experiences and examples to demonstrate that leaving the problem of expanded access to commercial entities would not solve the problems that expanded access required be solved.

For example, one participant wrote: "I want to add my voice to those favoring greater, not less, government intervention... to protect the interest of the people against the narrow sectarian interests of large telecommunications industries. Why the federal government gave up its part ownership in the Internet backbone is a mystery to me. An active interventionist government is essential to assure universal access at affordable prices (for)... people living in (the) heart of cities or in the Upper Peninsula of Michigan."(4)

A number of people from rural and remote areas participated and explained their concern that they not be left out of the online future because connecting them to the Net would not be profitable.

In response to a post from someone in Oregon, a librarian from a remote area of Michigan wrote: "I'd like to hear more from the Oregon edge of the world. Being from a small, rural library in the Upper Peninsula of Michigan, with a very small tax base... faced with geographical isolation and no clout... how do we get our voices heard and assure our patrons equal and universal access to these new and wonderful services... we have no local nodes... every hook up is a long distance call. What are you doing over there?"(5)

A participant working with a scientific foundation echoed this concern. He wrote: "When faced with the resources and persuasive power (legal and otherwise) of enormous multinational corporations with annual incomes that are orders of magnitude greater than some of the territories they serve, only a capable and committed national guarantee of access, and a national cost pool can provide access to these new technology resources."

"And THE INTERNET IS SPECIALLY IMPORTANT to areas with limited access to technical and scientific resources. As one of the leading non-profit educational foundations devoted to the environmental problems of small tropical islands, we (Islands Resources Foundation) are amazed at the richness of the Internet resource, and terribly concerned that our constituents throughout all of the world's oceans are going to (be) closed off from access to this resource because of monopoly pricing policies." (To the NTIA, he urged, "we ask careful attention to the equity issues of access, and a federal guarantee of access and availability.")(6)

Recognizing that people without computers or net access wouldn't be able to participate in this conference because they didn't have computers and modems already available, a limited number of public access sites had been set up. One poster from San Francisco explained how this made it possible to participate. The person wrote: "I am sitting in the corner of the card catalogue room at the San Francisco main library,(...) doing what I hope I will be able to do for the rest of my years: use computers freely. Internet, online discourse, rather is invaluable; the role of the computer-friendly mind is becoming ever greater and the need to communicate within this medium needs to remain open to all. If not, we will fall into the abyss of the isolated world....We could become isolated in a cubicle existing only through our computer....I would choose otherwise. Keep computers part of the schools and libraries, and definitely make (the) Internet free to any who wish to use it. Otherwise we are doomed."(7)

Another poster expressed support for library access and participation. He cautioned: "If things go as it looks they are going now, libraries will lose out to business in the war for the net. Yes, this means that we will be drowning in a deluge of what big business tells us we want to hear and the magic of the net will vanish in a poof of monied interests. Some estimates that I have read say that it should cost no more than $10 a year per user for universal access to the national network, including library sites so that those without phones or home computers have access. The NSF has decided against funding the Internet anymore and all the talk of (...)(late) is about the privatizing of the net. No one seems to get the point involved (or, worse: They *do* get the point.). The backbone of the net should be retained by the government. The cost is relatively inexpensive and the benefits are grand. Paying large fees (some plans call for charges based on the amount of data consumed and others by time spent net-surfing) defeats the nature of the net. We have possibilities for direct democracy. At the very least, for representation of mentally distinct groups as opposed to physical. That is, now we are represented in Congress by geographical area, not what our opinions support... "(8)

Several people complained how Net access was not only difficult because of the cost of modem connections, but that for many people it was a financial hardship to even own a computer. As one poster from Virginia explained: "As a newcomer to the net, I don't feel I have much relevant to say. All this chatter about Info Superhighways strikes me as so much political double talk. The highway exists. But to drive on the damn thing you need a car. Computers (Macs or PCs, etc.) are not items that someone making 6 or 7 dollars an hour can easily obtain."(9)

Other posters described the efforts in their areas to provide public access to the Net. In Seattle, we learned that the Seattle Public Library and the Seattle branch of Computer Professions for Social Responsibility had set up a system that made e-mail access and an e-mail mailbox available to anyone in Seattle

who wanted it.

We learned that in Blacksburg, Virginia, federal funds had helped to set up the Blacksburg Electronic Village by installing fiber optic cable to all new apartments being built so the people would have direct access to the Internet.(10)

Canadian posters described how the Blue Sky Free-Net in Manitoba Canada was providing access to all of Manitoba with no extra long distance phone charges to small rural areas. We were told that in Manitoba, "They have basically a hub in each of the different calling areas...some places will be piggybacking on CBC radio waves, others on satellite connections."(11)

Also proposals were made to provide access to other forgotten segments of the society like the homeless. A poster from San Francisco proposed that terminals with network access be installed in homeless shelters. The person explained: "Provide homeless shelters with online systems frozen into Netnews and e-mail, or e-mail and gopher. A 386 terminal running Linux, Xwindows and Netscape, and linked into a user group such as e-mail and gopher, etc., would permit defining the lowest level of involvement. People need communication to represent themselves, and e-mail for that reason, as well as Netnews."(12) People from other countries also contributed to the discussion providing a broader perspective than might normally be available in a national policy discussion.

From the Netherlands came the following observation: "After attending the Virtual Conference for two days now, I would like to give my first (contribution) to the discussion. Since I work for the government of the Netherlands, at the Central Bureau of Statistics, which is part of the Department of Economic Affairs, the question of availability of statistical figures intrigues me. As a result of safety precautions there is no online connection possible with our network. There should, however, be a source for the public to get our data from, we get paid by community-money so the community should benefit (from) the results of our efforts. I am wondering how these matters are regulated in the other countries who participate in the Virtual Conference " "With kind greetings," he ended.(13)

And a Psychology Professor from Moscow State University in Russia wrote: "Hi, netters: (He explained how he had subscribed to the two mailing lists dealing with network access, since he didn't think there would be many messages so it wouldn't require much time.) "I'm glad I'm wrong," he admitted. "I can't follow the massive traffic of discussions. Sometimes my English is too poor to grasp the essence, sometimes I don't know the realities, legislation etc. Some themes I'm greatly pleased with.... I agree gladly with Larry Irving (of the NTIA who had said he was -ed) thrilled with the volume of traffic & quality of discussion. I am, too. Perhaps I'll find more time later to read the messages more attentively. I shall not un-subscribe, though." "The people in the 2nd & 3rd worlds," he continued, "are just now trying to

find our own ways to use the Internet facilities & pleasures. I am interested in (the -ed) investigation of these ways, in teaching and helping them in this kind of activity. Besides, my group is working on bibliographic database construction and letting ... remote access to it. For several days only we got an IP access to the WWW, we are not experienced yet to access. So I use ordinary e-mail. Good luck to all subscribers." he ended. "I wish you success."(14)

As part of the discussion several participants discussed how they felt the ability to communicate was the real advance represented by the Global Computer Network, rather than the means of providing information as others have maintained.

Titling her message, "Not just information -> Communication," a participant from Palo Alto, California wrote, "... the NTIA is building a one-way highway to a dead end when they take the word Telecommunications out of their rhetoric." She listed several points for people to consider, among which were:

"1. Information is always old already.
2. Tele-communications, properly algorithmed, provides dynamic information about who we are as the human race....
3. Telecommunications is the road to direct democracy and a future for this planet.
4. Down-stream bandwidth is just another broadcast medium. Upstream bandwidth is power for the people." (15)

In a similar vein, another participant who was a college student wrote: "To start off, I take issue with the term 'service.' As I have stated...the terminology being used is being adopted from an out-dated model of a Top-Down communications system. The new era of interconnection and many-to-many communication afforded by Netnews and Mailing lists (...) brings to the forefront a model of bottom-up rather than top-down communication and information. It is time to re-examine 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. Rather than service, I would propose that we examine what 'forms of communication' should be available. So instead of talking about 'Universal Service' we should consider 'Universal Interconnection to forms of communication.'"(16)

These were just some of the many concerns raised in this week long online conference supported and sponsored by a branch of the U.S. government. The people participating raised serious questions as to whether the real issues needed to make access possible for the many rather than a multimedia plaything for the few, would be considered and examined

Many were concerned for those who didn't now have access to the Net, either because they didn't have modems or even more fundamentally because they couldn't afford computers. Thus there

was a significant sentiment that computers with network access be made available in public places where people could have access, like public libraries.

One participant noted that current policy was favoring a few people having video connections rather than the many having e-mail capability. He requested that we: "Redirect some of the funding for high end technology into getting the mainstream public onto the net. Instead of funding an hour of video between two users, we should use the money to let 100,000 users send an e-mail message."(17)

Summing up the sentiment expressed during the conference, a participant wrote: "I find it hard to believe a state can function in the 21st century without a solid information infrastructure and citizens with enough technological savvy to use it."(18)

The conference was a very significant event. From cities to rural and remote areas, people made the hard effort to express their concern and commitment to having everyone have access and to protest the U.S. government policy of giving commercial entities the Net as a policy that is in conflict with the public and social goal of universal network access for all. Despite hardships that people experienced to participate mailboxes got clogged with the volume of e-mail that people couldn't keep up with, newsgroups appeared late on Usenet and at very few sites so it was hard to get access to them, the lack of publicity meant that many didn't find out till the conference was almost over, etc., the people who participated did what they could to contribute to and speak up for the means for everyone to be able to be part of the net as a contributor not just as a listener. A new government form was created which is very different from what has existed thus far.

This online conference made clear that the hard problems of our time can be solved only if the most advanced technology is used to involve the largest possible number of people in the decisions that will affect their lives.

PART II

In trying to determine the significance of this conference for solving the problems of the future of the Net, it is helpful, however, to look back at how a similar problem was explored 30 years ago and see if there are lessons that can be applied to the problem of today.

In Spring of 1961 an important event occurred. MIT, a pioneering engineering institution was to celebrate its 100th birthday. A call went out, for suggestions for what would be an appropriate celebration. Martin Greenberger, then a young MIT faculty member, describes how he responded to the request and proposed a series of lectures on the Computer and the Future.

"We threw open the hatches," Greenberger remembered,"and got

together the best people we could assemble whatever their fields. We asked these thinkers to project ahead and help us to understand what was in store."(19)

One of the invited speakers was the British writer Sir Charles Percy Snow (better known as C. P. Snow). His talk on "Scientists and Decision Making" opened the conference. In 1961, working computers were only 17 years old. One of the first working computers was the ENIAC which was created in 1945. The computer pioneers and enthusiasts who gathered at the MIT conference, however, recognized the enormous impact that computers could have on society in the future, particularly on the university of the future if the computer could be made more accessible. This was a period when computers were very expensive and not very available. When one did have access to a computer, it was most likely to something like an IBM mainframe, which was being operated in batch processor mode. This meant that one delivered one's program on a stack of punch cards to the computer center and some hours or days later, returned for a printout of the computer results.

Those at MIT and at other academic institutions recognized that there would be a great and important change in computer science, in particular, and in university education, in general, if every student could have access to a computer for at least 2 hours a day and if the computer could be used increasingly by educators and researchers.

Though these were important issues on the minds of the MIT faculty in 1961, the opening talk at the centennial conference took a different direction. C. P. Snow described the period that they were living in, saying: "We happen to be living at a time of a major scientific revolution, probably more important in its consequences than the first industrial revolution."(20)

He predicted that the significance of the changes would be something "we shall see in full force in the very near future." And he raised the question: Will the challenge represented by the emergence of the computer be treated seriously by society?

Snow explained that when important decisions were made by a society, they were more likely to be good decisions if a large number of people were involved in the decision making process. He gave examples of decisions made by the British government during and after World War II. One of the decisions was to undertake strategic bombing, that is the bombing of civilian populations, as part of the British War effort. C. P. Snow explained how he felt this decision was made by a very small number of people and that in his view, it lengthened the war and was a harmful decision to the British people. He also described the decision in Great Britain to introduce National Health Care. That decision involved the discussion of many people at many levels of British society. Such broad public discussion, he believed, managed to filter up to the government, and led to legislation that was of great benefit to British society. Snow was fearful that a small

number of people would be making the needed decisions regarding the computer and he warned, "A handful of people, having no relation to the will of society, having no communication with the rest of society, will be taking decisions in secret which are going to affect our lives in the deepest sense."(21)

He also cautioned against having government officials without the adequate scientific or technical background, making decisions that would determine the future of the computer. It was necessary, he maintained, that those who understood the depths of the arguments of the issues being dealt with, be involved with government policy concerning computers.

Others at the conference explored how the computer would impact on diverse areas of society. John Kemeny, who later became one of the creators of the BASIC programming language and the DTSS time-sharing system, explored how the computer could affect the library of the future. Alan Perlis, another speaker at the conference, explored how the computer might change the university of the future. J. C. R. Licklider, who was to become the head of the soon to be created Information Processing Techniques Office under ARPA (Advanced Project Agency of the U.S. Department of Defense) also attended the conference. He had recently published a thought provoking article, "Man Computer Symbiosis", exploring how computers would change intellectual processes. In his contributions to the conference, J. C. R. Licklider examined the human-computer partnership and cautioned that the human must not so clutter his mind with codes and formats that he cannot think about his substantiative problem. He projected that in the future the computer would aid intellectual development, explaining, "In due course it will be part of the formulation of problems, part of real-time thinking, problem solving, doing of research, conducting of experiments, getting into the literature and finding references.... And it will mediate and facilitate communication among human beings."(22) He proposed that the most important function of the digital computer in the university, should be as a catalysis for the development of computer science.

Other participants at the conference included Claude Shannon and Norbert Wiener. Both had been instrumental in putting the study of engineering and communication on a scientific footing. At the conference, Wiener observed that "a computing machine is a general-purpose device that can be programmed to do many specific jobs. But, if you fail to give a necessary instruction to a computer, you cannot expect the machine itself to think of this restriction. An unsafe act, thus," Wiener warned, "may not show its danger until it is too late." Wiener cautioned that humans had to oversee the computer, that the computer required more human intellect, not less. "They involve more thought," he explained, "and not less thought. They may save certain parts of our efforts, but they do not eliminate the need for intelligence."(23)

One of the most important presentations at the conference was by the young MIT faculty member, John McCarthy. McCarthy spoke as a representative of a committee set up by the MIT

administration, to make recommendations about the future computer needs of MIT. McCarthy described a new form of computing that was called time-sharing and the vision for the future that it represented. He explained how a computer time-sharing system was one that interacts with many simultaneous users through a number of remote consoles. With time-sharing, multiple users could work interactively with a computer, by taking advantage of the faster speed the computer functioned at, as opposed to humans. Several users could work at terminals sharing a computer, but they would each have the illusion that they were the sole user of the computer.

At the end of the conference, the linguist Yehoshua Bar-Hillel concluded that it was hard to predict what the future of the computer would be in the long term, or even in the short term. However, he recommended that it was important to decide what type of future it would be worthwhile to encourage and to work to make that future a reality.

The conference marked an important turning point in the development of the computer. It represented in effect, the passing of the torch from those like Claude Shannon and Norbert Wiener who had developed information and communication theory and those like John Maunchly and Grace Hopper who had helped create the working computer and functioning software. They were passing the torch, so to speak, to those who would pioneer a new form of computing, that of the time-sharing of computers. The development of time-sharing would in time lead to the creation of online communities of computer users, and then to the linking of such online communities into a supercommunity of online communities, which eventually became the development of a Global Computer Network.

The MIT faculty member who presented the talk on time-sharing at the Centennial Conference, John McCarthy, described the technical change that was on the horizon in 1961.(24) McCarthy realized that a new form of computing would become possible and that MIT could help to make the needed technological leap. This was just at the time of the change from vacuum tubes to transistorized computers.

Another participant at the MIT Conference was Robert Fano, a senior faculty member at MIT, who had contributed to the information theory developed by Wiener and Shannon. In the summer of 1961, Fano took a sabbatical to work at Lincoln Labs because he hoped to learn more about digital computers there. He felt one had to begin thinking about communication in the general purpose way that the digital computer was making possible.(25)

Also, in the summer of 1961 Fernando Corbato, then the assistant director of the MIT Computation Center, along with several other programmers from the Center, were "in the heat of trying to work out the intricacies of the software problems to create a primitive prototype for a time-sharing system" which they called the Compatible Time-Sharing System or CTSS.(26)

Though they gave a demonstration of a crude prototype time-sharing system in November, 1961, they couldn't develop CTSS until the spring of 1962 when the more advanced hardware, the IBM 7090, the first transistorized computer in the IBM family, arrived.

Corbato, McCarthy, Fano and Licklider were part of a group of scientists and engineers who had become convinced that interactive computing and time-sharing had to be developed and it would need to replace the batch processing mode of computing that commercial companies like IBM projected as the future of the computer.

Licklider had gone to work at the acoustical research company Bolt Beranek and Newman, known as BBN. He had been able to try out one of the earliest time-sharing systems there. Licklider describes the sentiment of the group of researchers who were determined to make the leap to time-sharing, explaining: "Well, it turned out that these guys at MIT and BBN. We'd all gotten really excited about interactive computing and we had a kind of little religion growing here about how this was going to be totally different from batch processing."(27)

By the Fall of 1962, Licklider had accepted a position with ARPA, to support the development of time-sharing and interactive computing. One of the first projects that Licklider funded was Project MAC, a research project at MIT, headed by Robert Fano, to achieve 3 goals:

1) time-sharing
2) a community using it
3) education which meant supporting research projects

Out of the work done by Project MAC, a time-sharing system was developed and an online community of computer users grew up. Members of the community not only participated in the system, but also contributed the programs and data to help the system grow and regenerate.

Describing the surprise that the creation of this online community represented to the researchers who had pioneered time-sharing, Fano observed: "Friends being born out of using somebody else's program, people communicating through the system and then meeting by accident and saying 'Oh, that's you.' All sorts of things. It was a nonreproducable community phenomenon."(28)

In addition, the creation of such time-sharing systems provided the model for a more expansive online community, for the online super community that would be developed through linking together the various time-sharing communities that had developed. In 1968, Licklider and Robert Taylor described the networking model that had developed from time-sharing, the supercommunity of time-sharing communities, which provided the vision for what was to become the ARPANET, and then the Internet, and then the Global Computer Network of our times. Describing online time-sharing

communities of 1968, they observed that these communities were learning how to cooperate and mutually support each other and they were producing large and growing resources of programs, data and know-how which they felt was only the beginning of the kind of online networking supercommunity of the future.

Also, building on the work done creating the Compatible Time-Sharing System at MIT in the early 1960s, Bell Labs programmers Ken Thompson, Dennis Ritchie and others developed the Unix Time-sharing system in 1969.

Their goal, similar to that of the Project MAC pioneers, was to create a community of programmers. Reviewing the achievements of CTSS, Fano described one of the important but un-met goals. He explained, "One of our goals was to make the computer truly accessible to people wherever they were. We did not succeed. For people who lived in the community that used the system, it was fine. In any system like that, you keep learning things, you keep using new things, and so you keep having troubles. If you can go next door and say, 'Hey, I was doing this and something strange happened, do you know what I did wrong?' Usually somebody in your neighborhood will be able to help you. If instead, you are far away, you are stuck.... We tried to develop some way of helping remote users.... Well, we never did. So in fact, we failed to make the computer truly accessible regardless of the location of the user."(29)

Other computer networking efforts like the creation of the ARPANET, of Usenet, and of the uucpnet that transported it, the gatewaying of Usenet with the ARPANET, and the creation of the NSF backbone for the Internet, helped to solve the important problem left unsolved by Project MAC. This growing network, and particularly the Usenet newsgroups and IRC chat give computer folk who have access to them a way to post their problems, to get help, and to share the solutions they have figured out, so people can benefit from others' experiences. Usenet and IRC chat have thus followed in the footsteps of Project MAC and other early time-sharing systems and have created an online supercommunity of communities of computer users. What the Centennial conference at MIT and the early time-sharing work (along with subsequent developments like Unix and Usenet) show, is that the creation of the current global computer network is not the result of some science fiction dream. Rather the global network is the result of scientific and engineering experimentation and the creation of models based on the real world prototypes that the experimental mode produces. What then is the value of identifying the real roots of the Net in trying to determine the future of the Global Computer Communications Network? How can knowing this past history help to guide the work for the future?

Recalling the admonition of C. P. Snow at the MIT Centennial conference, that the more people involved in trying to solve important social problems, the more likely the solution will be beneficial to society, rather than harmful, reminds us that there is a need to involve the broadest possible number of people in

the problem of expanding and determining the future of the Net. Also, the legacy of the MIT pioneers of time-sharing is not only the development of time-sharing, it is also the lesson that it is important to create the prototype of what one is trying to develop, and to build one's vision for the future on what the real models show is possible. Fortunately, such prototypes have been created.

The NTIA conference, using mailing lists and Usenet news-groups to have a broad reaching online discussion, created a prototype for how ubiquitous networking can be achieved more broadly within the U.S. and elsewhere.

The NTIA conference demonstrated that in the involvement of the many the important problems of our times can be analyzed so they can be solved. And the Internet and Usenet news, vital components of the Global Computer Network, are providing important means for the people of our society to contribute to the needed discussion to determine what decisions will be helpful or harmful concerning the future of the Net.

Even though the NTIA conference meant a much broader section of people than ever before were able to participate in the policy discussion over the future of the Net, one of the participants explained why this process was only a prototype of what was needed. He wrote: "I think this conference was accessible to more than just "elite technocrats. I, for instance, am a graduate student at the U of MN. I have access because everyone who attends the University has access, and can apply their access via numerous computer labs that are open to all students. I think a lot of people don't realize that we're at a very critical point with determining the future of resources such as the Internet. I join you in hoping that no irreversible decisions are made on the basis of this conference there needs to be a much wider opportunity for public comment."(30)

Epilogue

What was the significance of the NTIA conference toward helping to determine what direction government policy should take regarding the future of the Net?

When the NTIA conference was held in November 1994, many of the participants expressed their dissatisfaction with the plan of the U.S. government to turn the backbone of the U.S. portion of the Internet over to private and commercial interests by May 1, 1995. Despite the many questions raised about the objectives of U.S. policy by those participating in the online conference, and despite the fact that the stated goal of the conference was to involve citizens in helping to formulate policy objectives, the U.S. government ignored the concerns and voices raised during the online conference, and went ahead with their plans to privatize the U.S. portion of the backbone of the Internet.