The Amateur Computerist

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Introduction

This special issue of the *Amateur Computerist* is dedicated to the life and work of Michael Hauben. Michael helped found and edit this publication. He gave it its name reflecting that it is intended for those who love computing. Much of Michael's writing appeared in the *Amateur Computerist* from its beginning in 1988 until his untimely death in June 2001. In our pages he published and explained and popularized his vision of a democratizing, interactive and enlivening Internet populated by many citizens of the net – netizens.

The first article explores the emergence of the concept of netizens. It builds to its conclusion that the future cannot be known but we can and should strive for the future we want. Michael's vision of the netizen can be a guide. The next article tells some of the story of Michael's growing up and his connection with computing. It is followed by tributes to and remembrances of Michael. The bulk of the issue is a collection of a few of Michael's articles especially concerning netizens, democracy and his understanding of the importance of the Net. The issue ends with a report from a conference in Berlin where these same concerns were discussed and debated.

We offer this issue not only to commemorate the life and work of Michael Hauben but also because we feel the relevancy of these for today.

The Emergence of the Netizen, Is the Early Vision Still Viable?*

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I want to explore a vision for the future, a vision that builds on the inspiration provided the world by the French concept of "the citizen." The vision is based on a new form of "citizen" that has grown up with

the Internet, called the "netizen."[1]

In 1992-1993, Michael Hauben, co-author of the book *Netizens: On the History and Impact of Usenet and the Internet* was in his second year as a college student at Columbia University in New York City. Describing the research that he did which revealed the emergence of Netizens, Michael writes:

> I started using local bulletin board systems (called BBS's) in Michigan in 1985. After several years of participation on both local hobbyist-run computer bulletin board systems and the global Usenet, I began to research Usenet and the Internet.

The computer bulletin board culture being described flourished in the U.S. and parts of Europe and elsewhere in the 1980s to the early 1990s. As a hobby, early computer users set up their own home computers to make it possible for other people to call, leave messages or programs, respond to the messages or download the programs. They used modems and the telephone lines to connect their computers. As a teenager in Michigan in the 1980s, Michael was part of this computer bulletin board community of sharing ideas, discussion and software. From other computer users who were part of this community, he learned about the Internet. By the early 1990s the Internet had become a network of networks that spanned the globe. Michael also learned of Usenet which used telephones, computers, modems and the Unix operating system to send messages around the world. Usenet and the Internet made it possible for computer users to have online discussions with people from other parts of the world, to share technical problems, and to get help from a global online community.

"This was a new environment for me," Michael continues. "Little thoughtful conversation was encouraged in my high school. Since my daily life did not provide places and people to talk with about real issues and real world topics, I wondered why the online experience encouraged such discussion and consideration of others. Where did such a culture spring from? And how did it arise? During my sophomore year of college in 1992, I was curious to explore and better understand this new online world." (*Netizens*, "Preface," p. ix)

By 1995, Michael's research was recognized internationally, and he was invited to Japan to speak at a conference about the subject of

Netizens. In his talk, he describes his early investigation of Usenet and the Internet. He explains how "As part of course work at Columbia (University) I explored these questions. One professor encouraged me to use Usenet and the Internet as places to conduct research. My research was real participation in the online community, exploring how and why these communication forums functioned." He continues, "I posted questions on Usenet, mailing lists and freenets [Freenets were just springing up at the time as community networks which provided local people with free access to the Internet -ed]. Along with my questions I would attach some worthwhile preliminary research. People respected my questions and found the preliminary research helpful. The entire process was one of mutual respect and sharing of research and ideas, fostering a sense of community and participation." *(Netizens*, page ix)

Through this research process, he "found that on the Net people willingly help each other and work together to define and address issues important to them." (ibid.)

This was the experience people had on Internet mailing lists and Usenet newsgroups in the early *1990s*, before the web culture had developed and spread. What one found online was a great deal of discussion and interactive communication. This was like the computer bulletin board culture. While the computer bulletin boards put users in contact with local computer users, Usenet newsgroups and Internet mailing lists put users in contact with other computer users from around the world. When Michael posted his early research questions on Usenet and the Internet he received about 60 responses from around the globe. A number of these responses were detailed descriptions of how people online had found the Net an exciting and important contribution to their lives.

Elaborating on the progression of his research, Michael writes: My initial research concerned the origins and development of the global discussion forum Usenet. For my second paper, I wanted to explore the larger Net, what it was, and its significance. This is when my research uncovered the remaining details that helped me recognize the emergence of Netizens. (*Netizens*, p. x)

While people answering his questions were describing how the

Internet and Usenet were helpful in their lives, many wrote about their efforts to contribute to the Net, and to help spread access to those not yet online. It is this second aspect of the responses that Michael received which he recognized as an especially significant aspect of his research.

Describing the characteristics of those he came to call netizens, Michael writes:

There are people online who actively contribute to the development of the Net. These are people who understand the value of collective work and the communal aspects of public communications. These are the people who discuss and debate topics in a constructive manner, who e-mail answers to people and provide help to newcomers, who maintain FAQ's, files and other public information repositories. These are the people who discuss the nature and role of this new communications medium. These are the people who as citizens of the Net I realized were Netizens. (*Netizens*, pp. ix-x)

Later Michael elaborates:

Net.citizen was used in Usenet...and this really represented what people were telling me – they were really net citizens – which Netizen captures. To be a 'Netizen' is different from being a 'citizen.' This is because to be on the Net is to be part of a global community. To be a citizen restricts someone to a more local or geographical orientation." (From "Webchat with Michael Hauben," http://www.columbia.edu/~hauben/papers/jr_gii_summit-webchat.txt, Jan. 25, 1996)

Michael was not referring to all users who get online. He differentiates between netizens and others online:

Netizens are not just anyone who comes online. Netizens are especially not people who come online for individual gain or profit. They are not people who come to the Net thinking it is a service. Rather, they are people who understand that it takes effort and action on each and everyone's part to make the Net a regenerative and vibrant community and resource." (*Netizens*, p. x)

The talk Michael was invited to present in Japan, was given in November 1995. The talk reflected his experiences and online research

from 1992-1995.

By 1995 the U.S. portions of the Internet was becoming increasingly commercialized. There was an effort on the part of the U.S. mass media to promote a "get rich quick" view of the Internet. Many who have come online since 1995 have not had the experience of the early culture of interactive participation and sharing that prevailed through the early 1990s. Instead these origins are hidden and the early development of the Internet is erroneously characterized as a period of "exclusivity." This is not an accurate description. By the early 1990s users were finding ways to spread the Internet through civic efforts like creating community networks and Freenets and through creating gateways between different networks like the Unix UUCP network and the Internet and Fidonet. But by 1995 the U.S. government no longer supported the efforts which would continued the sharing and cooperative culture of the early Internet. Instead there was a vigorous campaign to commercialize and privatize the U.S. portion of the public Internet. (The way this was done was probably also in violation of U.S. constitutional provisions with respect to the necessary public processes to be undertaken before public property is privatized. However, the commercial pressure to carry the privatization out quickly left little time to challenge the process.)

In response to the growing commercialization and privatization, Michael and I set out to do research into the origins of the sharing, participatory Internet and Usenet culture to better understand the nature of the interesting online world we had become part of in the early 1990s.

In January 1994 we put a draft book online documenting the origins of the online network and culture it gave birth to. In his preface to the book Michael wrote:

> As more and more people join the online community and contribute toward the nurturing of the Net and towards the development of a great shared social wealth, the ideas and values of netizenship spread. But with the increasing commercialization and privatization of the Net, Netizenship is being challenged. During such a period it is valuable to look back at the pioneering vision and actions that made the Net possible and examine the lessons they provide. (*Netizens,* p. xi)

In the next section, I look back at the pioneering vision.

Historical Origins of the Vision for the Net

Through studies of the history of the Internet, it became evident that the vision for its development had been pioneered by J. C. R. Licklider, an experimental psychologist who was interested in human-computer relation.

> The world of the Netizen was envisioned more than twenty-five years ago by J. C. R. Licklider. Licklider brought to his leadership of the U.S. Department of Defense's ARPA program a vision of the 'intergalactic computer network'. (*Netizens*, p. 5)

Licklider introduced this vision when he gave talks for the Advanced Research Projects Agency (ARPA) program inspiring people with the idea of the importance of a new form of computing and of the potential for a network that would make it possible to communicate utilizing computers.

In a paper that Licklider wrote with Robert Taylor in 1968, they established several principles about how the computer would play a helpful role in human communication.[2] They wrote:

> We believe that communicators have to do something nontrivial with the information they send and receive...to interact with the richness of living information – not merely in the passive way that we have become accustomed to using books and libraries, but as active participants in an ongoing process, bringing something to it through our interaction with it, and not simply receiving from it by our connection to it.
> We want to emphasize something beyond its one-way transfer: the increasing significance of the jointly constructive, the mutually reinforcing aspect of communication – the part that transcends 'now that we both know a fact that only one of us knew before.' When minds interact, new ideas emerge. (Licklider and Taylor, p. 21)

Michael had experienced the importance of online interaction among people with different ideas. From the diversity, something new

developed.

The network of various human communicators quickly forms changes its goals, disbands and reforms into new collaborations.

The fluidity of such group dynamics leads to a quickening of the creation of new ideas. Groups can form to discuss an idea, focus in or broaden out, and reform to fit the new ideas that have been worked out. (*Netizens*, p. 6)

The virtual space created on noncommercial networks was accessible to all, while the content on commercial networks like CompuServe or America On Line was only accessible by those who paid to belong. (*Netizens*, pp. 6-7)

By the early 1990s the research Licklider had initiated at ARPA had led to the development of first the ARPAnet and then the Internet. Also an effort by graduate students to have an online newsletter resulted in a newsgroup network known as Usenet.

In 1996, Michael wrote that the Net should be like a public utility – akin to postal/telephone/water. While he did not necessarily favor regulation, he explained that regulation by government would be necessary to have equal access available to all to the net. "The market," he predicted, "would not make the Internet available in areas where it could not make a profit (and that the Net would lose if all potential contributors were not able to participate.)"

Michael saw the Internet and Usenet as a communications public utility that needed government support so that it could be available to all.

In response to a sensitivity among many online in the U.S. about government regulation meaning potential censorship, he emphasized that "Regulation does not mean censorship.... Rather regulation means putting the public interest over the commercial or private interest. The Net is a shared commons, which means it is important to make it available to the many, and not grabable by the few." ("WEBCHAT")

By 1996, he found that:

Advertising will (and is) polluting the online world. Those with money will quickly take over the spaces (...and) those without money will not be able to. And those thinking of money are not thinking about a global cooperative community – they are

thinking of themselves. (ibid.)

He believed that commercial entities could not develop a network that would spread access to all, a network that would encourage user participation in its development. He also proposed the need for citizens to find ways to influence their governments to counter the pressure on government by commercial entities to direct the Internet's development in commercial directions.

A cornerstone before commercialization was the broad ranging discussion on Usenet or mailing lists. This discussion encouraged the interaction and exchange of diverse viewpoints. "Only by seeing many points of view," writes Michael, "can one figure out his or her position on a topic." Many of the people who responded to his research questions told how they valued hearing from people with different experiences and points of view. "Brainstorming among different types of people," he concludes, "produces robust thinking."

> Information is no longer a fixed commodity or resource on the Net. It is constantly being added to and improved collectively," he observes, explaining, "The Net provides an alternative to the normal channels and ways of doing things. The Net allows for the meeting of minds to form and develop new ideas. It brings people's thinking processes out of isolation and out into the open. Every user of the Net gains the role of being special and useful. The fact that every user has his or her own opinions and ideas adds to the general body of specialized knowledge on the Net. Each netizen thus becomes a special resource valuable to the Net. (*Netizens*, pp. 4-5)

In the course of researching the origins of networking, Michael discovered the source of the culture of sharing and cooperation. Developing the Internet was "not a commercial process.... The 'selfless-ness' grew out of the fact that technology required helping each other to succeed – for people to develop and further computing technologies." He also recognized the need for open code and for the open publication of the technical developments. He writes:

> The public funding of the ARPAnet project meant that the documentation would be made public and freely available. The documentation was neither restricted nor classified. This open

process encouraging communication was necessary for these pioneers to succeed. Research in new fields of study requires that researchers cooperate and communicate in order to share their expertise. Such openness is especially critical when no one person has the answers in advance. (*Netizens*, p. 109)

Protection

Michael pointed out that both Usenet and the Internet flourished in their early development because they were protected from commercial use. He writes:

Usenet has not been allowed to be abused as a profit-making venture by any one individual or group. Rather people are fighting to keep it a resource that is helpful to society as a whole. (*Netizens*, p. 55)

Commercial usage was prohibited on the U.S. part of the emerging Internet known as the NSFnet. "There were Acceptable Use Policies (AUP) that existed because these networks were initially founded and financed by public money."

This protection then extended to the networks from other countries that connected to the NSFnet. Since on the NSFnet, Michael writes, "commercial usage was prohibited, which meant it was also discouraged on other networks that gatewayed into the NSFnet backbone." (*Netizens*, p. 29)

Recognizing the need for protection for such a medium, Michael urges the importance of the net and of protecting the people's ability to develop its potential. He writes, "For the people of the world, the Net provides a powerful means for peaceful assembly. Peaceful assembly allows people to take control. This power deserves to be appreciated and protected. Any medium that helps people hold or gain power is something special that has to be protected." (*Netizens*, p. 26)

Not only did government regulation provide a protection from commercial abuse during the Net's development, but the developing network also provided a means for citizens to affect and influence their governments.

A study Michael did of an online conference sponsored by the U.S. government in November 1994 showed the potential of the Net for

making available to government a broad range of public views on an important new development like the Internet. Similarly, discussion groups such as those that Usenet provided could grow to provide a forum through which people would be able to influence their governments. Also such forums would allow for discussion and debate of issues in a mode that facilitates mass participation. Such discussion, Michael writes, "becomes a source of independent information. An independent source is helpful in the search for truth."(*Netizens*, p. 56) But universal access to the Internet is necessary to fulfill its promise. The Internet is identified as a "public good" that needs to be accessible to all the population. (*Netizens*, p. 246)

Michael recognized the difference between the view toward Usenet and the Internet that he received in the responses to his research questions and the view toward the future development of the Net which was being proposed then by the U.S. government. Describing the two different views, he writes:

> The picture of the Internet painted by the U.S. government has been one of an 'information superhighway' or 'information infrastructure' to which people could connect, download some data or purchase some goods, and then disconnect. This image is very different from the...cooperative communications forums on Usenet where everyone...(was welcomed to -ed) contribute. The transfer of information is secondary...in contrast to the reality that the Internet and Usenet (can -ed) provide a place where people can share ideas, observations and questions. (*Netizens*, p. 254)

An important democratic development occurred. Users on Usenet and mailing lists were able to be the architects of the evolving networks. Michael writes:

> The basic element of Usenet is a post. Each individual post consists of a unique contribution from a user, placed in a subject area called a newsgroup. Usenet grew from the ground up in a grassroots manner. (...) In its simplest form, Usenet represents democracy. Inherent in most mass media is central control of content. Many people are influenced by the decisions of a few.... Usenet, however, is controlled by its audience....

Most of the material for Usenet is contributed by the same people who actively read Usenet. Thus, the audience to Usenet, decides the content and subject matter to be thought about, presented and debated.

The ideas that exist on Usenet come from the mass of people who participate in it. In this way, Usenet is an uncensored forum for debate where many sides of an issue come into view.... People control what happens on Usenet. In this rare situation, issues and concerns that are of interest and thus important to the participants, are brought up.... The range of Usenet connectivity is international and quickly expanding into every nook and cranny around the world. This explosive expansion allows growing communication with people around the world. (*Netizens*, p. 49)

From Usenet pioneers like Greg Woodbury, Michael learned that, "it was the desire for communication that helped this social network develop and expand." While appreciating the potential of Usenet and the Internet to help people make a better world possible, many of those online in the mid 1990s also anticipated how difficult it would be to bring this about.

"People on the Net," Michael writes, "need to be active in order to bring about the best possible use of the Net." (Webchat)

It is interesting to see how closely the conceptual vision Michael developed matched that of the vision of J. C. R. Licklider.

Michael's views were influenced by his experience online, his study and the comments he received in response to his research questions from people around the world.[3]

Subsequent research shows Licklider had recognized that to be able to develop computer and network science and technology, an online community that would encourage users to contribute was needed. This collaborative community is what people found online on Usenet and the Internet even into the early 1990s.

Also Licklider advocated support and protection of the creative users online who were eager to explore how to utilize the Internet in interesting and novel new ways. Licklider staunchly maintained that users had to be participants in making the decisions that would develop

and spread the Internet to all. He warned that commercial entities could not develop a network that would spread access to all or that would encourage user participation in its development.

The Future

In a similar way Licklider emphasized the need for a participatory evolution for the Internet, and for there to be a public utility framework for its development, Licklider sees that there is a public policy choice that must be made. He writes:[4]

It's a choice between data and knowledge. It's either mere access to information or interaction with information. And for mankind it implies either an enmeshment in silent gears of the great electrical machine or mastery of a new and truly plastic medium for formulating ideas and for explaining, expressing and communicating them.

Michael and a friend he met when he was invited to Japan proposed a Netizens Association as a way to take up the challenges of evolving a network that would support interactive communication and user participation.[5] Such an association could take on the goals of the Netizen and netizenship. It could be a help in the struggle to forge a net that will carry on the vision of an interactive participatory network of networks that Licklider introduced. In January 1993 Michael put together a Draft Declaration of the Rights of Netizens which could be a starting point for a collaboration of Netizens who are committed to the original vision for the Internet. This vision has made it possible for the Internet to develop an infrastructure capable of promoting vibrant interactive participation and resource sharing before the commercialization and privatization of the Net. Michael writes in the Draft Declaration of the Rights of Netizens:

The Net is not a Service, it is a Right. It is only valuable when it is collective and universal. Volunteer effort protects the intellectual and technological common-wealth that is being created. DO NOT UNDERESTIMATE THE POWER OF THE NET and NETIZENS.[6]

Conclusion

The vision of J. C. R. Licklider and then of users who Michael recognized were netizens has helped to guide and spread a participatory and interactive new form of communication infrastructure.

However the commercial model for the Internet's development is very different. It aims to create passive users who are at the mercy of powerful corporations both for their access to the Net and for the determination of how they can use the Net. The commercial model is a challenge to the early vision of a participatory Internet where all the population has the possibility of gaining access and of shaping the network form and content that is socially beneficial.

How will netizens support each other to continue working toward their goal? Is there a need for a netizens association as Michael and his friend from Japan Hiro proposed? The path forward is not well marked. In 1961, the linguist, Yehoshua Bar Hillel speaking about the computer, pointed out that we cannot know the future. If however we know what we are striving for, we can work for the future we want to have.[7]

What future do we want to have?

The visions of J. C. R. Licklider and Michael Hauben are of a participatory future. If we keep those visions alive we keep alive the possibility that the potential of the Internet will be realized.

Footnotes

1. This article is taken from a speech given during "Semaine Europeenne" in Strasbourg, France sponsored by L'Institue d'Etudes Politiques (IEP). More than three hundred students attended and participated in a week long discussion of "Europe & Internet" in the Winston Churchill building of the European Parliament.

2. Licklider, J. C. R. and Robert Taylor. "The Computer as a Communication Device." In *Science and Technology:* For the Technical Men in Management. No 76. April, 1968. Pp. 21-31. Also reprinted in *In Memoriam: J. C. R. Licklider: 1915-1990.* Report 61. Systems Research Center. Digital Equipment Corporation. Palo Alto, California. August 7, 1990. Pp. 21-41.12

3. See also the Livingnet website http://livinginternet.com/. William Stewart the creator of the site writes: "Joseph Carl Robnett 'Lick' Licklider developed the idea of a universal network, spread his vision throughout the IPTO, and inspired his successors to realize his dream by creation of the ARPAnet. He also developed the concepts that

led to the idea of the Netizen."

4. Licklider, "Social Prospects of Information Utilities" in "The Information Utility and Social Choice." Sackman and Norman Nie, editors, AFIPS Press, Montvale, 1970, p. 6. Licklider comments about the choice, "Thus though the crux is a switch, it is not a switch in a level track. One branch goes down, one up."

5. Michael writes: After our visit, I wrote Hiro Takashi that I was very happy to have met him and his friends from their computer club at his University. In his e-mail when I returned home he asked if there was a Netizens Association. He wrote in a P.S. in an e-mail of Dec. 6 "Netizen association is available? If not in Japan, I want to make it."
I told him I did not know of any and asked him what he had in mind for a Netizens Association to do. He responded: "I think [a] Netizen Association is a guide into tomorrow's Internet world. Internet and other network[s] have a flood of electrical information. So people cannot swim very good in Internet. So Netizen Association tell or advise how to swim or get selected information. The association act as guide. Oh, and we have to spread information about concept of netizen. But making association process has many difficult points, I think. So we have to give careful consideration to the matter."

6. Proposed Declaration of the Rights of Netizens (Reproduced in this issue. See p. 18)

7. Y. Bar Hillel in *Computers and the World of the Future*, edited by Martin Greenberger, MIT Press, 1962, p. 324.

* This article is from an invited talk presented at the European Parliament Building in Strasbourg, France. The talk was given on February 26, 2002 to students as part of a panel on "the Internet and Politics."

Michael, Computers and the Net

By Jay Hauben
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For my whole family, it was wonderful that Michael was born on May Day, May 1 1973 in Boston, Massachusetts. He was one month early and was born early in the morning as the sun began to rise.

Michael went to nursery school and kindergarten in Boston. For his 5th birthday he surprised us by asking for a hand held calculator as his birthday present. We bought him one in the COOP at MIT nearby. Michael and I had great fun using that calculator to do iterations and other math tricks. Shortly after that we moved to Detroit. There Michael went to public school for one year. He was the only first grader with an exhibit in the school's Science Fair. The school was a rough place and the staff discouraged Michael from reading. So Ronda and I were his teachers for another year in what we called "home school."

He first saw computers in the Toronto Science Center in 1980 when he was 7 years old. There were hands-on computer exhibits and an exhibit of computer controlled robots. He was soon asking for his own computer. By 1983 he bought himself a Timex Sinclair 1000 computer for $100 out of his birthday present money. The TS 1000 had 3K of memory. We used a tape recorder as the storage device and our TV as a monitor. Michael subscribed to some computer magazines. He typed in some of the "TRY THIS" programs and learned a lot from them. He and I worked on a program that used only the 3K memory. Using peeks and pokes, we were able to get planes to drop bombs on moving ships!

We enrolled him in a TAG (Talented And Gifted) summer program for junior high school kids (ages 12 and 13) in 1985. The first day the instructor (Mrs. Brown) took off the cover of an Apple II computer to show that it was just wires and components. She then showed some simple BASIC commands. That night Michael tried to write a BASIC program. Michael had us buy a book called *The Applesoft Tutorial* and he read his way through that whole book. He succeeded in getting a graphic program to work. He called it "BOO." It was a skeleton that blinked its eyes and made faces. We took Michael once a week to the

Wayne County Education Center where he began to try Apple IIE, Texas Instrument, Atari and Commodore computers. Mostly he tried to figure out what BASIC commands would work and asked questions about the features and advantages of each. Michael made friends with a neighbor, Tom, who was three times his own age. Tom used Commodore computers. When Tom bought a Commodore 64, Michael bought himself his next Timex machine (Timex Sinclair 2068). But Timex made a deal with Commodore and stopped supporting the 2068. Michael thought he had the better computer but the deal made his obsolete.

Michael participated in computer clubs and programming competitions in junior high school which must have been around 1986. Ronda had won a Compaq computer in 1985 in a drawing. She asked for a modem with the prize rather than a hard drive because she and Michael agreed that communication was more important than storage. Michael used the computer and modem to participate in local BBSs. His first handle was "WizKid." He was from then on an active participant in the BBS communities in the Detroit area. To begin with, he was one of their youngest members. Somehow he found out about an online time-sharing system set up near the University of Michigan, called MNet. He became an active member of that community even though the other members were college students or older.

At first I was opposed to Michael's being in discussions of how to pick up women or things like that. He realized my opposition and wrote an essay about censorship in Nazi Germany that convinced me that censoring him was wrong. His argument was if the Nazi's had not been censored by the previous government, Hitler could not have come to power. The German people would have been inoculated against Nazism by the debate that would have occurred with it in the earlier days.

From MNET, Michael heard, in the late 1980s, about Usenet. At some point while still in Michigan, Michael felt he was no longer a kid and changed his handle to "Sentinel." After using his handle for a while, Michael found a thread on one of the BBSs where posters were wondering whatever happened to "WizKid," the poster who made the discussions more serious and important. I think Michael was very happy to see that thread and he posted that he was "WizKid," now called "Sentinel."

When Michael was 13 or 14 years old he left word in some computer stores that he was willing to help people who were unsure what to buy and how to set up their computers. A few people called him and I had to drive him to his "jobs." He did not know what to charge but whatever he asked, his customers always gave him more.

In 1988, at age 15, Michael participated in the founding meetings of the *Amateur Computerist*. One discussion was what to name the new newsletter. *Beginning Computerist* was suggested. Michael argued that the newsletter would be for all lovers of computing not just beginners. Since an amateur does something for the love of it not for financial gain, his suggestion of *Amateur Computerist* won the approval of all. Michael was also one of the most prolific contributors of articles and editorial suggestions.

From his contacts on MNet Michael was able for most of his high school years to work at the University of Detroit. He was well loved there for the care with which he set up people's computers and taught them how to use them. Michael went on to earn his Columbia College work-study income by doing computer support work in the student labs there.

When Michael first dialed into MNet in the mid 80s he was actually using the Internet. He first explored Usenet and took full advantage of e-mail when he started as a freshman at Columbia in Sept. 1991. He helped initiate the alt.amateur-comp newsgroup on the U.S. Labor Day in 1992. And, as he has written, that is when he started his research about the value of the net to people (See the "Preface: What is a Netizen," pp. ix-xi in *Netizens*).

In 1992, Michael started an independent study at Columbia College of Columbia University. He wanted to know if the net made a difference in people's lives. He posted a series of questions which are in the appendix to chapter one of his book *Netizens* (pp. 29 to 34 in the hard back edition). From the responses, he discovered there were Netizens, people who saw that the newly emerging net held the promise of a fuller more interesting life for everyone who could get connected. Michael became very enthusiastic about the Net. It gave him a renewed personal hope much the way the fall of the Berlin Wall had done three years earlier. Michael shared his enthusiasm with his professor at Columbia.

The professor told Michael he would fail the course if he did not rework his data and analysis. The professor did not realize the importance of what Michael had done. But Michael also shared his enthusiasm with the online world. He gathered the documentation to prove his scientific discovery was valid. His work inspired especially Ronda and that was the genesis of the Netizen book originally called "Netizens and the Wonderful World of the Net."

In 1994, Michael and Ronda were excited to put their first draft of their book *Netizens* online. They did a book reading on Jan 10, 1994 and were happily surprised when Michael's old friend Tom attended. They also both spoke at Columbia University about netizens. After Michael received his BA in Computer Science in 1995, he was, for one year, a Columbia e-mail postmaster. He went on to earn a Masters degree from Teachers College in Technology and Communications in 1997. Michael considered it an honor to speak at conferences in Japan, Canada, and Greece. He took joy in seeing his work appear in journals and books and in a hard cover edition of *Netizens.*

A Netizens mailing list grew out of Michael's invitation to speak about netizens in Japan. One Japanese student reasoned that if there are netizens there must be a netizens association that was international. The student asked to join the Netizens Association. Michael answered that one did not exist. He and the student talked about starting such an association. Michael suggested that a first step would be a Netizens Association mailing list. The student's name is Hiroyuki Takahashi and the story of the origin of the Netizens mailing list is at:
http://www.columbia.edu/~hauben/text/netizen-a-call.html.

The privatization and commercialization of the net was very painful to Michael. He was overjoyed that the Internet keeps spreading but was disappointed that most users of the net didn't see the net he had envisioned. He was still trying to use the net for the purposes he thought were its essence. He was on and contributed to many mailing lists, especially those having to do with music and the efforts of young people to form communities around their common interests in different music genre. On these lists Michael reviewed music performances, analyzed trends in the youth music culture and sent out pointers to upcoming events. He also participated actively in the events so his online life was

coupled with his offline life. He was however disappointed when some people offline did not live up to the expectations he had from his online contact with them.

Perhaps his biggest disappointment came when he never found or was accepted at a graduate program he could afford that would have allowed him to continue his pioneering research that he did as an undergraduate. But still regularly for the last 8 or 9 years Michael received inquires and requests for help. Perhaps averaging one every two weeks, they were from people all over the world who knew of Michael's work from online sources and felt he was the expert or the best source of the help they needed.

Even during his bouts of depression, Michael watched with interest the spread all over the world of the concept of net citizens, his Netizens. Michael is given credit for its origin in new dictionaries that are appearing. The latest one may be a Hebrew dictionary still in preparation. Michael spoke in the last few months of his life of his hope and plans for a paperback edition of the book *Netizens*. He gave thought to a new introduction or epilogue which would begin, "It is now the beginning of the 21st Century..." and would take up to make a frank and scientific analysis of what parts of his original vision still seem accurate and what if anything has been derailed or needs to be altered. It would be his fond wish that the details of Internet technology be popularized and that the fight for universal free or low cost access to Usenet, e-mail, chat groups and all the other wonders of the net be continued.

An Introduction to the Work And Life of Michael Hauben (1973-2001)

By John Horvath
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[Editor's Note: The following is taken from a longer Eulogy in TELEPOLIS at: http://www.heise.de/tp/english/inhalt/te/9180/1.html]

Outside the community of netizens, Michael Hauben was not very well known. His name was not splashed across the front pages of newspapers or propagated through mainstream broadcast media. Even in "cyberspace" he was relatively unknown, like most of us. Nevertheless, his words and ideas have had a profound effect on all those who regularly use the Internet, whether they realize it or not. Indeed, in Europe it was the foundation to what is now commonly referred to throughout member states and accession countries, not to mention the European Commission itself, as the "information society."

In a 1992 article entitled "The Net and Netizens: The Impact the Net Has on People's Lives," Michael Hauben wrote the following:

Welcome to the 21st Century. You are a Netizen (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. Virtually, you live next door to every other single Netizen in the world. Geographical separation is replaced by existence in the same virtual space.

With these words the concept of a "Netizen" was introduced and quickly spread into popular use. Later, in a book called *Netizens: On the History and Impact of Usenet and the Internet*, co-authored by Ronda Hauben, herself a renown Netizen and ardent critic of ICANN, Michael Hauben elaborated his concept:

My initial research concerned the origins and development of the global discussion forum Usenet. [...] I wanted to explore the larger Net and what it was and its significance. This is when

my research uncovered the remaining details that helped me to recognize the emergence of Netizens. There are people online who actively contribute towards the development of the Net. These people understand the value of collective work and the communal aspects of public communications. These are the people who discuss and debate topics in a constructive manner, who e-mail answers to people and provide help to newcomers, who maintain FAQ files and other public information repositories, who maintain mailing lists, and so on. These are people who discuss the nature and role of this new communications medium. These are the people who act as citizens of the Net.

Although in global terms Michael Hauben may be relatively unknown, the words and ideas he introduced, embodied in the term Netizen, is something which in retrospect seems as a matter of course and a natural part of our language and civic discourse (other such concepts include the Cold War, for instance, which was coined by a French journalist). The ability to develop such a concept and introduce it into daily use, which then remains as an integral part of our intellectual heritage, betrays an insight akin to that of what we generally consider to be a great thinker.

Despite not being a pop-icon, Michael Hauben's influence extended far and wide. He was invited to Japan to speak about his ideas, and he appeared in documentaries about the Internet on TV Tokyo. He also was frequently consulted to comment on the growing importance of the Internet as a new democratic communications medium. Not surprisingly, his co-authored book "Netizens: On the History and Impact of Usenet and the Internet" is published not only in an English but in Japanese as well.

Some of Michael's Accomplishments*

Research and Publications

Netizens: On the History and Impact of Usenet and the Internet published May 1997 by IEEE Computer Society Press.

"Culture and Communication," chapter in *The Ethical Global Information Society: Culture and Democracy Revisited*, edited Jacques Berleur and Diane Whitehouse published 1997 by Chapman & Hall.

"Birth of Netizens," chapter in *The Age of Netizens*, Shumpei Kumon, published 1996 by NTT Press.

"Netizens" in *The Thinker* Vol 2, No. 5 February 2, 1996, p. 1. Stanford University.

"Online Public Discussion and the Future of Democracy," in *Proceedings Telecommunities 95: Equity on the Internet*, Victoria, B.C.

"Interview with Henry Spencer: On Usenet News and C News," chapter in *Internet Secrets*, edited by John R. Levine and Carol Baroudi, published 1995 by IDG Books.

"A New Democratic Medium: The Global Computer Communications Network," in *AHKCUS Quarterly*, no. 14 July 1994, p. 26. Special Issue on Hong Kong Media Facing 1997.

"Exploring New York City's Online Community," in *CMC Magazine*, May 1995.

"Netizens," in *CMC Magazine*, February 1997.

Presentations

California: Live Radio Interview 11/2/94 on KUCI, 88.9 FM – University of California Irvine for the Cyberspace Report.

Michigan: Book Reading at Henry Ford Community College in Dearborn, MI. on January 10, 1994.

New York: "Researching the Net: A talk on The Evolution of Usenet News and The Significance of the Global Computer Network." Given to Columbia University's student ACM Chapter on 4/24/94.

California: Interview on University of California, San Diego Radio Station November '94.

New York: "Researching the Net" talk given at the Mid-Manhattan Branch of the New York Public Library on May 1, 1995

Japan: Appeared in a Japanese Documentary about the Internet. 7/2/95 on NHK, TV Tokyo

Japan: Guest Speaker at Hypernetwork '95 Beppu Bay Conference. 11/24/95 in Beppu, Oita Prefecture, Japan. Topic "Netizens and Community Networks"

Canada: Presented "The Effect of the Net on the Professional News Media" at INET'96 in Montreal, Canada on June 27, 1996.

Greece: Presented "Culture and Communication: Usenet and Community Networks" at IFIP WG 9.2/9.5 in Corfu, Greece on May 8, 1997.

*From the Resume of Michael Hauben

In Memoriam a Netizen
Michael Hauben

By Dr. A. R. Herman*

Once upon a time I had been searching on the web for documents about the life and work of the famous mathematician (maybe he is better known as the co-inventor of the computer language BASIC and of DTSS), of the late Professor John G. Kemeny. One of the robots sent me to Michael Hauben and so it began.... I became acquainted with the family Hauben. By the web I could read the early, digital version of the book "Netizens," written by Michael and Ronda Hauben.

The time went on and I met personally Ronda and Jay Hauben in Budapest, Hungary. It was a pleasure to me. I received a significant gift – the hardbound edition of "Netizens" (IEEE Computer Society Press, Los Alamitos, CA, 1997). I read it over thoroughly because from one side it is well written (readable) and from the other it is a fascinating account of the past, present and the future of the Internet, including a chronicle and impact of the Usenet, moreover about the life and usage of the "net." As an engineer, who worked that time in a library I was interested to know more about the Internet.

Nathan and Ida Reingold, wrote in their book *Science in America, A Documentary History, 1900 – 1939* (The University of Chicago Press, Chicago – London, 1981) that:

> A traditional way of regarding science and its history is to envisage a core consisting of concepts, data, and techniques, an account of which constitutes the history of science. Human beings and their institutions are outside the core; if they are sometimes included within the definition of 'core,' if the tendency is to define them in terms of importance to the content of science. In fact, to this day both the ideology of science and some histories have a tendency, explicitly or implicitly, to identify the scientist and the scientific organ-ization with the body of knowledge. Ohm becomes Ohm's Law; Darwin is natural selection; the early Royal Society is Newtonian science. The core exists independently of humans;

humans exist for the core.

Michael and Ronda Hauben wrote their book successfully in the best tradition of science history and at the same time they made it clear that the development of the network from the beginning was the result of the scientific work of flesh and blood, i.e. real people.

The title of their book used the new word, new term, the "netizen," i.e. citizen of the net, which was coined by Michael. His word became very popular in a short time, and if you search the web for it, you will have hundreds of URL addresses to see, among them, Estonian or Japanese addresses. (There is a Japanese translation of this book initiating a social approach to this new phenomenon.) There are various opinions about the beginning of the net. I use a citation from Michael and Ronda's book :

> J. C. R. Licklider was one of these early network pioneers. His vision of an Intergalactic Computer Network helped to inspire these developments.

The book stays somehow mainly on ARPAnet and the Usenet. I think that ARPAnet and the so called poor man's ARPAnet were of course very early phases of the "Internet revolution," but I think that at MIT and Dartmouth the first time-sharing systems were the beginning, not to mention the work of Baran at Rand corporation.

Scientists and researchers and users who were free of market forces have developed the current global computer network. There is a long list of names of people who contributed to establishing this net, who may be named netizens. Michael Hauben was the author of this new word, and with his works, among others his main work, the book "Netizens," made a significant contribution to the exploring of the technical and social roots and aspects of the Internet. He deserves the right to be one of the netizens and be on the short list.

One of the first thinkers about the role of this network in the world was Michael Hauben. His early passing away made a big gap mainly for the community of netizens (not only for his parents) and this gap will be very difficult to fill.

There were theoretical speculations proceeding the work on Netizens. Some ideas of Pierre Teilhard de Chardin, the Jesuit philosopher, published nearly half a century ago in "The Vision of the

Past" (Harper & Row, New York, 1966) were about the "noosphere," i.e. the man-made sphere on the globe. The Hungarian biologist, Vilmos Csányi, published his synthesizing work, "Evolution Systems and Society: A General Theory of Life, Mind, and Culture" (General Evolution Research Group/Duke University Press, Durham, NC, 1989), which concludes with the autogenesis of a global system based on new technology.

Michael had the knowledge and foundation to make the next step, to join these speculations with the birth and development of the Internet. This work may be continued partially by Ronda and Jay Hauben, but I think the method used nine years ago by Michael, i.e. lean upon the netizens community, will help them to work on this topic and search for possible coworker(s).

<center>* * *</center>

"Habent sua fata libelli" (the books have their own fate) the original Latin expression meant (for me) how the work can live through centuries and find its reader, but in this case it has other meaning. The book was read over by me and left at the distant left corner on my writing table. I thought that it may be and will be a good beginning for a new period of my life. (I prepared myself for the period of my retirement.)

That time I was working at the OMIKK. It is an abbreviation from the Hungarian name of the National Technical Information Centre and Library in Budapest. This library was serving the whole Hungarian community, people and organizations, including small and medium sized enterprises, both as a special and as public library in the fields of science, technology and economy. OMIKK was one of the biggest Hungarian libraries, with a holding of one million and a half library units (books, serials and other documents), and traditionally it was in the forefront of progress. OMIKK was the first public – and for a long time the only – organization not only in Hungary, but in the whole so called Eastern Block, or on the east side of the Iron Curtain which had subscriptions to the western science and technology databases twenty years ago. We had the biggest collection of CD-ROM databases (more than one hundred) and the most subscriptions to electronic journals in Hungary (more than six thousand). One element of the library crisis in

the whole world is that in the best cases, budgets are flat while there is the more or less exponentially growing number of publications, the inflation in prices making an ever growing tension. So we had a money shortage for acquisition.

At the same time it was clear to me, that Michael and Ronda Hauben's book *Netizens*, although it will be a very useful book for our readers, we will not buy it. I had an exemplar dedicated personally to me. I was afraid that not any other Hungarian library will have this book. I decided one year ago, grudgingly, to give to the library. So it was that this groundbreaking book became part of the OMIKK's holding. OMIKK was a state owned public budget organization, founded more than a hundred years ago, in 1883. The Secretary of State for Education decided to put an end of this success story, against the will of many thousands of our users, so he made it with the date June 30, 2001. The holdings of the previous OMIKK were transferred to Budapest Technical University.

"Habent sua fata libelli" so it is the fate of the exemplar of Michael and Ronda Hauben's book *Netizens*, dedicated personally to me, in the last two years.

Budapest, 25th November, 2001.

* Sadly, Dr. Akos Herman died on February 28, 2002.

Giving Back to the World

By Bill Steward
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Like so many who learned from Michael's work, I only knew him on a virtual level, through the Internet. However, I knew a great deal about the work he had done, and therefore felt the warmth and admiration for him that one would feel for a good friend. His research and publications helped me tremendously in understanding the context in

which the Internet sits, and finding his writings on J. C. R. Licklider and the Usenet were like discovering a wonderful window into the history of the creation of the net. It is appropriate that he coined the term Netizen, for he was one of its best practitioners, giving back to the world by leveraging the power of the net to provide help and information to untold numbers of people across the world. He set a great example we are well recommended to follow. I'm sure he already has a mailing list going in heaven.

Thoughts Regarding Michael's Work and Legacy

By Luis de Quesada
lgd42@hotmail.com

Perhaps Michael Hauben's greatest ideal and contribution was that he was people oriented. He envisioned government just as our forefathers meant it to be "a government by the people and for the people" nothing less is acceptable and that a true people's government could be strengthened and improved by public debate. Michael's idea wasn't far fetched or utopian. Michael's idea was exactly what our forefathers intended our government to be. A government not in the hands of the big corporations and their lobbyists, but a truly people oriented democracy. Michael saw computers and the internet as unprecedented means of communication and education which need to be preserved for collective use and not for the private use of a privileged class. The computer and its information highway are and must be for equally shared public use, so Michael created Netizens, a collective for citizens equally sharing the internet as a right not as a service. One needs only to read the principles on which Netizens was founded, the rights of Netizens; to understand Michael's intentions, ideals and gift for all of us and all of man-kind.

The way I see it, Michael, like Cuba's Jose Marti, chose to side with the poor, the workers and all the little and disenfranchised people, as Marti once said and wrote, "CON LOS POBRES DE LA TIERRA,

QUIERO YO MI SUERTE ECHAR," which translates, "WITH THE POOR PEOPLE OF THIS EARTH, I WANT TO SHARE MY FATE." And he did, fighting for the rights of all the poor and the under served to become computer literate, to enable them to freely log in and navigate the Internet. Therefore it is my opinion that in founding Netizens, with the help of his loving parents Ronda and Jay, Michael founded what I call "THE SPANISH REPUBLIC OF THE INTERNET." The Spanish Republic 1931-1939 was founded on truly democratic principles and justice for all, just like our own in 1776. It is therefore our duty to defend Netizens and keep it alive, just like the loyal citizens of Spain and their brothers and sisters from all over the world came to Spain to defend it from fascism and the never ending greed of those who wanted to keep Spain and its people in eternal servitude. Unfortunately "THE GOOD FIGHT" in Spain was lost along with many other "good fights" in recent decades. So we must therefore carry on the torch and keep Michael's idea, NETIZENS, alive to ensure that complete privatization of the Internet never happens, because it is morally wrong, because in time, logging in would be a private commodity, reserved for a privileged few. They say people truly die when their ideas are no longer remembered and no longer matter to anyone. Michael's idea means so much to the underprivileged and to all of us who shared his vision of justice for all. We must keep up the fight so his idea of a free and collective internet will keep on existing as a right for everyone, for mankind's benefit!

Mike: Sketches

By Simon Butler
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I first met Mike Hauben during freshman year at Columbia. We were both on the same floor, Carman Nine. He was a friendly fellow, always interested in chatting even when I, a surlier young man, wasn't. On the street, while passing all the restaurants and shops by the university, he'd reel off the names of various sites if I were silent. He was just trying to make conversation, of course. After a while, he stopped. Newbie's habit, I guess.

Mike introduced me to a great deal of new things I never would've realized were there had he not taken the initiative to help me check them out. Suddenly, I was posting messages on the poetry newsgroup, rec.arts.poems, and interacting with other fans on the New York Yankees newsgroup, when the only way I even dreamed about conversing in this manner with people before was via some sort of hobbyist's salon or cultural group. Or at a baseball game, for that matter.

He got me into Pink Floyd and Led Zeppelin, two bands I absolutely despised before I met him. And in turn, I introduced him to certain pieces of classical music. We even went to the opera together, along with our mutual friend Ed. And Mike who was enchanted by the theater but was less exposed to the great works of the cinema joined me as we watched various classics, from Kurosawa's "Throne of Blood" to Hitchcock's "The Lady Vanishes." Not all of them he liked. In some cases, we held quite different, and often conflicting, opinions. But he was always willing to experiment.

That's what I think he wanted to do most, in order to enjoy life, to experiment. Even his death seems the result of an ill-fated decision to try the end of existence when all else seemed to fail. I think in his experimentation, he produced some beauties, some truths; his book on the Internet; his immersion into the world of music; his increased appreciation of the cinematic medium; his friendship with people worldwide, due to his online and offline inter-connectivity.

I think he trod quite deeply on the Earth and broke the soil. His

footprint is still there. The indentation of his life. The perpetuity of a strange, unique wisdom, and the injustice of itself.

New Hebrew Dictionary

Subject: the term netizen

Hi, I was hoping you could help me define the term "netizen." I'm actually working on a Hebrew dictionary, and since the term is now used in our language as well, we decided to include it in the new version of our dictionary (hardcopy).

My question is: to my ear, the term implies a sense of responsibility, belonging, sharing, cooperation etc., meaning malevolent users, such as hackers and virus spreaders, wouldn't be considered netizens. Am I correct to assume this?

The reason I'm asking is that some definitions I found (on the Web, of course) say netizen is simply an Internet user, or frequent user. This seems lacking to me. Do you agree? TIA Best regards,

Dorit Attar <attargum@inter.net.il>

Linguist, Translator and Editor

A Tribute

By Claudia Hill
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Although I never met Michael, his parents, Jay and Ronda have asked me to write a few words about how I view Usenet as part of a tribute to Michael, forever a citizen of the Net, a Netizen.

My view of Usenet is analogous to an architectural structure. Usenet is made up of individuals exchanging information electronically through newsgroups to form a virtual architectural structure of information in

much the same manner that collaborations between architects, builders, and construction workers result in real structures perhaps made of brick, concrete, mortar and wood. The foundations of each Usenet newsgroup depend on the agreement between participants who make decisions about the group as its users. This seems to me like an architectural plan of a building which developers agree to follow once drafted.

Along the way, architects' plans may become altered or improved and likewise, newsgroups may change direction or be influenced by views of one sort or another. Newsgroup participants are accountable for the traffic on a Usenet newsgroup, much like architects and resultant buildings they design. Buildings, once constructed, can be modified, expanded or abandoned, and newsgroups too can undergo changes in their virtual structures as more and more information is sent over the networks between newsgroup participants.

But, Usenet, a virtual architectural structure, has enduring characteristics which real architecture does not. While real buildings are subjected to the harsh elements of time; from inclement weather conditions acting on natural and artificial materials, man-made acts of destruction, changes in the whim of architectural fashion to economic downturns, Usenet seems to have immortality to it. Once a participant or citizen of Usenet, the individual becomes a part of this virtual architectural "net" structure. Usenet participants, or "Netizens," then are the sum total of the views on a particular topic and in some sense are immortalized within the virtual architectural structure. Usenet as an architectural structure, albeit a virtual one, is a credible analogy and one, that I hope you will agree, seems boundless in its reach and limitless in its potential.

Some writings of Michael Hauben

[Editor's Note: The following is the Preface to *Netizens: On the History and Impact of Usenet and the Internet*, IEEE Computer Science Press, May 1997]

Preface: What is a Netizen?

By Michael Hauben

The story of Netizens is an important one. In conducting research four years ago online to determine people's uses for the global computer communications network, I became aware that there was a new social institution, an electronic commons, developing. It was exciting to explore this new social institution. Others online shared this excitement. I discovered from those who wrote me that the people I was writing about were citizens of the Net, or Netizens.

I started using local BBSs in Michigan in 1985. After seven years of participation on both local hobbyist-run computer bulletin boards systems, and global Usenet, I began to research Usenet and the Internet. I found these online discussions to be mentally invigorating and welcoming of thoughtful comments, questions and discussion. People were also friendly and considerate of others and their questions. This was a new environment for me. Little thoughtful conversation was encouraged in my high school. Since my daily life did not provide places and people to talk with about real issues and real world topics, I wondered why the online experience encouraged such discussions and consideration of others. Where did such a culture spring from, and how did it arise? During my sophomore year of college in 1992, I was

curious to explore and better understand this new online world.

As part of course work at Columbia University, I explored these questions. One professor's encouragement helped me to use Usenet and the Internet as places to conduct research. My research was real participation in the online community by exploring how and why these communications forums functioned. I posed questions on Usenet, mailing lists and freenets. Along with these questions, I would attach some worthwhile preliminary research. People respected my questions and found the preliminary research helpful. The entire process was one of mutual respect and sharing of research and ideas. A real notion of 'community' and 'participation' takes place. I found that on the Net people willingly help each other and work together to define and address issues important to them. These are often important issues which the conventional media would never cover.

My initial research concerned the origins and development of the global discussion forum Usenet. For my second paper, I wanted to explore the larger Net and what it was and its significance. This is when my research uncovered the remaining details that helped me to recognize the emergence of Netizens. There are people online who actively contribute towards the development of the Net. These people understand the value of collective work and the communal aspects of public communications. These are the people who discuss and debate topics in a constructive manner, who e-mail answers to people and provide help to new-comers, who maintain FAQ files and other public information repositories, who maintain mailing lists, and so on. These are people who discuss the nature and role of this new communications medium. These are the people who as citizens of the Net, I realized were Netizens. However, these are not all people. Netizens are not just anyone who comes online, and they are especially not people who come online for individual gain or profit. They are not people who come to the Net thinking it is a service. Rather they are people who understand it takes effort and action on each and everyone's part to make the Net a regenerative and vibrant community and resource. Netizens are people who decide to devote time and effort into making the Net, this new part of our world, a better place. Lurkers are not Netizens, and vanity home pages are not the work of Netizens. While lurking or trivial home pages

do not harm the Net, they do not contribute either.

The term Netizen has spread widely since it was first coined. The genesis comes from net culture based on the original newsgroup naming conventions. Network wide Usenet newsgroups included net.general for general discussion, net.auto for discussion of autos, net.bugs for discussion of unix bug reports, and so on. People who used Usenet would prefix terms related to the online world with the word NET similar to the newsgroup terminology. So there would be references to net.gods, net.cops or net.citzens. My research demonstrated that there were people active as members of the network, which the term net citizen does not precisely represent. The word citizen suggests a geographic or national definition of social membership. The word Netizen reflects the new non-geographically based social membership. So I contracted the phrase net.citizen to Netizen.

Two general uses of the term Netizen have developed. The first is a broad usage to refer to anyone who uses the Net, for whatever purpose. Thus, the term netizen has been prefixed in some uses with the adjectives good or bad. The second usage is closer to my understanding. This definition is used to describe people who care about Usenet and the bigger Net and work towards building the cooperative and collective nature which benefits the larger world. These are people who work towards developing the Net. In this second case, Netizen represents positive activity, and no adjective need be used. Both uses have spread from the online community, appearing in newspapers, magazines, television, books and other offline media. As more and more people join the online community and contribute toward the nurturing of the Net and towards the development of a great shared social wealth, the ideas and values of Netizenship spread. But with the increasing commercialization and privatization of the Net, Netizenship is being challenged. During such a period it is valuable to look back at the pioneering vision and actions that have helped make the Net possible and examine what lessons they provide. That is what we have tried to do in these chapters.

Michael Hauben, New York and Beppu. November 1995

What the Net Means to Me

By Michael Hauben

The Net means personal power in a world of little or no personal power. (other than those on the top – who are called powerful because of money, but not because of thoughts or ideas.) The essence of the Net is Communication, of personal communication between individual people, and between individuals and those who in society who care (and do not care) to listen. The closest parallels I can think of are several fold:
  - Samizdat Literature in Eastern Europe.
  - People's Presses
  - The Searchlight, Appeal to Reason, Penny Press, etc.
  - Citizen's Band Radio
  - Amateur or Ham radio.

However the Net seems to have grown farther and be more accessible than the above. The audience is larger, and continues to grow. Plus communication via the Net allows easier control over the information – as it is digitized and can be stored, replied to, and easily adapted to another format.

The Net is the vehicle for distribution of people's ideas, thoughts and yearnings. What commercial service deals with the presentation of ideas? I do not need a computer to order flowers from FDT or clothes from the Gap. I need the Net to be able to voice my thoughts, artistic impressions, and opinions to the rest of the world. The world will then be a judge as to if they are worthy by either responding or ignoring my contribution.

Throughout history (at least in the U.S.A.), there has been a phenomenon of the street corner Soapbox. People would "stand up" and make a presentation of some beliefs or thoughts they have. There are very few soapboxes in our society today. The 70s and 80s wiped out public expression to the public via the financial crisis and growing sentiment of put your money where your mouth is. In the late 80s and early 90s, the Net has emerged as a forum for public expression and discussion. The Net is partially a development from those who were

involved with the Civil Rights, Anti-War struggles and Free Speech movements in the 60s. The personal computer is also a development by some of these same people.

Somehow the social advances rises from the fact that people are communicating with other people to help them undermine the upper hand other institutions have. An example is people in California keeping tabs on gas station prices around the state using Netnews. More examples of people reviewing music – rather than telling others, you should really go buy the latest issue of magazine X (rolling stones, etc) as it has a great review. This is what I mean by people power – people individually communicating to present their take on something rather than saying go get commercial entities' X view from place Y. This is people contributing to other people to make a difference in people's lives. In addition, people have debated commercial companies' opposition to the selling of used CDs. This conversation is done in a grassroots way – people are questioning the music industry's profit making grasp on the music out there. The industry definitely puts profit ahead of artistic merit, and people are not interested in the industry's profit making motive, but rather great music.

Representation of two things:
- Way of expressing one's voice - when that voice generally does not have a place in the normal political order.
- Way of Organizing and questioning other peoples experiences so as to have a better grip on a question or problem. Someone regaining control of one's life from society.

These are all reasons why I feel so passionately about 1) keeping the Net open to everyone, and having such connections being available publicly, and 2) Keeping the Net un-commercialized and un-privatized. Commercialism will lead to growing emphasis on serving oriented rather than sharing oriented uses of the Net. Like I said before, it is NOT important for me to be able to custom order my next outfit from the Gap or any other clothing store. Companies should develop their own networks if they wish to provide another avenue to sell their products. In addition, commercial companies will not have it in their interest to

allow people to use the Net to realize their political self. Again let me reemphasize, when I say politics, I mean power over one's lives, and surroundings. And this type of politics I would call democracy.

Proposed Declaration of the Rights of Netizens*

We Netizens have begun to put together a Declaration of the Rights of Netizens and are requesting from other Netizens contributions, ideas, and suggestions of what rights should be included. Following are some beginning ideas.

The Declaration of the Rights of Netizens:

In recognition that the net represents a revolution in human communications that was built by a cooperative non-commercial process, the following Declaration of the Rights of the Netizen is presented for Netizen comment.

As Netizens are those who take responsibility and care for the Net, the following are proposed to be their rights:

o Universal access at no or low cost
o Freedom of Electronic Expression to promote the exchange of knowledge without fear of reprisal
o Uncensored Expression
o Access to Broad Distribution
o Universal and Equal access to knowledge and information
o Consideration of one's ideas on their merits
o No limitation of access to read, to post and to otherwise contribute
o Equal quality of connection
o Equal time of connection
o No Official Spokesperson
o Uphold the public grassroots purpose and participation
o Volunteer Contribution – no personal profit from the contribution freely given by others

o Protection of the public purpose from those who would use it for their private and money making purposes

   The Net is not a Service, It is a Right. It is only valuable when it is collective and universal. Volunteer effort protects the intellectual and technological common-wealth that is being created. DO NOT UNDER-ESTIMATE THE POWER OF THE NET and NETIZENS.

   Inspiration from: RFC 3 (1969), Thomas Paine, Declaration of Independence (1776), Declaration of the Rights of Man and of the Citizen (1789), NSF Acceptable Use Policy, Jean Jacques Rousseau, and the current cry for democracy worldwide.

* Written by Michael Hauben as a New Years message, January 1993.

Participatory Democracy
From the 1960s and
SDS into the Future Online*

By Michael Hauben

   The 1960s was a time of people around the world struggling for more of a say in the decisions of their society. The emergence of the personal computer in the late 70s and early 80s and the longer gestation of the new forms of people-controlled communication facilitated by the Internet and Usenet in the late 80s and today are the direct decedents of 1960s.

   The era of the 1960s was a special time in America. Masses of people realized their own potential to affect how the world around them worked. People rose up to protest the ways of society that were out of their control, whether to fight against racial segregation, or to gain more power for students in the university setting. *The Port Huron Statement* (Miller, pp. 329-374) created by the Students for a Democratic Society (SDS) was a document which helped set the mood for the decade.

   By the 1970s, some of the people who were directly involved in

student protests continued their efforts to bring power to the people by developing and spreading computer power in a form accessible and affordable to individuals. The personal computer movement of the 1970s created the personal computer. By the mid 1980s they forced the corporations to produce computers which everyone could afford. The new communications media of the Internet grew out of the ARPAnet research that started in 1969 and Usenet which was born in 1979. These communications advances coupled with the availability of computers transforms the spirit of the 1960s into an achievable goal for our times.

SDS and the Need for Participatory Democracy

The early members of SDS found a real problem in American Society. They felt that the United States was a democracy that never existed, or rather which was transformed into a representative system after the constitutional convention. The United States society is called a democracy, but had ceased being democratic after the early beginnings of American society. SDS felt it is crucial for people to have a part in how their society is governed. SDS leaders had an understanding of democratic forms that did not function democratically in the 1960s nor do they today. This is a real problem that the leaders and members of SDS intuitively understood and worked to change.

An important part of the SDS program included the understanding of the need for a medium to make it possible for a community of active citizens to discuss and debate the issues affecting their lives. While not available in the 1960s, such a medium exists today in the 1990s. The seed for the revival of the 1960s SDS vision of how to bring about a more democratic society now exist in the personal computer and the Net. This seed will be an important element in the battle for winning control for people as we approach the new millennium.

The Port Huron Statement and Deep Problems with American Democracy

The Port Huron Statement was the foundation on which to build a movement for participatory democracy in the 1960s. In June 1962, a SDS national convention was held in a UAW camp located in the

backwoods of Port Huron, Michigan. Tom Hayden, who was then SDS Field Secretary, drafted The original text of *The Port Huron Statement.* The Statement sets out the theory of SDS's criticism of American society. *The Port Huron* convention was itself a concrete living example of the practice of participatory democracy.

The Port Huron Statement was originally thought of as a manifesto, but SDS members moved instead to call it a "statement." An introductory note describing how it was to be a document that should develop and change with experience prefixed it:

> This document represents the results of several months of writing and discussion among the membership, a draft paper, and revision by the Students for a Democratic Society national convention meeting in Port Huron, Michigan, June 11-15, 1962. It is presented as a document with which SDS officially identifies, but also as a living document open to change with our times and experiences. It is a beginning: in our own debate and education, in our dialogue with society. (*The Port Huron Statement* in Miller, p. 329)

This note is important in that it signifies that the SDS document was not defining the definite solution to the problems of society, but was making suggestions that would be open to experiences towards a better understanding. This openness is an important precursor to practicing participatory democracy by asking for the opinions of everyone and treating these various opinions equally.

The first serious problem inherent in American society identified by *The Port Huron Statement* is the myth of a functioning democracy:

> For Americans concerned with the development of democratic societies, the anti-colonial movements and revolutions in the emerging nations pose serious problems. We need to face the problems with humanity; after 180 years of constitutional government we are still striving for democracy in our own society. (*The Port Huron Statement* in Miller, p. 361)

This lack of democracy in American society contributes to the political disillusionment of the population. Tom Hayden and SDS were deeply influenced by the writings of C. Wright Mills, a philosopher who was a Professor at Columbia University until his death early in 1962.

Mills' thesis was that the "the idea of the community of publics" which make up a democracy had disappeared as people increasingly got further away from politics. Mills felt that the disengagement of people from the State had resulted in control being given to a few who in the 1960s were no longer valid representatives of the American people. In his book about SDS, *Democracy is in the Streets*, James Miller wrote:

> Politics became a spectator sport. The support of voters was marshaled through advertising campaigns, not direct participation in reasoned debate. A citizen's chief sources of political information, the mass media, typically assaulted him with a barrage of distracting commercial come-ons, feeble entertainments and hand-me-down glosses on complicated issues. (Miller, p. 85)

Such fundamental problems with democracy continue today in the middle of the 1990s. In *The Port Huron Statement,* SDS was successful in identifying and understanding the problems, which still plague us today. This is a necessary first step to working towards a solution. The students involved with SDS understood people were tired of the problems and wanted to make changes in society. *The Port Huron Statement* was written to address these concerns:

> ...do they not as well produce a yearning to believe there is an alternative to the present, that something can be done to change circumstances in the school, the workplaces, the bureaucracies, the government? It is to this latter yearning, at once the spark and engine of change, that we direct our present appeal. The search for a truly democratic alternatives to the present, and a commitment to social experimentation with them, is a worthy and fulfilling human enterprise, one which moves us, and we hope, others today. (Miller, p. 331)

Describing how the separation of people from power is the means used to keep people uninterested and apathetic, *The Port Huron Statement* explains:

> The apathy is, first, subjective – the felt powerlessness of ordinary people, the resignation before the enormity of events. But subjective apathy is encouraged by the objective American situation – the actual structural separation of people from

power, from relevant knowledge, from pinnacles of decision-making. Just as the university influences the student way of life, so do major social institutions create the circumstances which the isolated citizen will try hopelessly to understand the world and himself. ("The Society Beyond" in *The Port Huron Statement,* Miller, p. 336)

The Statement analyzes the personal disconnection to society and its effect:

The very isolation of the individual – from power and community and ability to aspire – means the rise of democracy without publics. With the great mass of people structurally remote and psychologically hesitant with respect to democratic institutions, those institutions themselves attenuate and become, in the fashion of the vicious cycle, progressively less accessible to those few who aspire to serious participation in social affairs. The vital democratic connection between community and leadership, between the mass and the several elites, has been so wrenched and perverted that disastrous policies go unchallenged time and again. (Miller, p. 336)

The Statement describes how it is typical for people to get frustrated and quit going along with the electrical system as something that works. The problem has continued, as we now have all time lows in voter turn-outs for national and local elections. In a section titled "Politics Without Publics," the Statement explains:

The American voter is buffeted from all directions by pseudo-problems, by the structurally initiated sense that nothing political is subject to human mastery. Worried by his mundane problems which never get solved, but constrained by the common belief that politics is an agonizingly slow accommodation of views, he quits all pretense of bothering. (*The Port Huron Statement*, Miller, p. 337)

Students in SDS did not let these real problems discourage their efforts to work for a better future. They wanted to be part of the forces to defeat the problems. *The Port Huron Statement* contains an understanding that people are inherently good and can deal with the problems that were described. This understanding is conveyed in the "Values"

section of the Statement:

> Men have unrealized potential for self-cultivation, self-direction, self-understanding, and creativity. It is this potential that we regard as crucial and to which we appeal, not to the human potential for violence, unreason, and submission to authority. The goal of man and society should be human independence: a concern not with the image of popularity but with finding a meaning in life that is personally authentic; a quality of mind not compulsively driven by a sense of powerlessness, nor one which unthinkingly adopts status values, nor one which represses all threats to its habits, but one which easily unites the fragmented parts of personal history, one which openly faces problems which are troubling and unresolved; one with an intuitive awareness of possibilities, an active sense of curiosity, an ability and willingness to learn. (*The Port Huron Statement*, Miller, p. 332)

Participatory Democracy

Those participating in the Port Huron convention came away with a sense of the importance of participatory democracy. This sense was in the air in several ways. The convention itself embodied participatory democracy through the discussion and debate over the text of the Statement as several people later explained. *The Port Huron Statement* called for the implementation of participatory democracy as a way to bring people back into decisions about the country in general, and their individual lives, in particular. One of Tom Hayden's professors at University of Michigan, Arnold Kauman, came to speak about his thoughts and use of phrase 'participatory democracy.'

Miller writes that in a 1960 essay, "Participatory Democracy and Human Nature," Kauman had described a society in which every member had a "direct responsibility for decisions." The "main justifying function" of participatory democracy, quotes Miller, "is and always has been, not the extent to which it protects or stabilizes a community, but the contribution it can make to the development of human powers of thought, feeling and action. In this respect, it differs, and differs quite fundamentally, from a representative system incorporating all sorts of

institutional features designed to safeguard human rights and ensure social order." (Miller, p. 94)

Kauman explains:

Participation means both personal initiative – that men feel obliged to help resolve social problems – and social opportunity – that society feels obliged to maximize the possibility for personal initiative to find creative outlets. (Miller, p. 95)

A participant at the Port Huron Conference, Richard Flacks remembers Arnold Kauman speaking at the convention, "At one point, he declared that our job as citizens was not to role-play the President. Our job was to put forth our own perspective. That was the real meaning of democracy – press for your own perspective as you see it, not trying to be a statesman understanding the big picture." (Miller, p. 111)

After identifying participatory democracy as the means of how to wrest control back from corporate and government bureaucracies, the next step was to identify the means to having participatory democracy. In the "Values" section of *The Port Huron Statement*, the means proposed is a new media that would make this possible:

As a social system we seek the establishment of a democracy of individual participation governed by two central aims: that the individual share in those social decisions determining the quality and direction of his life; the society be organized to encourage independence in men and provide the media for their common participation. (*The Port Huron Statement*, Miller, p. 333)

Others in SDS further detailed their understandings of participatory democracy to mean people becoming active and committed to playing more of a public role. Miller documents Al Haber's idea of democracy as "a model, another way of organizing society." The emphasis was on a charge to action. It was how to be out there doing. "Rather than an ideology or a theory." (Miller, pp. 143-144)

Tom Hayden, Miller writes, understood participatory democracy to mean:

number one, action; we believed in action. We had behind us the so-called decade of apathy; we were emerging from apathy. What's the opposite of apathy? Active participation. Citizen-

ship. Making history. Secondly, we were very directly influenced by the civil rights movement in its student phase, which believed that by personally committing yourself and taking risks, you could enter history and try to change it after a hundred years of segregation. And so it was this element of participation in democracy that was important. Voting was not enough. Having a democracy in which you have an apathetic citizenship, spoon-fed information by a monolithic media, periodically voting, was very weak, a declining form of democracy. And we believed, as an end in itself, to make the human being whole by becoming an actor in history instead of just a passive object. Not only as an end in itself, but as a means to change, the idea of participatory democracy was our central focus. (Miller, p. 144)

Another member of SDS, Sharon Jeffrey understood "Participatory" to mean "involved in decisions." She continued, "And I definitely wanted to be involved in decisions that were going to affect me! How could I let anyone make a decision about me that I wasn't involved in?" (Miller, p. 144)

It is important to see the value of participatory democracy as a common understanding among both the leaders and members of SDS. While *The Port Huron Statement* contained other criticisms and thoughts, its major contribution was to highlight the need to more actively involve the citizens of the United States in the daily political process to correct some of the wrongs which passivity had allowed to build. Richard Flacks summarizes this in his article, "On the Uses of Participatory Democracy":

The most frequently heard phrase for defining participatory democracy is that 'men must share in the decisions which affect their lives.' in other words, participator democrats take seriously a vision of man as citizen: and by taking seriously such a vision, they seek to extend the conception of citizenship beyond the conventional political sphere to all institutions. Other ways of stating the core values are to assert the following: each man has responsibility for the action of the institutions in which he is imbedded.... (Flacks, pp. 397-398)

The Need for Community for Participatory Democracy

The leaders of SDS strived to create forms of participatory democracy within its structure and organization as a prototype and as leadership for the student protest movement and society in general. Al Haber, the University of Michigan graduate student who was the first SDS national officer, describes the need for a communication system to provide the foundation for the movement:

> The challenge ahead is to appraise and evolve radical alternatives to the inadequate society of today, and to develop an institutionalized communication system that will give perspective to our immediate actions. We will then have the groundwork for a radical student movement in America. (Sale, p. 25)

He understood the general society would be the last place to approach. There was a need to start smaller among the element of society that was becoming more active in the 1960s, the students. Haber outlined his idea of where to start:

> We do not now have such a public [interaction in a functioning community] in America. Perhaps, among the students, we are beginning to approach it on the left. It is now the major task before liberals, radicals, socialists and democrats. It is a task in which the SDS should play a major role. (Miller, p. 69)

> *The Port Huron Statement* defines 'community' to mean:

> Human relations should involve fraternity and honesty. Human interdependence is a contemporary fact;.... Personal links between man and man are needed. (SDS, p. 332)

Prior to his full time involvement with SDS, Hayden wrote an article for the Michigan Daily describing how democratic decision-making is a necessary first step towards creating community. Hayden's focus was on the University when he wrote, "If decisions are the sole work of an isolated few rather than of a participating many, alienation from the University complex will emerge, because the University will be just that: a complex, not a community." This sentiment persisted in Hayden's and others thoughts about community and democracy for the whole country. (Miller, p. 54)

This feeling about community is represented in *The Port Huron Statement's* conclusion. The Statement calls for the communal sharing

of problems to see that they are public and not private problems. Only by communicating and sharing these problems through a community will there be a chance to solve them together. SDS called for the new left to "transform modern complexity into issues that can be understood and felt close-up by every human being." The statement continues, "It must give form to the feelings of helplessness and indifference, so people may see the political, social and economic sources of their private troubles and organize to change society..." (*The Port Huron Statement*, p. 374 of Miller)

The theory of participatory democracy was engaging. However, the actual practice of giving everyone a say within the SDS structures made the value of participatory democracy clear. The Port Huron Convention was a real life example of how the principles were refreshing and capable of bringing American citizens back into political process. The community created among SDS members brought this new spirit to light. C. Wright Mills writings spoke about "the scattered little circles of face-to-face citizens discussing their public business." Al Haber's hope for this to happen among students was demonstrated at Port Huron. SDS members saw this as proof of Mills's hope for democracy. This was to be the first example of many among SDS gatherings and meetings. Richard Flacks highlighted what made Port Huron special. He found a "mutual discovery of like minds." Flacks continued, "You felt isolated before, because you had these political interests and values and suddenly you were discovering not only like minds, but the possibility of actually creating something together." It was also exciting because, "it was our thing: we were there at the beginning." (Miller, p. 118)

The Means for Change

SDS succeeded in doing several things. First, they clearly identified the crucial problem in American democracy. Next, they came up with an understanding of what theory would make a difference. All that remained was to find the means to make this change manifest. They discovered how to create changes in their own lives and these changes affected the world around them. However, something more was needed to bring change to all of American society.

Al Haber understood this something more would be an open

communication system or media which people could use to communicate. He understood that, "the challenge ahead is to appraise and evolve radical alternatives to the inadequate society of today, and to develop an institutionalized communication system that will give perspective to our immediate actions." (Sale, p. 25) This system would lay the "the groundwork for a radical student movement in America." (Sale, p. 25) Haber and Hayden understood SDS to be this, "a national communications network" (Miller, p. 72)

While many people made their voices heard and produced a real effect on the world in the 1960s, lasting structural changes were not established. The real problems outlined earlier continued in the 1970s and afterwards. A national, or even international, public communications network needed to be built to keep the public's voice out in the open.

Members of SDS partially understood this, and put forth the following two points in *The Port Huron Statement* section on "Toward American Democracy":

Mechanisms of voluntary association must be created through which political information can be imparted and political participation encouraged.

The allocation of resources must be based on social needs. A truly 'public sector' must be established, and its nature debated and planned. (PHS, Miller, p. 362)

International Public Communications Network – or the Net

This network and the means to access it began developing toward the end of the 1960s. Two milestones in the genesis were 1969 when the first ARPAnet node was installed and in 1979 when Usenet started. Both are pioneering experiments in using computers to facilitate human communication in a fundamentally different way than already existing public communications networks like the telephone or television networks. The ARPAnet, which was a single network predecessor of today's multi-network Internet, and Usenet, which continues to grow and expand around the world, gave rise to the Net, or the worldwide global computer communication networks. Another important step toward the development of an international communication network was

the personal computer movement, which took place in the middle to late 1970s. This movement created the personal computer, which makes it affordable for an individual to purchase the means to connect to this public network.

However, the network cannot simply be created. SDS understood that "democracy and freedom do not magically occur, but have roots in historical experience; they cannot always be demanded for any society at any time, but must be nurtured and facilitated." (*The Port Huron Statement*, in Miller, p. 361)

Participants on the ARPAnet, Internet, and Usenet inherently understood this, and built a social and knowledge network from the ground up. As Usenet was created to help students who did not have access to the ARPAnet, or a chance to communicate in a similar way, they came to it in full force. The online user became part of a global culture and considers him or herself to be a global citizen. This global citizen is a net citizen, or a Netizen. The world, which has developed, is based on communal effort to make a cooperative community. Those who have become Netizens have gained more control of their lives and the world around them. However, access to this world needs to spread in order to have the largest possible effect for the most number of people. In addition, as some efforts to spread the Net become more commercial, some of the values important to the Net are being challenged. (Hauben, "Culture and Community")

A recent speech I was invited to present at a conference on "the Netizen Revolution and the Regional Information Infrastructure" in Beppu, Japan helps to bring the world of the Netizen into perspective with the ideas of participatory democracy,

> Netizens are not just anyone who comes on-line, and they are especially not people who come on-line for isolated gain or profit. They are not people who come to the Net thinking it is a service. Rather they are people who understand it takes effort and action on each and everyone's part to make the Net a regenerative and vibrant community and resource. Netizens are people who decide to devote time and effort into making the Net, this new part of our world, a better place. (Hauben, Hypernetwork '95 speech)

The Net is a technological and social development that is in the spirit of the theory clearly defined by the Students for a Democratic Society. This understanding could help in the fight to keep the Net an uncommercialized public commons (Felsenstein). This many to many medium provides the tools necessary to bring the open commons needed to make participatory democracy a reality. It is important now to spread access to this medium to all who understand they could benefit.

The Net brings power to people's lives because it is a public forum. The airing of real problems and concerns in the open brings help towards the solution and makes those responsible accountable to the general public. The Net is the public distribution of people's muckraking and whistle blowing. It is also just a damn good way for people to come together to communicate about common interests and to come into contact with people with similar and differing ideas.

The lack of control over the events surrounding an individual's life was a common concern of protestors in the 1960s. *The Port Huron Statement* gave as a reason for the reforms SDS was calling for that "Americans are in withdrawal from public life, from any collective efforts at directing their own affairs." (*The Port Huron Statement*, Miller, p. 335)

Hayden echoed C. Wright Mills when he wrote, "What experience we have is our own, not vicarious or inherited." Hayden continued, "We keep believing that people need to control, or try to control, their work and their life. Otherwise, they are without intensity, without the subjective creative consciousness of themselves, which is the root of free and secure feeling. It may be too much to believe, we don't know." (Miller, p. 262)

The desire to bring more control into people's daily life was a common goal of student protest in the 1960s. Mario Savio, active in the Berkeley Free Speech movement, "believed that the students, who paid the university to educate them, should have the power to influence decisions concerning their university lives." (Haskins and Benson, p. 55) This desire was also a common motivator of the personal computer movement.

The Personal Computer Movement

The personal computer movement immediately picked up after the protest movements of the 1960s died down. Hobbyist computer enthusiasts wanted to provide access to computing power to the people. People across the United States picked up circuit boards and worked on making a personal mini-computer or mainframe which previously only large corporations and educational institutions could afford. Magazines, such as *Creative Computing*, *Byte* and *Dr. Dobbs' Journal*, and clubs, such as the Homebrew Club, formed cooperative communities of people working towards solving the technical problems of building a personal and inexpensive computer.

Several pioneers of the personal computer movement contributed to the tenth anniversary issue of *Creative Computing* Magazine. Some of their impressions follow:

The people involved were people with vision, people who stubbornly clung to the idea that the computers could offer individuals advantages previously available only to large corporations.... (Leyland, p. 111)

Computer power was meant for the people. In the early 70s computer cults were being formed across the country. Sol Libes on the East Coast and Gordon French in the West were organizing computer enthusiasts into clubs.... (Terrell, p. 100)

We didn't have many things you take for granted today, but we did have a feeling of excitement and adventure. A feeling that we were the pioneers in a new era in which small computers would free everyone from much of the drudgery of everyday life. A feeling that we were secretly taking control of information and power jealously guarded by the Fortune 500 owners of multi-million dollar IBM mainframes. A feeling that the world would never be the same once "hobby computers" really caught on. (Marsh, p. 110)

There was a strong feeling [at the Homebrew Club] that we were subversives. We were subverting the way the giant corporations had run things. We were upsetting the establishment,

forcing our mores into the industry. I was amazed that we could continue to meet without people arriving with bayonets to arrest the lot of us.

The Net and Conclusion

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 the discussion necessary to identify today's fundamental questions. One criticism is that it would be impossible to assemble the body politic in person at a single time. The Net allows for a meeting that takes place on each person's own time, rather than all at one time. 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.

Another criticism 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 whoever 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.

The individuals involved with SDS, the personal computer movement and the pioneers involved with the development of the Net understood they were a part of history. This spirit helped them to push forward in the hard struggle needed to bring the movements to fruition. The invention of the personal computer was one step that made it possible for people to afford the means to connect to the Net. The Internet has just begun to emerge as a tool available to the public. It is important that the combination of the personal computer and the Net be spread and made widely available at low or no costs to people around the world. It is important to understand the tradition, which these developments have come from, in order to truly understand their value to society and to make them widely available. With the hope connected to this new public communications medium, I encourage people to take up the struggle, which continues in the great American radical tradition.

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Netizens, Chapter 7
Behind the Net: The Untold History of the ARPAnet and Computer Science

By Michael Hauben

The global Internet's progenitor was the Advanced Research Projects Agency Network (ARPAnet), financed and encouraged by the U.S. Department of Defense. This is important to remember, because the support and style of management by ARPA of its contractors was crucial to the success of the ARPAnet. As the Internet develops and the struggle over the role it plays unfolds, it will be important to remember how the network developed and the culture with which it was connected. The culture of the Net as a facilitator of communication is an important feature to understand.

The ARPAnet *Completion Report*, published jointly in 1978 by Bolt, Beranek and Newman (BBN) of Cambridge, Massachusetts, and ARPA, concludes by stating:

> ...it is somewhat fitting to end on the note that the ARPAnet program has had a strong and direct feedback into the support and strength of computer science, from which the network itself sprung.[1]

In order to understand the wonder that the Internet and various other components of the Net represent, we need to understand why the ARPAnet *Completion Report* ends with the suggestion that the ARPAnet is fundamentally connected to and born of computer science rather than of the military.

THE HISTORY OF ARPA LEADING UP TO THE ARPAnet

A climate of scientific research surrounded the entire history of the ARPAnet. ARPA was formed to fund basic research, and thus was not oriented toward military products. The formation of this agency was part of the U.S. government's response to the then Soviet Union's launch of Sputnik in 1957.[2] One area of ARPA-supported research concerned the

question of how to utilize the military's investment in computers to do Command and Control Research (CCR). Dr. J. C. R. Licklider was chosen to head this effort. Licklider came to ARPA from Bolt, Beranek and Newman, (BBN) in Cambridge, MA in October 1962.[3] His educational background was a combination of engineering studies and physiological psychology. His multi-disciplinary experiences provided Licklider with a prospective uncommon among engineers.

As a result of Licklider's arrival, the Agency's contracts were shifted from non-academic contractors toward "the best academic computer centers".[4] The then-current method of computing was batch processing. Licklider saw that improvements could be made in CCR only from work that would advance the current state of computing technology. He particularly wanted to move forward into the age of interactive computing, and Defense Department contractors were not moving in that direction. In an Interview, Licklider described how at one of the contractors, System Development Corporation (SDC), the computing research being done "was based on batch processing, and while I was interested in a new way of doing things, they [SDC] were studying how to make improvements in the ways things were done already."[5] To reflect the changed direction Licklider was bringing to ARPA-supported research, his division of ARPA was renamed the Information Processing Techniques Office (IPT or IPTO). The office "developed into a far-reaching basic research program in advanced technology."[6]

The *Completion Report Draft* states that "Prophetically, Licklider nicknamed the group of computer specialists he gathered the 'Intergalactic Network'."[7] Before work on the ARPAnet began, the foundation had been established by the creation of the Information Processing Techniques Office of ARPA. Robert Taylor, Licklider's successor at the IPTO, reflects on how this foundation was based on Licklider's interest in interconnecting communities:

> Lick was among the first to perceive the spirit of community created among the users of the first time-sharing systems.... In pointing out the community phenomena created, in part, by the sharing of resources in one timesharing system, Lick made it easy to think about interconnecting the communities, the

interconnection of interactive, on-line communities of people...”[8]

The “spirit of community” was related to Licklider’s interest in having computers help people communicate with other people[9] Licklider’s vision of an “intergalactic network” connecting people represented an important conceptional shift in computer science. This vision guided the researchers who created the ARPAnet. After the ARPAnet was functioning, the computer scientists using it realized that assisting human communication was a major fundamental advance that the ARPAnet made possible.

As early as 1963, a commonly asked question of the IPTO directors by the ARPA directors about IPTO projects was “Why don’t we rely on the computer industry to do that?,” or occasionally more strongly, “We should not support that effort because ABC (read, “computer industry”) will do it – if it’s worth doing!”[10] This question leads to an important distinction: ARPA research was different from what the computer industry had in mind to do, or was likely to undertake. Since Licklider’s creation of the IPTO, the work supported by ARPA/IPTO continued his explicit emphasis on communications. The *Completion Report* explains:

> The ARPA/IPTO theme...is that the promise offered by the computer...as a communication medium between people, dwarfs into relative insignificance the historical beginnings of the computer as an arithmetic engine.[11]

The *Completion Report Draft* goes on to differentiate the research ARPA supported from the research done by the computer industry:

> The computer industry, in the main, still thinks of the computer as an arithmetic engine. Their heritage is reflected even in current designs of “their communication systems.” They have an economic and psychological commitment to the arithmetic engine model, and it can die only slowly...[12]

The *Completion Report Draft* further analyzes this problem by tracing it back to the nation’s universities:

> ...furthermore, it is a view that is still reinforced by most of the nation’s computer science programs. Even universities, or at least parts of them, are held in the grasp of the arithmetic engine concept....[13]

ARPA's IPTO was responsible for the research and development which led to the success of first the ARPAnet, and later the Internet. Without this support and commitment, such a development might never have happened. One of ARPA's criterion for supporting research was that the research had to offer an order of magnitude of advance over the current state of development. Such research is never immediately profitable. In society, therefore, is the need for organizations that do not pursue profit as their goal, but rather work on furthering the state of the art. Computer networking was developed and spread widely in an environment outside of commercial and profit considerations, an environment that supported such research.

Others understood the communications promise of computers. For example, in RFC 1336, David Clark, senior research scientist at MIT's Laboratory for Computer Science, describes the impact of the Internet in making possible new means of human-to-human communication:

It is not proper to think of networks as connecting computers. Rather, they connect people using computers to mediate. The great success of the internet is not technical, but in human impact. Electronic mail may not be a wonderful advance in Computer Science, but it is a whole new way for people to communicate. The continued growth of the Internet is a technical challenge to all of us, but we must never loose sight of where we came from, the great change we have worked on the larger computer community, and the great potential we have for future change.[14]

Research predating the ARPAnet had been done by Paul Baran, Thomas Marill and others.[15] This led Lawrence Roberts and other IPTO staff to formally introduce the topic of networking computers of differing types (that is, incompatible hardware and software) together in order to make it possible for ARPA's Principle Investigators (PI) to share resources. The ARPA Principle Investigators meeting was held annually for university and other contractors to summarize results of the previous year and discuss future research. In the spring of 1967 it was held at the University of Michigan, in Ann Arbor. Networking was one of the topics brought up at this meeting, it was decided that there had to be agreement on conventions for character and block transmission, error

checking and retransmission, and computer and user identification. These specifications became the contents of the inter-host communication's "protocol." Frank Westervelt was chosen to write about this protocol, and a communication group was formed to study the questions.[16]

In order to develop a network of varied computers, two main problems had to be solved:

1. To construct a 'subnetwork' consisting of telephone circuits and switching nodes whose reliability, delay characteristics, capacity, and cost would facilitate resource sharing among computers on the network.

2. To understand, design, and implement the protocols and procedures within the operating systems of each connected computer, in order to allow the use of the new subnetwork by the computers in sharing resources.[17]

After one draft and additional work on this communications position paper were completed, a meeting was scheduled in early October 1967 by ARPA at which the protocol paper and specifications for the Interface Message Processor (IMP) were discussed. A subnetwork of IMPs, dedicated mini-computers connected to each other and to one or more of the participant's computers, was the method chosen to connect the computers (hosts) to each other via phone lines. This standardized the subnet to which the hosts connected. Researchers at each site would have to write the software necessary to connect their local host computer to the IMP at their site. ARPA picked 19 possible participants in what was now known as the "ARPA Network."

From the time of the 1967 PI meeting, various computer scientists who were ARPA contractors were busy thinking about the planning and development of the ARPAnet. Part of that work was a document outlining a beginning design for the IMP subnetwork. This specification led to a competitive procurement for the design of the IMP subnetwork.

By late 1967 ARPA had given a contract to the Stanford Research Institute (SRI) to write the specifications for the communications

network they were developing. In December of 1968, SRI issued a report "A Study of Computer Network Design Parameters." Elmer Shapiro played an important role in the research for this report. Based on this work, Lawrence Roberts and Barry Wessler of ARPA wrote the final ARPA version of the IMP specification.[18] This specification was ready to be discussed at the June 1968 PI meeting.

The Program Plan "Resource Sharing Computer Networks" was submitted June 3, 1968 by the IPTO to the ARPA Director, who, with unusual speed, approved it on June 21, 1968. It outlined the objectives of the research, and how the objectives would be fulfilled. The purposed network was impressive, as it would prove useful to both the computing research centers that connected to the network and to the military. The proposed research requirements would provide immediate benefits to the computer centers the network would connect. ARPA's stated objectives were to experiment with varied interconnections of computers and sharing of resources in an attempt to improve productivity of computer research. Justification was drawn from technical needs in both the scientific and military environments. The Program Plan developed into a set of specifications. These specifications were connected to a competitive Request for Quotation (RFQ) to find an organization that would design and build the IMP subnetwork.[19]

Following the approval of the Program Plan, 140 potential bidders were mailed the Request for Quotation. After a bidders conference, 12 proposals were received and from them ARPA narrowed the field down to four bidders. BBN was the eventual recipient of the contract.[20]

The second technical problem, as defined by the *ad hoc* Communications Group, still remained to be solved. The set of agreed upon communications settings (known as a protocol), which would allow the hosts to communicate with each other over the subnetwork, had to be developed. This work was left "for host sites to work out among themselves."[21] This meant that the software necessary to connect the hosts to the IMP subnetwork had to be developed. ARPA assigned this duty to the initially designated ARPAnet sites. Each of the first sites had a different type of computer to connect. ARPA trusted that the programmers at each site would be capable of modifying their operating systems in order to connect their systems to the subnetwork. In addition, the sites

needed to develop the software necessary to utilize the other hosts on the network. By assigning them responsibilities, ARPA made the academic computer science community an active part of the ARPAnet development team.[22]

Steve Crocker, one of graduate students involved with the development of the earliest ARPAnet protocols, associates the placement of the initial ARPAnet sites at research institutions with the fact that the ARPAnet was ground-breaking research. He wrote in a message responding to questions on the COM-PRIV mailing list:

> During the initial development of the ARPAnet, there was simply a limit as to how far ahead anyone could see and manage. The IMPs were placed in cooperative ARPA R&D sites with the hope that these research sites would figure out how to exploit this new communication medium.[23]

The first sites of the ARPAnet were picked to provide either network support services or unique resources. The key services the first four sites provided were:[24]

UCLA	Network Measurement Center
SRI	Network Information Center
UCSB	Culler-Fried interactive mathematics
UTAH	graphics (hidden line removal)

Crocker recounts that these four sites were selected because they were "existing ARPA computer science research contractors." This was important because "the research community could be counted on to take some initiative."[25]

The very first site to receive an IMP was UCLA. Professor Leonard Kleinrock of UCLA was involved with much of the early development of the ARPAnet. His work in queuing theory gave him a basis to develop measurement techniques used to monitor the ARPAnet's performance. This made it natural that UCLA received one of the first nodes, as it would be important to measure the network's activity from early on - one of the first two or three sites had to be the measurement site in order for the statistics to be based on correct data for analysis purposes and UCLA accordingly came to be the Network Measurement Center (NMC).[26]

The Network Working Group

Once the initial sites were chosen, representatives from each site gathered together to talk about how to solve the technical problem of getting the hosts to communicate with each other. The *Completion Report Draft* tells us about this beginning:

> To provide the hosts with a little impetus to work on the host-to-host problems. ARPA assigned Elmer Shapiro of SRI "to make something happen," a typically vague ARPA assignment. Shapiro called a meeting in the summer of 1968 that was attended by programmers from several of the first hosts to be connected to the network. Individuals who were present have said that it was clear from the meeting at that time, no one had even any clear notions of what the fundamental host-to-host issues might be.[27]

This group, which came to be known as the Network Working Group (NWG), was exploring new territory. The first meeting took place several months before the first IMP was configured. In Crocker's recollections of the important developments produced by the NWG that were provided as the introduction to RFC-1000, the reader is reminded that the thinking involved was groundbreaking and thus exciting. Crocker remembers that the first meeting was chaired by Elmer Shapiro, who initiated the conversation with a list of questions.[28] Also present at this first meeting were Steve Carr from University of Utah, Crocker from UCLA, Jeff Rulifson from SRI, and Ron Stoughton from UCSB. These attendees, most of them graduate students, were the programmers described in the *Completion Report Draft*.

According to Crocker, this was a seminal meeting. The attendees could only be theoretical, as none of the lowest levels of communication had been developed yet. They needed a transport layer or low-level communications platform to be able to build upon. BBN would not deliver the first IMP until August 30, 1969. It was important to meet before this date, as the NWG "imagined all sorts of possibilities."[29] Only once they started thinking together could this working group actually develop anything. These fresh thoughts from fresh minds helped to incubate new ideas. The *Completion Report Draft* properly acknowledges what this early group helped accomplished: "Their early thinking

was at a very high level."[30] A concrete decision made at the first meeting was to continue holding meetings similar to the first one. This set the precedent of holding exchange meetings at each of their sites.

Crocker, describing the problems facing these networking pioneers, writes:

> With no specific service definition in place for what the IMPs were providing to the hosts, there wasn't any clear idea of what work the hosts had to do. Only later did we articulate the notion of building a layered set of protocols with general transport services on the bottom and multiple application-specific protocols on the top. More precisely, we understood quite early that we wanted quite a bit of generality, but we didn't have a clear idea how to achieve it. We struggled between a grand design and getting something working quickly.[31]

The initial protocol developments lead to DEL (Decode-Encode Language) and NIL (Network Interchange Language). These languages were more advanced than what was needed and could not be implemented at the time. The basic purpose was to form an on-the-fly description that would tell the receiving end how to understand the information that would be sent. The discussions at this first set of meetings were extremely abstract as neither ARPA nor the universities had conceived of an official charter. However, the lack of a specific charter allowed the group to think broadly and openly.

BBN had provided details about the host-IMP interface specifications from the IMP side. This information gave the group some definite starting points to build from. Soon after BBN provided more information, members of the NWG, of BBN and of the Network Analysis Corporation (NAC) met for the first time on Valentine's Day, 1969. The NAC had been invited because it had been contracted by ARPA to specify the topological design of the ARPAnet and to analyze its cost, performance, and reliability characteristics.[32] As all the parties had different priorities, the meeting was a difficult one. BBN was interested in the lowest level of making a reliable connection. The programmers from the host sites were interested in getting the hosts to communicate with each either via various higher-level programs. Even when the crew from BBN did not turn out to be the "experts from the East," members

of the NWG still expected that "a professional crew would show up eventually to take over the problems we were dealing with."

A step of great importance that began the open documentation process occurred as a result of a "particularly delightful" meeting a month later in Utah. The participants decided it was time to start recording their meetings in a consistent fashion. What resulted was a set of informal notes titled "Request for Comments" (RFC). Crocker writes about their formation:

> I remember having great fear that we would offend whomever the official protocol designers were, and I spent a sleepless night composing humble words for our notes. The basic ground rules were that anyone could say anything and that nothing was official. And to emphasize the point, I labeled the notes "Request for Comments." I never dreamed these notes would distributed through the very medium we were discussing in these notes. Talk about Sorcerer's Apprentice![33]

Crocker replaced Shapiro as the Chairman of the NWG soon after the initial meeting. He describes how they wrestled with the creation of the host-host protocols:

> Over the spring and summer of 1969 we grappled with the detailed problems of protocol design. Although we had a vision of the vast potential for inter-computer communication, designing usable protocols was another matter. A custom hardware interface and custom intrusion into the operating system was going to be required for anything we designed, and we anticipated serious difficulty at each of the sites. We looked for existing abstractions to use. It would have been convenient if we could have made the network simply look like a tape drive to each host, but we knew that wouldn't do.[34]

The first IMP was delivered to UCLA in late August 1969. The next was delivered to SRI a month later in October.[35] As soon as more than one IMP existed, the NWG had to implement a working communications protocol. The first set of pairwise host protocols included remote login for interactive use (telnet), and a way to copy files between remote hosts (FTP). Crocker writes:

> In particular, only asymmetric, user-server relationships were

supported. In December 1969, we met with Larry Roberts in Utah, [and he] made it abundantly clear that our first step was not big enough, and we went back to the drawing board. Over the next few months we designed a symmetric host-host protocol, and we defined an abstract implementation of the protocol known as the Network Control Program. ("NCP" later came to be used as the name for the protocol, but it originally meant the program within the operating system that managed connections. The protocol itself was known blandly only as the host-host protocol.) Along with the basic host-host protocol, we also envisioned a hierarchy of protocols, with Telnet, FTP and some splinter protocols as the first examples. If we had only consulted the ancient mystics, we would have seen immediately that seven layers were required.[36]

The NWG went on to develop the protocols necessary to make the network viable. The group grew as more and more sites connected to the ARPAnet. The group became large enough (around 100 people) that one meeting was held in conjunction with the 1971 Spring Joint Computer Conference in Atlantic City. A major test of the NWG's work came in October 1971, when a meeting was held at MIT. Crocker continues the story,

[A] major protocol "fly-off" – Representatives from each site were on hand, and everyone tried to log in to everyone else's site. With the exception of one site that was completely down, the matrix was almost completely filled in, and we had reached a major milestone in connectivity.[37]

The NWG was creating as what was called the "host to host protocol." Explaining why this was important, the authors of the *Completion Report Draft* wrote:

...[T]he problem is to design a host protocol which is sufficiently powerful for the kinds of communication that will occur and yet can be implemented in all of the various different host computer systems. The initial approach taken involved an entity called a "Network Control Program" which would typically reside in the executive of a host, such that processes within a host would communicate with the network through

this Network Control Program. The primary function of the NCP is to establish connections, break connections, switch connections, and control flow. A layered approach was taken such that more complex procedures (such as File Transfer Procedures) were built on top of similar procedures in the host Network Control Program.[38]

As the ARPAnet grew, the number of users bypassed the number of developers, signaling the success of these networking pioneers. Crocker appointed Alex McKenize and Jon Postel to replace him as chairmen of the Network Working Group. The *Completion Report Draft* details how this role changed:

McKenzie and Postel interpreted their task to be one of codification and coordination primarily, and after a few more spurts of activity the protocol definition process settled for the most part into a status of a maintenance effort.[39]

ARPA was a management body that funded academic computer scientists. ARPA's funding paved the way for these scientists to create the ARPAnet. BBN helped by developing the packet switching techniques which served as the bottom level of transmitting information between sites. The NWG provided an important development in its "Request for Comments" documentation, which made possible developing the new protocols.

RFCs as "Open" Documentation

The open exchange of ideas initiated from the very first meeting of the Network Working Group continued in the Request For Comments. As meeting notes, the RFCs were meant to keep members updated on the status of various developments and ideas. They were also meant to gather responses from people. RFC 3, "Documentation Conventions," documents the "rules" governing the production of these notes beginning with the open distribution rules:

Documentation of the NWG's effort is through notes such as this. Notes may be produced at any site by anybody and included in this series.[40]

These opening sentences invite anyone willing to be helpful in the protocol definition process. This is important because all restrictions are

lifted by these words, allowing for the open process aimed for. (RFC-3 is reproduced in the appendix at the end of this chapter.) The guide goes on to describe the rules concerning the contents of the RFCs:

The content of a NWG note may be any thought, suggestion, etc. related to the HOST software or other aspect of the network. Notes are encouraged to be timely rather than polished. Philosophical positions without examples or other specifics, specific suggestions or implementation techniques without introductory or background explication, and explicit questions without any attempted answers are all acceptable. The minimum length for a NWG note is one sentence.[41]

In RFC-3, Crocker continues to explain the philosophy behind the perhaps unprecedented openness represented:

These standards (or lack of them) are stated explicitly for two reasons. First, there is a tendency to view a written statement as ipso facto authoritative, and we hope to promote the exchange and discussion of considerably less than authoritative ideas. Second, there is a natural hesitancy to publish something unpolished, and we hope to ease this inhibition.[42]

This open process encouraged and led to the exchange of information. Technical development is only successful when information is allowed to flow freely and easily between the parties involved. Encouraging participation is the main principle that made the development of the Net possible.

Statements like the ones contained in RFC-3 are democratic in their support of a process of openness. They were written during the late 1960's, a time of popular protest for freedom of speech. People were demanding more of a say in how their countries were run. The open environment needed to develop new technologies is consistent with the cry for more democracy by students and other throughout the world during the 1960s. What is amazing is the collaboration of the NWG (mostly graduate students) and ARPA (a component of the military) during the 1960s and 1970s. This seems unusual given the active student anti-war movement. Robert Braden of the Internet Activities Board reflects on this collaboration:

For me, participation in the development of the ARPAnet and

the Internet protocols has been very exciting. One important reason it worked, I believe, is that there were a lot of very bright people all working more or less in the same direction, led by some very wise people in the funding agency. The result was to create a community of network researchers who believed strongly that collaboration is more powerful than competition among researchers. I don't think any other model would have gotten us where we are today.[43]

Such collaboration is why the work of these computer scientists led to such amazing and democratic achievements, the Net and the cooperative culture of the Net.[44]

Calling their notes a "Request for Comment" established a significant tradition. It predates the Usenet post, which in a fashion could also be called a "request for comment." Both are the presentation of a particular person's ideas, questions, or comments to the general public for comments, criticism or suggestions. Early RFCs established this tradition. Many RFCs are in fact comments on previous RFCs.[45]

Conclusion

How were the developments of the ARPAnet made possible? None of the participants had previous solutions to any of the problems they faced in establishing a working packet-switched testbed with host-to-host connectivity. They had to put much thought and work into their research. As the resulting ARPAnet was tremendously successful and fulfilled ARPA's project objectives, it is important to see what can be learned from the research and research methods from which it emerged. Bernie Cosell, who worked at BBN during this early period, describes the importance of an open process in a developmental situation:

*no*one* had the necessary expertise [and vision] to figure any of this out on their own. The cultures among the early groups were VERY different [-] multics, sigma-7, IBM...at Rand, ...PDP-10s at BBN and SRI...[and possibly] UCSB and Utah had PDP-10's, too. The pie-in-the-sky applications ranged over a WIDE landscape, with no one knowing quite where it would lead. Some kind of free, cross-cultural info/idea exchange *had* to happen.[46]

The computer scientists and others involved were encouraged in their work by ARPA's philosophy of gathering the best computer scientists working in the field and supporting them:

> IPT usually does little day-to-day management of its contractors. Especially with its research contracts, IPT would not be producing faster results with such management as research must progress at its own pace. IPT has generally adopted a mode of management that entails finding highly motivated, highly skilled contractors, giving them a task, and allowing them to proceed by themselves.[47]

The work of the Network Working Group was vital to the development of the ARPAnet. Vinton Cerf, another of the graduate students involved with the early protocol development and still closely connected to the Internet, echoed this sentiment in his paper "An Assessment of ARPAnet Protocols":

> The history of the Advanced Research Project Agency resource sharing computer network (ARPAnet) is in many ways a history of the study, development, and implementation of protocols."[48]

Cerf supports Cosell's opinion about the uncertainty and newness of the entire project:

> The tasks facing the ARPAnet design teams were often un-clear, and frequently required agreements which had never been contemplated before (e.g., common protocols to permit different operating systems and hardware to communicate). The success of the effort, seen in retrospect, is astonishing, and much credit is due to those who were willing to commit themselves to the job of putting the ARPAnet together.[49]

The NWG's work blazed the trail, which the developers of the TCP/IP suite of protocols (Transport Control Protocol/ Internet Protocol) successfully followed when the need to expand and include other networks based on technologies other than NCP arose. The principles embodied in RFC-3 and the open RFC documentation provided a strong foundation that began with NCP and was continued by the work on TCP/IP. NCP was developed in the field, and versions of it were released early in its development so various programmers could work on

implementing and improving the protocol. In addition, all specifications were free and easily available for people to examine and comment on. Through this principle of early release, problems and kinks were found and worked out in a timely manner. The future developers of TCP/IP learned from the developers of NCP a practice of developing from the bottom up. The bottom-up model allows for a wide range of people and experiences to join in and perfect the protocol and make it the best possible.

The public funding of the ARPAnet project meant that the documentation could be made public and freely available. The documentation was neither restricted nor classified. This open process encouraging communication was necessary for these pioneers to succeed. Research in new fields of study requires that researchers cooperate and communicate in order to share their expertise. Such openness is especially critical when no one person has the answers in advance. In his article, "The Evolution of Packet Switching," Larry Roberts described the public nature of the process:

> Since the ARPAnet was a public project connecting many major universities and research institutions, the implementation and performance details were widely published.[50]

The people at the forefront of development of these protocols were the members of the Network Working Group, many of whom came from academic institutions, and who therefore had the support and time needed for the research. In summing up the achievements of the process that developed the ARPAnet, the *Completion Report Draft* explains:

> The ARPAnet development was an extremely intense activity in which contributions were made by many of the best computer scientists in the United States. Thus, almost all of the "major technical problems" already mentioned received continuing attention and the detailed approach to those problems changed several times during the early years of the ARPAnet effort.[51]

Fundamental to the ARPAnet, as explained by the *Completion Report Draft*, was the discovery of a new way of looking at computers. The developers of the ARPAnet viewed the computer as a communications device rather than only as an arithmetic device.[52] This new view,

which came from research conducted by those in academic computer science, made the building of the ARPAnet possible. Such a shift in understanding the role of the computer is fundamental in advancing computer science. The ARPAnet research has provided a rich legacy for the further advancement of computer science, and it is important that the significant lessons learned be studied and used to further advance the study of computer science.

NOTES

1. F. Heart, A. McKenzie, J. McQuillan, and D. Walden, *ARPANET Completion Report* (Washington, D.C.: DARPA and BBN, 1978) III-132. (hereafter, *Completion Report*).
2. *ARPAnet Completion Report Draft, September 9, 1977*, unpublished manuscript, III-6. (hereafter, *Completion Report Draft*).
3. ibid.
4. ibid., III
5, "Interview with J. C. R. Licklider" conducted by William Aspray and Arthur L. Norberg, tape recording, Cambridge, Massachusetts, 28 October 1988, OH 150, Charles Babbage Institute, University of Minnesota, Minneapolis, Minnesota.
6. *Completion Report Draft*, III-7.
7. ibid.
8. ibid., III-21.
9. See, for example, J. C. R. Licklider and Robert Taylor, "The Computer as a Communication Device," in *In Memoriam: J. C. R. Licklider 1915-1990* (Palo Alto, CA.: Digital Systems Research Center, 1990), originally published in *Science and Technology*, April 1968.
10. *Completion Report Draft*, III-23.
11. ibid., III-24.
12. ibid.
13. ibid.
14. RFC-1336, "Who's Who in the Internet," G. Malkin, May 1992, 15.
15. See Chapter 8 of this volume, "The Birth and Development of the ARPAnet" and *Completion Report*, section 1.1.2, starting on III-9.
16. *Completion Report Draft*, III-25, III-26.
17. *Completion Report*, II-7-II-8.
18. *Completion Report Draft*, III-31-III-33.
19. ibid., III-35 and *Completion Report*, II-2.
20. *Completion Report Draft*, III-35, III-36.
21. ibid., III-67.

22. ibid., III-39 and personal discussion with Alex McKenzie, November 1, 1993.
23. E-mail message to Com-Priv mailing list (com-priv@ psi.com). Subject "Re: RFC-1000 (Partial response to part 1)." Date: Nov. 27, 1993.
24. Vinton G. Cerf, private e-mail correspondence, dated Nov. 27, 1993. Subject: "Re: Early Days of the ARPAnet and the NWG."
25. "The Origins of RFCs" by Stephen D. Crocker is contained in J. Reynolds and J. Postal, RFC-1000, 1.
26. The following quotes show some of the reasoning that went into the choice of the initial ARPAnet sites:

    CCN's [The Campus Computing Network of UCLA] chance to obtain a connection to the ARPAnet was a result of the presence at UCLA of Professor L. Kleinrock and his students, including S. Crocker, J. Postel, and V. Cerf. This group was not only involved in the original design of the network and the Host protocols, but also was to operate the Network Measurement Center (NMC). For these reasons the first delivered IMP was installed at UCLA, and ARPA was thus able to easily offer CCN the opportunity for connection. (*Completion Report Draft*, III-689).

    UCLA was specifically asked to take on the task of a "Network Measurement Center" with the objective of studying the performance of the network as it was built, grown, and modified; SRI was specifically asked to take on the task of a "Network Information Center" with the objective of collecting information about the network, about host resources, and at the same time generating computer based tools for storing and accessing that collected information (*Completion Report Draft*, II-16).

    The accessibility of distributed resources carries with it the need for an information service (either centralized or distributed) that enables users to learn about those resources. This was recognized at the PI [ed. Primary Instigators] meeting in Michigan in the spring of 1967. At the time, Doug Engelbart and his group at the Stanford Research Institute were already involved in research and development to provide a computer-based facility to augment human interaction. Thus, it was decided that Stanford Research Institute would be a suitable place for a "Network Information Center" (NIC) to be established for the ARPAnet. With the beginning of implementation of the network in 1969, construction also began on the NIC at SRI (*Completion Report Draft*, III-60).

27. *Completion Report Draft*, III-67.
28. E-mail message to Con-Priv mailing list. Subject: "Re: RFC-1000 (End of response to part 1)." Date: Nov. 27, 1993.
29. RFC-1000.
30. *Completion Report Draft*, III-67.
31. E-mail message to Con-Priv mailing list. Subject: "Re: RFC-1000 (Response to part 2)," Date: Nov. 27, 1993.

32. *Completion Report*, III-30.
33. RFC-1000, 3.
34. ibid.
35. In RFC-1000, Stephen Crocker reports on the process of the installation of the first IMP:

    [T]ime was pressing: The first IMP was due to be delivered to UCLA September 1, 1969, and the rest were scheduled at monthly intervals.

    At UCLA we scrambled to build a host-IMP interface. SDS, the builder of the Sigma 7, wanted many months and many dollars to do the job.

    Mike Wingfield, another grad student at UCLA, stepped in and offered to get interface built in six weeks for a few thousand dollars. He had a gorgeous, fully instrumented interface working in five and one half weeks. I was in charge of the software, and we were naturally running a bit late. September 1 was Labor Day, so I knew I had a couple of extra days to debug the software. Moreover, I had heard BBN was having some timing troubles with the software, so I had some hope they'd miss the ship date. And I figured that first some Honeywell people would install the hardware – IMPs were built out of Honeywell 516s in those days – and then BBN people would come in a few days later to shake down the software. An easy couple of weeks of grace.

    BBN fixed their timing trouble, air shipped the IMP, and it arrived on our loading dock on Saturday, August 30. They arrived with the IMP, wheeled it into our computer room, plugged it in and the software restarted from where it had been when the plug was pulled in Cambridge. Still Saturday, August 30. Panic time at UCLA.

    The second IMP was delivered to SRI at the beginning of October, and ARPA's interest was intense. Larry Roberts and Barry Wessler came by for a visit on November 21, and we actually managed to demonstrate a Telnet-like connection to SRI.
36. RFC-1000, 4.
37. ibid.
38. *Completion Report Draft*, II-24.
39. ibid., III-69.
40. RFC-3, "Documentation Conventions," Stephen Crocker, April 1969, 1.
41. ibid.
42. ibid.
43. RFC-1336, 5.
44. This democratic community is in danger of being fundamentally altered. This study of the history of the development of the ARPANET in conjunction with Chapter 3, "The Social Forces Behind the Development of Usenet" is meant to help people understand where the Net has come from, in order to defend it, and try to fight to keep it open and democratic – "the eighth wonder of the world," as

some call the Internet.

45. Some examples of comments upon comments include:
    RFC-1 Crocker, S. Host software, 1969 April 7
    RFC-65 Walden, D. Comments on Host/Host Protocol document #1
    RFC-36 Crocker, S. Protocol notes, 1970 March 16
    RFC-38 Wolfe, S. Comments on network protocol from NWG/RFC #36
    RFC-39 Harslem, E.; Heafner, J. Comments on protocol re: NWG/RFC #36
    RFC-33 Crocker, S. New Host-Host Protocol, 1970 February 12
    RFC-47 Crowther, W. BBN's comments on NWG/RFC #331970 April 20
46. Bernie Cosell, "Re: RFC-1000 - Questions about the Origins of ARPAnet Protocols 2/2," alt.folklore.computers, Nov. 23, 1993.
47. *Completion Report Draft*, III-47.
48. Vinton Cerf, "An Assessment of ARPAnet Protocols," Infotech Education Ltd., Stanford University, California, (n.d.), 1.
49. ibid.
50. Lawrence Roberts, "The Evolution of Packet Switching," *Proceedings of the IEEE 66 (November 1978): 267.*
51. ibid., III-24.
52. ibid., III-24.

Appendix

Network Working Group   4 689
RFC-3   April 1969
                                            Stev e Crocker
                                                    UCL A

DOCUMENTATION CONVENTIONS

The Network Working Group seems to consist of Steve Carr of Utah, Jeff Rulifson and Bill Duvall at SRI, and Steve Crocker and Gerard Deloche at UCLA. Membership is not closed.

The Network Working Group (NWG) is concerned with the HOST software, the strategies for using the network, and initial experiments with the network.

Documentation of the NWG's effort is through notes such as this. Notes may be produced at any site by anybody and included in this series.

CONTENT

The content of a NWG note may be any thought, suggestion, etc. related to the HOST software or other aspect of the network. Notes are encouraged to be timely rather than polished. Philosophical positions without examples or other specifics, specific suggestions or implementation techniques without introductory or background explication, and explicit questions without any attempted answers are all acceptable. The minimum length for a NWG note is one sentence.

These standards (or lack of them) are stated explicitly for two reasons. First, there is a tendency to view a written statement as *ipso facto* authoritative, and we hope to promote the exchange and discussion of considerably less than authoritative ideas. Second, there is a natural hesitancy to publish something unpolished, and we hope to ease this inhibition.

FORM

Every NWG note should bear the following information:
1. "Network Working Group"
   "Request for Comments:" x, where x is a serial number.
   Serial numbers are assigned by Bill Duvall at SRI
2. Author and affiliation
3. Date
4. Title. The title need not be unique.

DISTRIBUTION

One copy only will be sent from the author's site to":

1. Bob Kahn, BB&N
2. Larry Roberts, ARPA
3. Steve Carr, UCLA
4. Jeff Rulifson, UTAH
5. Ron Stoughton, UCSB
6. Steve Crocker, UCLA

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OTHER NOTES

Two notes (1 & 2) have been written so far. These are both titled HOST Software and are by Steve Crocker and Bill Duvall, separately.

Other notes planned are on:
1. Network Timetable
2. The Philosophy of NIL
3. Specifications for NIL
4. Deeper Documentation of HOST Software.

Report from Berlin: The Vision Lives[1]

By Jay Hauben
jrh@ais.org

In 1992, Michael Hauben began research about what was then still called the Net (the Internet, Usenet, FidoNet, BITNET, etc.). Not only was his research about the Net, it was conducted on the Net. This research led him and Ronda Hauben to write the book *Netizens: On the History and Impact of Usenet and the Internet.*[2] The essence of Netizens is the prediction that the impact on society of the Net could be over-whelmingly positive. The authors examine the effect the Net was beginning to have on people's lives, on politics, the press, publishing, democratic decision making, etc. They envision a participatory democratic future made possible by the Net. But throughout their analysis they raise the possibility of derailment of this vision if the Net loses government protection or if an unregulated commercialism is allowed to impose its agenda on the development of the Net.

For a long time, in the U.S. at least, the questions of social impact and regulating commercialization raised in *Netizens* were only mini-mally discussed. The situation now seems to be changing. An Associa-tion of Internet Researchers (AoIR) is growing with a strong component of sociologists and others concerned with social impact. Universities and colleges are beginning to introduce Internet Studies degrees, with social impact being a key question. In Europe, it is beginning to be realized that the project of European unification will be profoundly affected by the social impact of the new technologies – especially those of informa-tion and communication. An indication of the importance being given to considerations of the vision and precautions presented in *Netizens* was an international conference, "Innovations for an e-Society: Challenges for Technology Assessment" held in Germany in October 2001.[3]

On October 17 to 19, about 200 researchers participated in this conference in Berlin. The language of the conference was English with participants from Germany and many other countries present. The focus

of the conference was the impact on society which will result because of recent technological developments, especially the Internet. The assumption of the organizers was that the new technologies are bound to cause profound societal changes. The sum total of these changes the conference called "e-society." The question for the conference was what will or what should e-society look like?

The conference was organized on behalf of the German Federal Ministry of Education and Research. The Ministry has written of its commitment to a broad-based societal dialogue about how to shape the future.[4] This conference seemed intended to serve that purpose at least in that it invited participation from researchers in many fields from the academic, public and commercial sectors, and from many countries.

The participants were welcomed by Edelgard Bulmahn, the German Federal Minister for Education and Research.[5] She outlined the challenge: for there to be social justice in the future, there must be social purpose given to the e-society that is emerging. Detectable in her welcome was a sense that perhaps the current direction of e-society might be problematic. The goals of e-society research should be "that everyone benefit and no one be marginalized." For this to occur the Minister said there must be social discussion of what in the past guides us to decide what path society wants to follow. To have this discussion citizens need information about science and technology and scientists need a sense of society's needs. She concluded that the increasingly rapid distribution of new information and communication technologies requires an international dialogue on these questions and wished the participants a fruitful exchange of experiences.

Next, Armin Grunwald, director of the coordinating Institute for Technology and Assessment and Systems Analysis (ITAS) set the goal of the conference. He raised a question: Can technological developments be influenced according to society's goals or does technological development follow its own or a market dynamic? This question for the conference was in the context of the fear that the current direction might be toward deepening the social divides digitally rather than toward a globally networked civil society. Dr. Grunwald was optimistic that society as a whole could, with real effort, shape the emerging e-society according to societal goals and values and that was the reason for the

conference.[6]

The spectrum of research and opinion at the conference demon-strated an opening up of the questions for a broader than usual participation. It is not uncommon in current discussions of the changes that are expected in society due to new technologies to mention the need for transparency, for the protection of privacy, for life-long learning and for worker mobility in the new Europe. At this conference these were mentioned but they were also challenged. A keynote speaker from the commercial sector described in positive terms a Lifelong Learning project as a backbone for advanced education and training.[7] His presentation was questioned by a participant: "Do people really want to spend their lives being retrained for new jobs as their old ones are made obsolete or would quality of life require something else?" Lifelong learning was seen from this point of view as a substitute for a commit-ment to a shorter work week or fewer hours of work per day and other advantages for workers from the new technology. The narrow need for a constantly retrained workforce was countered by the criteria of a higher quality of stable and secure life for all. Similarly, the projection of a mobile work force as part of the goal of a "Mobile Europe"[8] was questioned by a participant:[9] "Have you asked people if they want the Mobile Europe you are planning?" The implication being there may be more than one vision of Mobile Europe. The goal of the unimpeded flow of ideas and people across all borders both internal and external versus the goal of the easy flow from job to job. The former was proposed as socially desirable. The latter was criticized as too narrow.

Privacy was raised as a universal concern. But in the E-Health sessions it was reported that more than 80% of people polled in Iceland favored the gathering of medical data for open medical research even if that required relinquishing the confidentiality of medical records.[10] Icelanders apparently felt the social value of making their medical records available overrode the personal value championed by some doctors of keeping them private. Besides this difference over the importance of privacy, there was a difference over the need for transparency. There was much talk at the conference of the need for transparency and openness as necessary for the social success of the e-society. But it was argued in one of the presentations that transparency

in nature is achieved by looking through a glass or crystal. Transparency implies something can be watched, but the goal of social shaping requires broad participation and influence on the process not merely more open disclosure about the process.[11]

At most conferences in the U.S., privacy, transparency, life-long learning and representative democracy are mainly discussed. Differences like those above suggest that this conference had participants from a broader than usual spectrum of society. One conference preprint article notes there is a view that e-governance relates to the performance of government services including the delivery of information to the public via information and communication technologies (ICT). But the researchers comment that this view is too narrow. They see the citizens of European countries as being "less prone to accept experts' opinions and regulators' decisions without having a say." They suggest governance needs to be "a more broad and creative idea... extending the participation of civil society in the decision process that concerns all citizens."[12] They argue that social "safety can follow only from an open dialogue, early extended participation and a negotiated partnership among a multiplicity of parties."

The conference organizers raised the need for social shaping of the emerging e-society not mere adaptation to it. Among the researchers there were some who understood that such social shaping requires actual guidance based on the values and principles of the citizens of the future Europe. One set of researchers reported about citizen cells or panels that they convened.[13] The citizen panels they described seemed more than a research tool. They were a possible prototypic form for citizen participation. Randomly chosen citizens were invited to attend the panels to answer the question, do people want Internet access and for what purposes? Since their wages would be paid to them, release from their jobs would be arranged and an honorarium offered, enough people could attend to make the panels a good cross section of the citizens. A consensus developed in all the panels that universal access to the Internet would be valuable. But valuable for what? The participants knew that their deliberations and opinions would be reported back to the government body that sponsored the study. The researchers reported that the consensus on that question was valuable for watching over the

politicians and political structures about which the citizens had much skepticism.

The citizen panels and research reported on by the German researchers can be compared with the research reported on by an American researcher. The American had asked with his research, did the new media help to increase the number of voters, i.e., to get out the vote? He reported, "My survey research shows...the Internet to have no effect on voter turnout."[14] His question and answer exposed a different understanding of participation than that of the German researchers discussed above. Participation for the American researcher meant voting. In the German research it meant serving on a citizen panel. In Germany and in Europe in general, low voter turnout is considered an indicator of the breakdown of the political process and the need for a reexamination of the process. In America, low voter turn out is often ascribed to citizen contentment with the status quo. The observation by Michael Hauben that the net makes possible "...a revitalization of society, the frameworks...being redesigned from the bottom up [and] a new more democratic world...becoming possible"[15] was reflected in the German research but not the American. The questions of this conference and its goals suggested a desire for revitalization and even some from the bottom up. The citizen panel research echoed Hauben's observation that "the common people have a unique voice that is now being aired in a new way."[16]

Another question that surfaced at the conference concerned the effect on European unity of corporate globalization or marketization. The Federal Minister raised the goal of reconciling innovation (market-ization of technology) and social justice. She thought the reconciliation was only possible if the debate over shaping the future or setting goals was broadened to hear from all sectors of society. Two European Commission researchers who were looking at the future Europe 10 years and 20 years from now[17] reported they were surprised by the broad anti-corporate globalization demonstrations and the criticism of global marketization in Seattle (Nov. 1999) and especially in Genoa (June 2001). In response other conference participants pointed out that a narrow economic agenda not under social or governmental regulation is bound to produce social tension and protest. The corporate agenda of

privatization and diminished governmental services and standards, and for the expansion of the private sector at the expense of the public sector, seemed to some to cloud the chance for social cohesion and thus endangering the chances for a more integrated or united Europe. These participants echoed the warning J. C. R. Licklider and Robert Taylor made when they envisioned the Internet in 1968. "For the society, the impact will be good or bad depending mainly on the question: Will 'to be on line' be a privilege or a right? If only a favored segment of the population gets a chance to enjoy the advantage of 'intelligence amplification,' the network may exaggerate the discontinuity in the spectrum of intellectual opportunity."[18]

Armin Grunwald presented the conference wrap up. He suggested that a proper summary of the conference was that after decades of deregulation there was a need for reregulation. Only then he implied could the social shaping of the future that the conference was aiming for be achieved. It was not, he argued, to return to hierarchical decision making but to engage in social dialogues with broad participation from all sectors. That would require allowing enough time for broad deliberation and careful assessment. Then a normative framework based on rule of law and respect for human rights could emerge.

The conference was planned so that its events would contribute to the work it was to accomplish. The welcome to Berlin included the recognition that a vibrant Berlin required an advanced technological base. That theme was reinforced by the banquet dinner speaker historian Hubert Laitko. His speech may have been too long for a dinner speech but was valuable for the detailed telling of the importance of scientific research in the last 150 years in the development of industry and technology in Berlin. In spite of wars, Nazism and the division of Berlin for 44 years, a tradition of pure scientific research and networks of creative activity continues in Berlin based he said on open intellectual communication and exchange among institutions and researchers.[19] As if to prove this last point, it was a special treat to have many scholars from the former East Germany add their spirit and expertise to this conference. Even the bus ride to the banquet was made into a guided tour narrated by a architect although some Berliners on the bus disagreed with some of his narrative.

To this reporter from the U.S., the conference seemed different from the U.S. norm. For the U.S. government and researchers the dominant Internet question since at least 1991 has been privatization and commercialization. Now in Europe, or at least at this conference called by the German government, the dual questions of the book *Netizens*, the great social potential of the Internet and great danger of the commercialization and privatization were being taken up. To me the work of this conference was a positive development in the direction pioneered by Michael Hauben and Ronda Hauben.

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Notes:

1. This report is written for the memorial issue of the *Amateur Computerist* honoring the life and work of Michael Hauben. The reporter attended the conference as a press guest.

2. Online since January 1994. Now at: http://www.columbia.edu/~rh120/netbook/. In hard cover edition since 1997 from the IEEE Computer Society Press, Los Alamitos, CA. Hereafter, *Netizens*.

3. *Innovations for an e-Society. Challenges for Technology Assessment*. Sponsored by the Federal Ministry of Education and Research (BMBF), Germany. See: http://www.itas.fzk.de/e-society/ See also *Innovations for an e-Society. Challenges for Technology Assessment*, Congress *PrePrints*, ISBN 3-89750-0973. Hereafter *PrePrints*.

4. Report of the Federal Government on Research 2000, BMBF, Bonn, no date, p. 10 and 46.

5. "Welcome Address," handout at the conference.

6. "Technology Assessment for Shaping the e-Society," copy provided by the author.

7. Joachim Schaper, "E-Learning as a Chance and Challenge for Lifelong Learning," presented at Plenary Session III.

8. Mathias Weber and J.C. Burgelman, "Mobile Europe: Balancing Technological Change and Europe's Socio-Economic Objectives." See *PrePrints*, Section 8.

9. Karsten Weber. His presentation at the conference, "Who should have access to which information?" can be seen at:

http://www.phil.euv-frankfurt-o.de/download/Access.pdf

10. Janine Morgall and Ingunn Bjornsdottir, "Confidentiality an issue for whom?." See *PrePrints*, Session 4.

11. B. De Marchi, S. Functowicz and A. Guimaraes Pereira, "e2-Governance: electronic and extended." *PrePrints*, Session 3.

12. ibid.

13. Hans Kastenholz and Elmar Wienhofer, "Civic Participation and the Internet. Opportunities and Limits of Electronic Democracy." *PrePrints*, Session 3.

14. Bruce Bimber, "Information Technology and the "New" Politics: Lessons from the American Experience*." PrePrints*, Session 3.

15. *Netizens*, page 3.

16. ibid., page 10.

17. K. Mathias Weber and J. C. Burgelman, participants in the European Commission's Institute for Prospective Technological Studies (IPTS) Futures Project.

18."The Computer as a Communication Device." *In Science and Technology: For the Technical Men in Management*. No 76. April, 1968. Pp. 21-31. Also reprinted in *In Memoriam: J. C. R. Licklider: 1915-1990.* Report 61. Systems Research Center. Digital Equipment Corporation. Palo Alto, California. August 7, 1990. Pp. 21-41.

19. Unfortunately only an abstract of his talk was included among the preprints and the talk is not available electronically.