The Amateur Computerist

Webpage: http://www.ais.org/~jrh/acn/

Fall 1992 **The Wonderful World of Usenet News** **Supplement**

Table of Contents

Introduction. . . . . Page 1
THE NET WORKS. . . . . Page 3
'Arte', Computers and. . . . . Page 11
Computer as a Democratizer.. . . . . Page 25
CityNet in. . . . . Page 31
Learning About Usenet. . . . . Page 32
Freenet BBS's.. . . . . Page 34
Usenet News.. . . . . Page 35
Two Books to Help Users:. . . . . Page 46
Liberation Technology. . . . . Page 53
In Memorial. . . . . Page 59

Introduction

One day during a programming class, one UAW member explained that people at Ford had taken classes in BASIC because they wanted to see what the computer could do.

This special supplement begins a serious answer to that question by featuring several articles about one of the most important developments in the world of computers and telecommunications – the creation, use, and potential of Usenet News. The different articles in this issue examine this development from different perspectives. Hopefully they will begin the process of seriously looking at this important development of our current times which has been made possible by the computer and

the computer pioneers who have taken on to develop its potential.

Recently, on Usenet News, a professor from Germany, posted a request for nominations for who was likely to, or should get the Nobel Prize in Economics. One response was that the prize should go to reward the significant achievement of the pioneers of Usenet News instead of to an economist creating useless models, as usual.

Just a few years ago, such a response would not have been heard outside of one's small circle of friends. But now such a response can be broadcast via a highly automated interactive computer conference system, called Usenet News, using very few natural resources, to an estimated 3 million people worldwide, within a very short period of time.

Yet Usenet News, and the telecommunications explosion it is part of, are rarely discussed in the public arena even though this achievement, made possible by the work of many computer pioneers, is perhaps the most important "current event" of our times.

The interconnection and interrelation among people around the world made possible by Usenet News is setting the basis for a thorough going examination of the problems of our society and for the search for solutions. In our first issue of the *Amateur Computerist*, we wrote:

"There was an effort by administrators of the UAW-Ford program at the Dearborn Engine Plant to kill interest in computers and computer programming. We want to keep interest alive because computers are the future. We want to disperse information to users about computers. Since the computer is still in the early stage of development, the ideas and experiences of the users need to be shared and built on if this technology is to advance. To this end, this newsletter is dedicated to all people interested in learning about computers." ("Introduction," vol 1 no. 1, pg.1)

Usenet News has also taken on this task and achieved it in a way that is remarkable, not the least amazing is the scale, the grassroots participation, and the contributions of many computer users from around the world.

This supplement is being published by the *Amateur Computerist* both to make this important development known to our readers and also to encourage discussion among netnews participants of the significance

of the achievement that Usenet News represents.

COMMENTS WELCOMED

We welcome your comments on any of the articles in this Supplement and hope to publish an additional supplement sometime next year to include both those comments and other articles, interviews etc. that have been submitted after this Supplement was finalized. We welcome submissions for this next Special Supplement on Usenet News. Also we encourage discussion of the issues raised here in the alt.amateur.comp newsgroup on Usenet News.

The Editors

THE NET WORKS

by Lee Hauser

There's a sense of power about it. A phone call, a logon, and you're connected with the world, a part of something much bigger than yourself, part of what brought down the Berlin Wall and broke up the Soviet Union, something that can inform and entertain you and has nothing to do with television.

You're connected to the Internet. Whether you're at a terminal at school, sneaking a little time at work, or are laying out a little of your own money for time on someone else's system, you've joined "cyberspace," that part of reality made up only of electronic impulses.

The term "cyberspace" was coined by William Gibson in his 1984 novel *Neuromancer*. Gibson's cyberspace was typified by direct mind-computer interface and a universally shared metaphor, the electronic world, a grided floor over which floated the glowing Euclidian shapes of data structures and complex systems. Despite the fact that Gibson had never used a computer when he wrote *Neuromancer*, his vision has shaped our views of cyberspace, perhaps forever, which is firmly in the grand tradition of science fiction.

Today's cyberspace is the Internet, a large number of computers connected by modems and various other means, thousands of them based at universities, commercial sites, or occupying a corner of someone's living room. These computers (the vast majority of which use the Unix operating system) regularly exchange megabytes of electronic

mail, encoded software and general conversation. Most of them do it at no charge to the user and under no one's central control.

The Internet got its start in the early 1960s as an experiment in connecting computers that were part of the Department of Defense's Advanced Research Projects Agency, known as ARPAnet. It grew beyond its original defense contractors to include other educational networks in North America, Europe and the Far East. One part of the Net, the part that many users find most interesting is Usenet News, the bulletin board system which now piggy backs on the Internet and other networks. This netnews system got its start in 1979.

Usenet News is a world of its own that gets by with a singular lack of rules. Like the world outside, how you view it will depend on what you want to see. You can get almost any question answered, many times and in many ways. There are red-light districts and religious discussions, bars and coffeehouses and flea markets, even institutions of higher learning. There are places where you can hear old-timers tell stories of the glorious past and see others invent the uncertain future. There are many joys to be found and many confusions to be faced on the Net, as it is called by its regulars.

Usenet is like a worldwide electronic BBS. It consists of "newsgroups" grouped into "hierarchies" where users post and reply to "articles." There are nearly three thousand newsgroups altogether, more than anyone can or would want to keep up with (while you may be interested in both Croation culture and the varieties of commercial software available in Australia, most of the stuff in-between might very well be meaningless to you). These groups are divided into several hierarchies such as Recreation, Talk, Sciences, Computers, Social, Miscellaneous and Alternate.

Fortunately, you don't have to wade through all the newsgroups to find what you want – at least not more than once. Most Usenet News access systems have software for reading the news and managing newsgroup subscriptions. One of the most popular is "rn" (a typically cryptic Unix name which stands for "readnews"). It reads a file called .newsrc which holds the names of all the newsgroups your system receives and, initially, tells "rn" that you are a subscriber of all of them. You can use "rn" to go through the newsgroups one by one, look at a

few messages and decide whether or not to keep the group on your subscription list.

Unfortunately, few books on Unix cover "rn" extensively; two that do are mentioned in the resource list.* You should also be aware that most Unix systems have an online manual called (can you guess?) "man." Typing "man rn" at the command line will get you the manual pages for "rn" or other Unix commands.

Usenet access is available from non-Unix systems too. There are several programs available that will connect PCs to Usenet News and some PC-based bulletin board systems have Internet mail and Usenet "feeds." You might have to look around for them even harder than you would for a public access Unix system.

In addition to the Usenet newsgroups, the Net is used for mail and file exchange. The foundation for all inter-system services was originally (and sometimes still is) the Unix-to-Unix CoPy program, or UUCP. UUCP does the automatic copying of files stored on one system to another system, whether they be mail, news or other data and programs.

Another service provided by some systems, and the one that makes software junkies stand up and take note, is ftp, or "file transfer protocol." Most systems have this function, which lets users on one system log onto other systems to download archived software. This is usually done anonymously, meaning the person logging on needs no account on the host machine. Many systems offer archives of public domain and shareware software; one of the biggest repositories is a system at the White Sands military complex in New Mexico.

Mail, of course, is one of the key uses of the Internet. Unix electronic mail (e-mail) is an integral part of the system. You can mail someone at the other end of the country as easily as you can someone at your own site; all you need is the e-mail address.

Until a few years ago, Internet addressing was a complicated matter, more art than science. Everyone had a "bang address" made up of the name of every system between the sender and the recipient separated by exclamation points, or "bang" symbols. It was a source of much Usenet conversation, trying to determine the most efficient route between any two points, both from the delivery point of view and the typing point of

view.

Nowadays most systems can be addressed by a "domain" address which usually consists of the user's ID and system name separated by an "@" symbol. Not all systems recognize this, however. For instance, the author of this article can be addressed by using uunet!polari!lsh (his bang address) or polari!lsh@uunet.uu.net (technically the domain address, with a bang due to the way the system receives its uucp feed).

Usenet, in particular, and the Internet, in general, are quite anarchic. There is literally no central control over the system other than the assignment of each computer's network address. The amount of access to the network, including which Usenet newsgroups (if any) will be supported, is entirely up to the local system administration.

Computers connect in a variety of ways, usually dictated by the standards of the regional networking organization. Dial-up lines are usually a minimum of 9600 bits per second, while many subnets have leased lines with higher transmission rates. Propagation can be amazingly fast; the famous "Internet Worm" infected over 6,000 sites in a matter of hours in November of 1989.

While the Net as a whole has no central control, machines at individual sites are under their own site administration. Each machine has finite capacity to receive information, and the amount of space and other resources available can determine whether a full or partial Usenet feed is received. The reception of particular newsgroups is also subject to administrative review; a site engaged in biological research may receive all of the bio hierarchy, but ignore all the rest. Especially subject to review at some sites (and some would call it censorship) are some of the alt groups, such as alt.sex, alt.arts.erotica, and other controversial groups. Nixpub sites, those that provide public dialup access, usually have all the groups they can get. Educational sites often do as well, despite periodic outcry over public money being spent on some of the alt groups.

Of course, it is the alt groups where most of the most interesting "action" is found. Unlike most hierarchies, where creating a new group requires some administrative or at least political input, alt groups can be started by anyone for any reason and are left to the users to thrive or die. A site that receives a good selection of alt newsgroups is almost assured

of high usage.

I'm always amazed at the unabashed personality shown by people online. It may be true that the anonymity of the modem allows a certain release from one's normal personality, but most posters append a signature file to their articles that clearly identifies them and their system of origin. Are they always this arrogant, this angry, this kinky? Do they care that fellow news readers in their own offices will see their postings? Indeed, does anyone else at their sites read news at all? Most users at non-public sites add a disclaimer to their messages, stating that their posting does not reflect the opinions of their employer, or possibly anyone else in the universe.

Usenet is a wonderful place to ask any of the questions that have been bothering you. There are newsgroups devoted to almost all subjects, places and times (and if there isn't one devoted to your subject, place and time, you can create your own and see if anyone shares your particular smidgen of reality). Find the right newsgroup, ask a question, and you'll usually get at least one answer. If there are "N" ways of answering your question you will probably get at least "N+1" answers. And of course you can throw in your own answers to whatever anyone else says. Fortunately, news-reading software has ways of keeping message threads together, but so much news flows over the lines that messages may not stay online very long.

Oh, where are the "fun" newsgroups? Groups of a local nature are found under regional or city names. In the Seattle area, for instance, they have names like seattle.general, pnw.general and pnw.forsale (the "pnw" stands for "Pacific Northwest"). Some other regional and local hierarchies include "ca" (California), "ne" for New England, "chi" for Chicago, and even "su" (Stanford University, where a substantial part of the computer science and engineering departments appear to hand in their homework over the Net). There are many others. One of the beauties of these regional hierarchies is that you can restrict your new postings to region, so your article "putting the summer cabin in Bar Harbor up for rent" doesn't show up on some inflation-weary Russian programmer's system.

If you're really into computers, there's plenty to be had under the "comp" hierarchy. The comp.sys.msdos, comp.sys.mac and others deal

with everyone's favorite hardware (with everything from Commodore 64 through Amiga thrown in).

Those with a more sensual bent can check out the voluminous postings in alt.sex (yes, there are also groups called alt.drugs & alt.rock-and-roll) and alt.arts.erotica. The alt.callahan's is the online pub where you can have good conversation, trade bad puns, and hoist a virtual brew. The alt.chatsubo is a bar on the seamier side of town, where the razorgirls and console cowboys play out their cyberpunk fantasies. Star Trek fans will find at least two groups devoted to their passion, while alt.sf-lovers takes care of most of the rest of the science fiction world.

There's a lot more out there, too – networks, software, advice, help, controversy and argument, enough to keep one fascinated for hours on end.

Some of the most interesting newsgroups are those that talk about the Net itself. There are groups such as news.newusers.questions that help beginners in their explorations of Usenet and other areas of the Net and news.misc, the group for talking about Usenet News.

At the opposite end of the spectrum are the groups like "alt.cyberpunk.tech, alt.cyberspace, alt.society.futures & alt.cyberpunk" that deal with the concept and implementation of cyberspace. There are discussions of the practicality of mind computer interfaces, of whether there could be a shared metaphor of what the electronic world looks like, and other details. The people doing the discussing are not only science fiction readers, but network administrators, virtual reality researchers and others who will be instrumental in the growth and refinement of cyberspace.

This is one of the reasons the Internet and Usenet News are important – they are part of the free flow of information essential to the continuing development of science and technology. Rather than letters between individuals or articles in narrowly targeted technical journals and conferences, thousands of people can discuss the subject, whatever it may be.

Unfortunately, though the Net is growing all the time and is available to more users than ever before, there are still relatively few people who have access to it. Many things need to happen before

wide-spread electronic communication is available to most people. Computers or terminals need to be easily and cheaply available. In France, for instance, the government-run Minitel network gives free terminals with system subscriptions. Over half of all French households are connected to Minitel.

The infrastructure of a universal network needs to extend to everyone who wants it. In a sense, of course, it does. The whole country is wired for telephone, which is the easiest way to enter cyberspace anyway. But the telephone wires can't carry all the information for anything close to Gibsonian cyberspace, or even more everyday things like realtime video. Eventually the copper wires we communicate on now may be replaced by more expensive but more capable fiber-optic lines.

And, of course, there needs to be a reason for people to go online. Today's electronic services provide attractive services, such as news, travel scheduling and information, encyclopedias, even shopping and real-time socializing. This all costs money, of course, often more than people can afford. Many users think online services should be free and as universal as telephone service, so many never proceed beyond their local bulletin boards.

Another thing that needs to change is the user interface. Services such as *Prodigy* and *America Online* have their own software to make their services more user-friendly, but each is unique. DOS-based bulletin boards and Unix systems are command-line oriented and far from "user-friendly." Terminals need to be as easy to use as telephones before they will be widely accepted.

Finally, we must retain the freedom to use online services. There is constant fighting between telephone companies and BBS operators about telephone line prices. There is also conflict over how the infra-structure will be extended - who will get access to the Net, and how much they will pay. Finally, there is a necessary upward trend in computer capability that leaves those who cannot afford computers behind. While computer prices are coming down relative to their power, there are very few truly low-end, very inexpensive computers. Just when XT-compatibles could be truly cheap, very few are being made because they are no longer fast enough for the people who have a thousand

dollars or more to spend. Computers could achieve wide penetration if low-end computers were easily available with easy-to-use software and good reasons to use them.

Now there is growing sentiment to make the Internet fully commercial, removing its government subsidy and making it pay its own way. In an interview in the May 25, 1992 *InfoWorld* magazine, Mitch Kapor says the commercialization of Internet is needed to continue its growth and free government money for a new, higher speed experimental network. Kapor, founder of Lotus Development Corporation, designer of the Lotus 1-2-3 spreadsheet and co-founder of the Electronic Freedom Foundation, says the Internet is the best way to bring connectivity to the general population until the nation can be wired for fiber, which will support audio and video. Most users of the Net would probably disagree with Kapor. It is likely that commercializing the Net would have a negative effect on its open, free-wheeling nature which is certainly its charm and possibly its reason for success. The Net was started on a noncommercial basis and continues that way to this day; it has grown and matured in that atmosphere, showing innovation and growth without the profit motive that until recently defined Kapor's success. If the high-speed network must be experimented with, why not let the commercial interests take over that work and leave unfixed that which is not broken.

This re-wiring of the nation is still years away, of course. In the meantime there's no good reason to stay away from today's Internet and Usenet News. It's part of what computers do best.

Resources

Using uucp and Usenet, from O'Reilly & Associates (a superior book, especially for the more technically minded)

The First Book of Unix, by Douglas Topham, from Howard W. Sams & Co. (an excellent intro to Unix for the complete Unix idiot, with an excellent intro to mail and Usenet News).

From: 74230.2702@CompuServe.COM (Lee Hauser)

In Defense of Technology: 'Arte', Computers and the Wonderful World of Usenet News: A Historical Perspective

"Another advantage of industry and of refinements in the mechanical arts, is that... Minds... being once aroused from their lethargy, are put into fermentation, turn themselves on all sides and carry improvements into every art and science."

David Hume, "Of Refinements in the Arts"

"Can we expect, that a government will be well modeled by a people, who know not how to make a spinning-wheel, or to employ a loom to advantage?"

David Hume, "Of Refinements in the Arts"

Introduction

During the past two decades there have been important technological breakthroughs. The personal computer, a science fiction dream for generations, is now available as a household appliance in a way that only the typewriter was just a few years ago. Also, a public conferencing network called Usenet News carried on telecommunications networks like the Internet, UUCP, and others, encourages public discussion and free exchange of ideas on a world wide scale.

The social implications of these developments are rarely discussed in the public arena. Instead the voices dominating any public discussion usually are those of condemnation of the computer and of criticism of

technological change and development. This article is an effort to begin serious discussion of these technological advances. It is also an effort to examine how such technological developments can increase the social wealth of our society.

Part I looks back to how philosophers and other serious thinkers historically evaluated the role of such new technology in increasing the social wealth of a society. It examines how they established the principles needed to answer critics of technological change and development.

The second part describes one of the most important technological achievements of the 20th century – Usenet News. Finally this article concludes that it is only by the active encouragement and participation in the computer and technological revolution that a better world can be won.

Part I
The Role of "Arte" in the Production of Social Wealth

The question of whether technological development benefits society is an important question. Recently there have been numerous articles, books, journals, etc. that claim such developments are only harmful to society. (For references to some of this literature see "Questioning Technology," *The Whole Earth Review*, No. 73, Winter, 1991.) The social implications of new technological developments like the computer and the telecommunications networks it has made possible, should not be dismissed as harmful developments as this literature implies. Voices defending these developments as the significant social advances they are, need to become part of the public debate. To gain some perspective on the principles at stake in this controversy, it is helpful to look back to early economic writers and their studies about the value to a society of "arte" or what modern writers would call the development of technology.

Writing in the *Great French Encyclopedia*, Diderot (1713-1784) pointed out the striking contradiction of modern society. Even though the wealth of society is produced by those who do the work of that society, they are the least respected and the study of the "mechanical

arts" which is necessary to make work most productive is treated with disdain and disrespect. Diderot, defining "Art" describes this contradiction. He writes: "Place on one side of the balance the real benefits of the most exalted sciences and the most honored `arts' and on the other side those of the `mechanical arts', and you will find that the esteem granted to both has not been distributed in the correct proportion of these benefits; and that people praised much more highly those men who were engaged in making us believe that we were happy, than those men actually engaged in doing so. What odd judgments we make! We demand that people be usefully employed and we scorn useful men."[1]

The 17th and 18th centuries were a period of profound social and economic change. This period of history saw great transformation in the ability of society to produce the necessities and conveniences of life for a growing population. Accompanying this social transformation was a growing concern with the role that the mechanical arts (called "arte") play in the production of social wealth on the part of those who tried to apply the methods of science to economic questions.

Such concern with the question of "arte" was not new. Philosophers like Plato and Aristotle had examined this economic category, considering it one of the important categories to be studied. For Plato, as he explains in his dialogue "Protagoras," the mechanical arts were akin to a gift from the gods, the sole advantage that humans had in their struggle for survival with the rest of the animal kingdom. They were the essential element which gave people the ability to survive in a hostile world.

Plato tells the story of how the gods Prometheus and Epimetheus were charged with populating the world with living creatures. They created a variety of life, giving to each species an advantage to help it to survive. But by the time they came to create humans, they had exhausted the traits they could provide. "Man alone," remarks Plato, "was naked and shoeless, and had neither bed nor arms of defense." Plato then explains how Prometheus, not knowing how else to be helpful to humans, "stole the mechanical arts of Hephaestus and Athene, and fire with them (they could neither have been acquired nor used without fire), and gave them to man." Thus Plato, via this parable, shows how only the mechanical arts, which differentiated humans from the rest of the animal kingdom, have made human life sustainable.[2]

Aristotle demonstrates a similar high regard for "arte" which is defined as "scientific knowledge and the corresponding skill of how to produce something in accordance with that knowledge."[3] In the *Nicomachean Ethics*, Aristotle distinguishes art from nature and explains that "Every art is concerned with bringing something into existence and to think by art is to investigate how to generate something which may or may not exist and of which the [moving] principle is in the producer and not in the thing produced."[4] He goes on to explain that arte is concerned with things which do not have this [moving] or regenerating principle in themselves. That arte is concerned with the production of things that nature does not create on her own. Hence arte requires the human creator and makes possible the manifold creations which nature does not provide for on her own.

Several British writers of the 17th and 18th centuries continued the Greek tradition of respect for "arte" or "techne" as the Greek word is transliterated. The mechanical arts were necessary for the production of the food and clothes and shelter needed to provide for a population that was moving from the land under feudalism into the towns and cities that would characterize the industrial revolution. The annual production of such food, clothing, shelter and other necessities and conveniences of life were considered social wealth by these writers. And the economic category "arte" was seen as the means of facilitating the production of this social wealth. Thus the economic category "arte" became a pressing concern.

Sir William Petty (1623-1687) who has been called "The Father of Scientific Political Economy" isolated four economic categories as being crucial for the production of social wealth. They were labor, land (i.e. nature), arte and stock. Petty maintained that the two essential categories were labor and land, and that labor was the active element and nature the passive element. He wrote "Labor is the Father and active principle of wealth as Lands are the Mother."[5] Though human beings could survive without 'arte', Petty believed that 'arte' was an important component of life, making it possible to produce more of the goods and necessities of life with less labor. "Art," he explains is "equal to the labor and skill of many in producing commodities."[6]

In order to increase the public wealth available to society, Sir

William Petty saw only two alternatives. “People must either work harder,” he wrote, “or introduce labor saving processes.” These labor saving processes, according to Petty, save the labor of many hands and provide more riches for society. “One man by art,” Petty writes, “may do as much work as many without it.”[7] He gives several examples: “viz one Man with a Mill can grind as much Corn as twenty can pound in a Mortar; one Printer can make as many Copies, as a Hundred Men can write by hands; one Horse can carry upon Wheels, as much as Five upon their Backs; and, in a Boat, or upon ice, as Twenty....”[8]

For Petty, the choice facing society was to have “few hands” “laboring harder” or “by introducing the Compendium and Facilitations of Art” to have a few workers doing the work of many.[9]

He refers to the example of Holland which had the advantage of being able to use Windmills instead of hand labor and thereby the “advantage of the labor of many thousand Hands is saved, for as much as a Mill made by one Man in half a year, will do as much Labor as four Men for five years together.”[10] Petty reasoned that the use of arte to save human labor was a continuing benefit to society. He demonstrated the long term social advantage gained from arte over simple labor by an illustration comparing the production by ‘arte’ with that of simple labor. “For if by such Simple Labor,” writes Petty, “I could dig and prepare for Seed a hundred acres in a thousand days; suppose then, I spend a hundred days in studying a more compendious way, and in contriving Tools for the same purpose; but in all the hundred days dig nothing.” If he takes the remaining nine hundred days to dig two hundred Acres of Ground, “then,” Petty concludes, “I say, that the Art which cost but one hundred days Invention is worth one Man’s labor forever; because the new Art, and one Man, performed as much as two Men could have done without it.”[11]

The social advantage of arte, according to Petty, is that a large portion of the population is freed from having to produce the goods needed by society and thus available for other important work, especially for scientific pursuits. The remaining people, Petty writes “may safely and without possible prejudice to the Commonwealth, be employed in Arts and Exercises of pleasure and ornament; the greatest whereof is the Improvement of natural knowledge.”[12]

When Petty identifies and describes "arte," his writing is a part of a body of economic literature during the 17th and 18th centuries which set out to scientifically define this economic category. In his article "'Art' and 'Ingenious Society'" reprinted in his book *Predecessors of Adam Smith* [1937] (New York, 1960 reprint, Chapter XIII), E. A. J. Johnson gathers several descriptions of "arte" and looks at what Petty and other 17th and 18th century economic commentators considered as the role of "arte" and the effect it has had on the development of society.

David Hume (1711-1776), one of the economists Johnson discusses, echoes Plato's emphasis on the importance of "arte" in distinguishing human beings from other animals. "There is one fundamental difference between man and other animals," Hume wrote, "...Nature has `endowed the former with a sublime celestial spirit, and having given him an affinity with superior beings, she allows not such noble faculties to lie lethargic or idle, but urges him by necessity to employ, on every emergence, his utmost art and industry'." (*Predecessors of Adam Smith*, pg.264.)

In this sense "Art" is, according to Johnson, "an ennobling faculty, implanted by Nature, which separates man from the rest of the zoological world by making greater production possible."(ibid.) Writers like Petty and Hume saw "arte" as the ability to utilize technology to abridge labor, and thus as a wondrous faculty peculiar to humans as part of the animal kingdom.

Other literary figures, like Daniel Defoe (1660-1731) in *Plan of the English Commerce* and writers of economic tracts like *The Advantages of the East-India Trade to England Consider'd* (1707), provide examples of the environmental and economic benefits which accompany the increased use of tools and machines to abridge the labor necessary for production. In Russia, Defoe explains, where "Labor was not assisted by Art" there was "no other Way to cut out a large Plank, but by felling a great Tree and then with a multitude of Hands and Axes hew away all the Sides of the Timber, till they reduced the middle to one large Plank." The Swedes or Prussians, on the other hand, Defoe explains, "could cut three or four, or more Planks of the like Size from one Tree by the Help of Saws and Saw Mills. The Consequence" Defoe points out, is "that the miserable Russian labored ten times as much as the other (the Swedes

and the Prussians -ed.) for the Same Money."[13] Not only does "arte" make it possible for more goods to be produced by less labor, but "arte" also makes it possible to produce more planks of lumber from each tree. When "arte" is used, fewer trees need to be cut down. And high wages can be paid to those workers using the most modern technology as they produce more goods with less labor than workers who use backward production techniques.

The anonymous author of *The Advantages of the East-India Trade to England Consider'd* (1707) equates advanced technology with the ability to produce goods more cheaply though the workers producing them continue to earn higher wages. This writer maintains, "Arts, and Mills, and Engines, which save the labor of Hands, are ways of doing things with less labor, and consequently with labor of less price, though the Wages of Men imploy'd to do them shou'd not be abated." (pg.66) He also demonstrates the beneficial catalyst such modern technology provides in encouraging new inventions and discoveries. He writes, "And thus the East-India Trade by procuring things with less, and consequently cheaper labor, is a very likely way of forcing Men upon the invention of Arts and Engines, by which other things may also be done with less and cheaper labor, and therefore may abate the price of Manufactures, tho' the Wages of Men shou'd not be abated." (pg.67) By using "arte," this writer contends, all aspects of the production process are improved. He writes that 'arte' "is no unlikely way to introduce ...more Order and Regularity into our English Manufactures...." (pg.67)

John Cary, in *An Essay on the State of England in Relation to its Trade* (1695, reprint England, 1972), observes that because of "arte" the price of many manufactures like glass bottles, silk stockings, sugar, etc. went down even though the wages of the workers weren't cut. "But then the question will be, how this is done?" he asks, and he answers "It proceeds from the Ingenuity of the Manufacturer, and the Improvements he makes in his ways of working, thus the Refiner of Sugars goes thro' that operation in a Month, which our Forefathers required four Months to effect." And "the Distillers draw more Spirits, and in less time... than those formerly did who taught them the Art." (pg.145-6)

Cary goes on to list other examples of how improvements in arte have led to changes in production that have increased the goods

available to the population though they cost less labor and so are cheaper. He writes: “The Glassmaker hath found a quicker way of making it out of things which cost him little or nothing, Silk-Stockings are wove instead of knit; Tobacco is cut by Engines instead of Knives; Books are printed instead of written;...Lead is smelted by Wind-Furnaces, instead of blowing with Bellows; all which save the labor of many Hands, so the Wages of those employed need not be lessened.” (pg.146)

Cary observes that the price of goods has come down, even though their desirability has improved. He writes, “The variety of our Woollen Manufactures is so pretty, that Fashion makes a thing worth both at Home and Abroad twice the Price it is sold for.... Artificers by Tools and Laves fitted for different Uses make such things as would puzzle a Stander by to set a price on according to the worth of Men’s Labor; the Plummer by new Inventions casts a Tun of Shott for Ten Shillings, which an indifferent Person could not guess worth less than Fifty.”(pg.146) After showing how a similar trend has occurred in the Navigation trades, Cary concludes, “New Projections are every day set on foot to render making our Manufactures easy, which are made cheap... not by falling the Price of poor People’s Labor.”

Also, he shows how these advances lead to a general environment of improved methods of production. “Pits are drained,” Cary writes, “and Land made Healthy by Engines and Aquaeducts instead of Hands; the Husbandman turns up his Soil with the Sallow, not digs it with his Spade; Sowes his Grain, not plants it; covers it with the Harrow, not with the Rake; brings home his Harvest with Carts, not on Horseback; and many other easy Methods are used both for improving of Land and raising its Product, which are obvious to the Eyes of Men versed therein, though do not come within the Compass of my present Thoughts.” (pg.147-148) And, he notes, these improvements not only lessen the number of laborers needed to do the work, but also make possible the payment of higher wages.

According to these early British economists, Government has a role to play to support the development of technology. “It should therefore,” writes Johnson, “be the duty of the state to increase ‘art’.” (*Predecessors,* pg.266)

Once the sense of "arte" as the abridgement of labor via some mechanical or scientific means is established, it is useful to look at the effect "arte" has had on the life and health of society.

Several essays written by David Hume consider the role arte plays in determining whether a society flourishes or decays, and thus whether the society can produce the wealth needed to support its people. Hume observes the correlation between a society's support for the mechanical arts and its political and intellectual achievements.[14]

"The same age," writes Hume, "which produces great philosophers and politicians, renowned generals and poets, usually abounds with skillful weavers and ship-carpenters."

Describing Hume's model of the role "arte" plays in the evolution of social progress, Johnson writes:

"The metamorphosis of society from a rude and simple state to a refined and polished one was clear: first came the development of 'art' whereby the products of the earth were worked up; this increased the productivity of a nation's land and its population, thereby permitting the population to expand further; the existing 'art' and its cumulative progress increased the number of occupations (together with the incomes derived therefrom); lastly, higher incomes and higher levels of comfort `gave birth to new desires'." (from *Predecessors*, pg.276-7)

Hume maintains that a vibrant intellectual environment is the product, not the cause of social support for mechanical invention and the mastery of mechanical techniques. "By means of the 'arts'," he writes, "the minds of men, being once roused from their lethargy, are put into fermentation, turn themselves on all sides and carry improvements into every art and science." ("Of Refinement in the Arts," in *Writings on Economics*, pg.22) Thus every area of human thought is affected by the development of "arte," every area becomes subject to scientific analysis. By example, Hume shows how social support for technology and mechanical invention will lead to more productive means of farming as the farmer will then subject agriculture to analysis and observation and, as Hume writes:

"When a nation abounds in manufactures and mechanic arts, the proprietors of land, as well as the farmers, study agriculture as a science, and redouble their industry and attention.... By this means, land

furnishes a great deal more of the necessaries of life...."

("Of Commerce," in *Writings on Economics*,
pg.11 [Johnson ref. pg.271])

Thus attention to the mechanical world stimulates ferment in all other intellectual areas. As Hume explains in his essay, "Of Refinement in the Arts":

"In times when industry and the arts flourish, men are kept in perpetual occupation, and enjoy, as their reward, the occupation itself, as well as those pleasures which are the fruit of their labor. The mind acquires new vigor; enlarges its powers and faculties; and by an assiduity in honest industry, both satisfies its natural appetites, and prevents the growth of unnatural ones, which commonly spring up, when nourished by ease and idleness."(*Writings on Economics*, pg.21)

Similarly, there is a negative effect when people are deprived of the ability to interact with the mechanical arts: "Banish those arts from society, you deprive men both of action and of pleasure; and leaving nothing but indolence in their place, you even destroy the relish of indolence, which never is agreeable...." (ibid., pg.21-22)

Hume explains how the development of the liberal arts is dependent upon the development and support for the mechanical arts. He writes:

"Another advantage of industry and of refinement in the mechanical arts, is, that they commonly produce some refinements in the liberal (arts -ed);" (ibid., pg.22)

He sees the development of the mechanical arts as the primary activity which leads to the development of the liberal arts. However, to develop each, he explains, attention must be paid to the development of the other as well: "Nor can one be carried to perfection, without being accompanied, in some degree with the other." (ibid.)

"The same age," he explains, "which produces great philosophers and politicians, renowned generals and poets, usually abounds with skillful weavers, and ship-carpenters. We cannot reasonably expect," Hume observes, "that a piece of woollen cloth will be brought to perfection in a nation, which is ignorant of astronomy, or where ethics are neglected. The spirit of the age affects all the arts.... Profound ignorance," he writes, "is totally banished, and men enjoy the privilege of rational creatures, to think as well as to act, to cultivate the pleasures of the mind

as well as those of the body." (ibid.)

Not only does the fermentation stimulated by mechanical activity and invention lead to a renaissance in intellectual development, but it also affects sociability. Hume writes: "The more these refined arts advance, the more sociable men become: nor is it possible that, when enriched with science, and possessed of a fund of conversation, they should be contented to remain in solitude, or live with their fellow-citizens in that distant manner, which is peculiar to ignorant and barbarous nations. They flock into cities; love to receive and communicate knowledge; to show their wit or their breeding; their taste in conversation or living, in clothes or furniture...." (ibid.)

This ferment leads to the development of social organizations, Hume explains:

"Particular clubs and societies are everywhere formed: Both sexes meet in an easy and sociable manner: and the tempers of men, as well as their behavior, refine apace. So that, beside the improvements which they receive from knowledge and the liberal arts, it is impossible but they must feel an increase of humanity, from the very habit of conversing together and contribute to each other's pleasure and entertainment." (ibid., pg.22-23)

He summarizes, "Thus industry, knowledge, and humanity, are linked together by an indissoluble chain...." (ibid., pg.23)

People privately benefit from the development of technology and industry; more importantly, a public benefit is achieved. "But industry, knowledge, and humanity," Hume writes, "are not advantageous in private life alone: They diffuse their beneficial influence on the public, and render the government as great and flourishing as they make individuals happy and generous. The increase and consumption of all the commodities, which serve to the ornament and pleasure of life, are advantageous to society; because, at the same time that they multiply those innocent gratifications to individuals, they are a kind of storehouse of labor, which, in the exigencies of state, may be turned to public service." (ibid., pg.23-24)

Not only did Hume show how attention to and support for the mechanical arts leads to an increase in social wealth, he also contends that the form of government, and the development of the political

structures of the society are dependent on the level of development of the industry in that society. He writes:

"Laws, order, police, discipline; these can never be carried to any degree of perfection, before human reason has refined itself by exercise, and by an application to the more vulgar arts, at least of commerce and manufacture. Can we expect, that a government will be well modeled by a people, who know not how to make a spinning-wheel, or to employ a loom to advantage?" (ibid., pg.24)

Similarly, Hume connects bad government with ignorance in the mechanical arts, "Not to mention that all ignorant ages are infested with superstition, which throws the government off its bias, and disturbs men in the pursuit of their interest and happiness." (ibid.)

Furthermore, Hume relates the development of political liberty to the development of technology. He writes, "The liberties of England, so far from decaying since the improvements in the arts, have never flourished so much as during that period."(ibid., pg.27)

He finds a symbiotic relationship between the progress of the mechanical arts [i.e. 'arte' -ed] in a society and the possibility of good government. In societies which encourage the mechanical arts to develop, larger sections of the population have the time and know how to fashion a more democratic and responsive government. Where technological development is discouraged, a greater part of the population has to spend all of its time producing for subsistence and has no time to devote to oversight of the government. Hume explains:

"If we consider the matter in a proper light, we shall find, that a progress in the arts is rather favorable to liberty, and has a natural tendency to preserve, if not produce a free government. In rude unpolished nations, where the arts are neglected, all labor is bestowed on the cultivation of the ground; and the whole society is divided into two classes, proprietors of land, and their vassals or tenants. The latter are necessarily dependent and fitted for slavery and subjection; especially where they possess no riches, and are not valued for their knowledge in agriculture; as must always be the case where the arts [i.e. mechanical arts -ed] are neglected." (ibid., pg.28)

He observes that in a land based society, tyranny is the norm. "The former naturally erect themselves into petty tyrants; and must either

submit to an absolute master, for the sake of peace and order; or if they will preserve their independence, like the ancient barons, they must fall into feuds and contests among themselves, and throw the whole society into such confusion, as is perhaps worse than the most despotic government."

Not only was Hume a proponent of public support for technological development, he also maintained that increasing the wealth available to all strata of the population was beneficial to industrial development. He observed that increasing the share of the social wealth, and even of the luxury available to poorer sections of society makes possible more democratic political institutions. "But where luxury nourishes commerce and industry," he writes, "the peasants, by a proper cultivation of the land become rich and independent; while the tradesmen and merchants acquire a share of the property, and draw authority and consideration to that middling rank of men, who are the best and firmest basis of public liberty. These submit not to slavery, like the peasants, from poverty and meanness of spirit; and having no hopes of tyrannizing over others, like the barons, they are not tempted for the sake of that gratification, to submit to the tyranny of their sovereign. They covet equal laws, which may secure their property, and preserve them from monarchial, as well as aristocratical tyranny." (ibid., pg.28-9)

Thus he traces the development of the government in England attributing changes to the level of technological development of the nation's industry.

Hume describes how the House of Commons in England evolved from the growth and expansion of industry:

"The lower house is the support of our popular government; and all the world acknowledges, that it owed its chief influence and consideration to the increase of commerce, which threw such a balance of property into the hands of the commons. How inconsistent then is it to blame so violently a refinement in the arts, (i.e. mechanical arts -ed.) and to represent it as the bane of liberty and public spirit!" (ibid., pg.29)

Hume's defense of technology against its detractors has a familiar ring. His writings represent a criticism of those who dismiss the benefits of the computer because of a supposed loss of privacy or increase in the potential for government control over the lives of its citizens. Hume's

writings challenge these efforts to blame the computer for such problems and instead they point an arrow to the democratic achievements of the last part of the 20th century that are the result of computer technology.

One of the most exciting of these achievements is the development of what is known as Usenet News, a worldwide computer conferencing network that makes possible democratic and uncensored debate and communication on thousands of subjects for computer users around the world. Hume's discovery that "arte" (i.e. the development and support of the mechanical arts) leads to the possibility of a more democratic set of institutions and then to the ability to preserve those institutions is being demonstrated by some of the dramatic applications that have developed as a result of the widespread use of computer technology.

Johnson's discussion of "arte," the writings of Plato, Aristotle, Petty, Defoe, and others, and the essays David Hume wrote on the question of "arte," provide a theoretical foundation to understand the important advance represented by Usenet News.

Notes

1. "Art," in *The Encyclopedia: Selections*, edited and translated by Stephen J. Gendzier, N.Y., 1967, pg.60. A modern example of such arte is provided by Carl Malamud in *Exploring the Internet* (N.J., 1992), pg.100. He writes: "The system takes raw timber and figures out the most efficient way to saw up the log to produce the most lumber. In an economy where 30 to 40 percent of GNP is based on forestry, this system proved quite popular."

2. From "Protagoras," in the *Works of Plato*, vol I, The Franklin Library, Penn, 1979, pg.81.

3. *Aristotle's Selected Works*, translated by Hippocrates G. Apostle and Lloyd P. Gerson, 1986, pg.676.

4. ibid., *Nicomachean Ethics*, 1140a 6-23.

5. "A Treatise of Taxes and Contributions," in *The Economic Writings of Sir William Petty*, edited by Charles Hull, vol I, pg.68.

6. "History of Trade," *Petty Papers*, vol I, London, 1927, pg.211.

7. “Political Arithmetick,” *The Economic Writings*, vol. I, pg.249.

8. *Ibid*., pg.249-250.

9. “Verbum Sapienti,” *The Economic Writings*, vol I, pg.118.

10. “Political Arithmethic,” *The Economic Writings*, vol I, pg.256.

11. “The Political Anatomy of Ireland,” *The Economic Writings*, vol I, Works, pg.182.

12. “Political Arithmetick,” *The Economic Writings*, pg. 270 and 271.

13. *A Plan of English Commerce*, 1730, Augustus Kelley reprint edition, N.Y., pg.36.

14. These essays are from *Political Discourses*, [Edinburgh, 1752]. Several of the essays have been reprinted in D. Hume, *Writings on Economics*, (ed. E. Rotwein [1955] Madison, 1970 reprint).

The Computer as a Democratizer

by Michael Hauben

“...only through diversity of opinion is there, in the existing state of human intellect, a chance of fair play to all sides of the truth.”

(John Stuart Mill, “On Liberty,”
Three Essays, Oxford, 1975, pg.60)

“In a very real sense, Usenet is a marketplace of ideas.”

(Bart Anderson, Bryan Costales, and
Harry Henderson, *Unix Communica*
tions, Indiana, 1991, pg.224)

Political thought has developed as writers presented the theoretical

basis behind the various class structures from aristocracy to democracy. Plato wrote of the rule of the elite Guardians. Thomas Paine wrote why people need control of their governments. The computer connects to this democratizing trend through facilitating wider communications among individual citizens to the whole body of citizens.

James Mill, the father of John Stuart Mill, takes a look at democracy in his article "Liberty of the Press" from the 1825 Supplement to the *Encyclopedia Britannica*. He writes about the question of a government that works as it should – for the advantage and gain of the people instead of the advantage and gain for those in control. Mill sees the government necessarily being corrupted if the chance exists. Those in the position of rule, would abuse that power for their advantage. Mill describes, "If one man saw that he might promote misrule for his own advantage, so would another; so, of course would they all." (James Mill, "Essay on Liberty of the Press," pg.20) Mill says that the people need a check on those in government. People need to keep watch on their government in order to make sure this government works in the interest of the many. Mill thus concludes, "There can be no adequate check without the freedom of the press. The evidence of this is irresistible." (Mill, pg.18)

What Mill often phrases as freedom of the press, or liberty of the press, is more precisely defined as the uncensored press. The uncensored press provides for the dissemination of information that allows the reader or thinker to do two things. First, a person can size up the issue and honestly decide his or her own position. Second, as the press is uncensored, this person can make his distinctive contribution available for other people to consider and appreciate. Thus what Mill calls "freedom of the press" makes possible the free flow and exchange of different ideas.

Thomas Paine, in *The Rights of Man*, describes a fundamental principle of democracy. Paine writes, "that the right of altering the government was a national right, and not a right of the government." (pg.341) Mill also expresses that active participation by the populace is a necessary principle of democracy. He writes:

"Unless a door is left open to the resistance of the government, in the largest sense of the word, the doctrine of passive obedience is adopted; and the consequence is, the universal prevalence of the

misgovernment, ensuring the misery and degradation of the people." (Mill, pg.13)

Another principle Mill links democracy to, is the right of the people to define who can responsibly represent their will. However, this right requires information to make a proper decision. Mill declares:

"We may then ask, if there are any possible means by which the people can make a good choice, besides **liberty of the press**? The very foundation of a good choice is knowledge. The fuller and more perfect the knowledge, the better the chance, where all sinister interest is absent, of a good choice. How can the people receive the most perfect knowledge relative to the characters of those who present themselves to their choice, but by information conveyed freely, and without reserve, from one to another?" (Mill pg.19)

Without information being available to the people, the candidates for office can be either as bad as the incumbents or worse. Therefore there is a need to prevent the government from censoring the information available to people. Mill explains:

"If it is in the power of their rulers to permit one person and forbid another, the people may be sure that a false report, – a report calculated to make them believe that they are well governed, when they are ill-governed, will be often presented to them." (Mill, pg.20)

After electing their representatives, democracy gives the public the right to evaluate their chosen representatives in office. The public continually needs information as to how their chosen representatives are fulfilling their role. Once these representatives have abused their power, Paine's and Mill's principle allows the public to replace those abusers. Mill also clarifies that free use of the means of communication is another extremely important principle:

"That an accurate report of what is done by each of the representatives, a transcript of his speeches, and a statement of his propositions and votes, is necessary to be laid before the people, to enable them to judge of his conduct, nobody, we presume, will deny. This requires the use of the cheapest means of communication, and, we add, the free use of those means. Unless every man has the liberty of publishing the proceedings of the Legislative Assembly, the people can have no security that they are fairly published." (Mill pg.20)

Ignorance, Thomas Paine calls the absence of knowledge and says that man with knowledge cannot be returned to a state of ignorance. (*The Rights of Man*, pg.357) James Mill shows how the knowledge man thirsts after leads to a communal feeling. General conformity of opinion seeds resistance against misgovernment. Both conformity of opinion and resistance require general information or knowledge. Mill explains:

"In all countries people have either a power legally and peaceably of removing their governors, or they have not that power. If they have not that power, they can only obtain very considerable ameliorations of their governments by resistance, by applying physical force to their rulers, or, at least, by threats so likely to be followed by performance, as may frighten their rulers into compliance. But resistance, to have this effect, must be general. To be general, it must spring from a general conformity of opinion, and a general knowledge of that conformity. How is this effect to be produced, but by some means, fully enjoyed by the people of communicating their sentiments to one another? Unless the people can all meet in general assembly, there is no other means, known to the world, of attaining this object, to be compared with freedom of the press." (Mill, pg.18)

In the previous quote Mill places his championing of the freedom of press as a realistic alternative to Rousseau's general assembly, which is not possible most of the time. Mill expands on the freedom of the press by setting the rules. An opinion cannot be well founded until its converse is also present. Here he sets forth the importance of developing your own opinion from those that exist. Mill writes:

"We have then arrived at the following important conclusions, – that there is no safety to the people in allowing anybody to choose opinions for them; that there are no marks by which it can be decided beforehand, what opinions are true and what are false; that there must, therefore, be equal freedom of declaring all opinions both true and false; and that, when all opinions, true and false, are equally declared, the assent of the greater number, when their interests are not opposed to them, may always be expected to be given to the true. These principles, the foundation of which appears to be impregnable, suffice for the speedy determination of every practical question." (Mill, pg.23)

The technology that is the personal computer, international

computer networks, and other recent contributions embody and put into practice James Mill's theory of liberty of the press. The personal computer makes it affordable for most people to have an information access station in their very own home. There are international computer networks that exist which allow a person to have debates with other people across the world, search for data in various data banks, or even play a computer game.

If a person is affiliated with a university community, works at a business which pays to connect to the Internet, or pays a special service fee, he or she can connect to a network of computer networks around the world. A connection to this international network empowers a person by giving him access to various services. These services include electronic mail, which means the ability to send private messages electronically to people across the world who also have electronic mail boxes. The public alternative to this is a service called Usenet News. This service is an example of James Mill's democratic principles.

Usenet News consists of many newsgroups which each cover a broad, but yet specific topic. People who utilize Usenet News typically pick certain newsgroups or topics to focus on. Every group has several items of discussion going on at the same time. Some examples of newsgroups include serious topics such as talk.politics.theory, – people "talking" about current issues and political theory, sci.econ – people discussing the science of economics, soc.culture.usa – people debating questions of United States society; and recreational topics (which might also be serious) such as alt.rock-n-roll – discussing various aspects of rock music, rec.sport.hockey – a discussion of hockey and rec.humor – jokes and humor. The discussions are very active and provide a source of information that fulfills James Mill's criteria for both more oversight over government and a more informed population. In a sense, what was once impossible, is now possible; everyone's letter to the editor is published. (Hauben, Interview with Staff Member, *The Amateur Computerist*, vol. 4 no.2-3 pg.14) What is important is that Usenet News is conducted publicly, and is uncensored. This means that everyone can both contribute and gain from everyone else's opinion.

The importance of Usenet News also exists in that it is an improvement in communications technology from that of previous telecommuni-

cations. The predecessors to computer networks were the Ham Radio and Citizen Band Radio (CB). The computer network is an advance in that it is easier to store, reproduce and utilize the communications. It is easier to continue a prolonged question and answer session or debate. The newsgroups on Usenet News have a distribution designation which allows them to be available to a wide variety of different size areas – local, city, national, or international. This allows for a variety of uses. The problem with the Internet is that in a sense it is only open to those who either have it provided to them by a university or company that they are affiliated with, or who pay for it. This limits part of the current development of the computer networks.

An example of a public enterprise, however, is a computer service called Freenet in Cleveland, Ohio. Freenet is operated by Case Western Reserve University as a community service. Anyone with a personal computer and a modem (a device to connect to other computers over existing phone lines) can call a local phone number to connect to Freenet. If members of the public do not own computers, they can use Freenet at the public library. Besides Usenet News, Freenet provides free access to a vast variety of information databases and community information. Freenet is just one example of the computer networks becoming much more readily available to broad sectors of society. As part of its databases, Freenet includes Supreme Court decisions, discussion of political issues and candidates, and debate over contemporary laws. Freenet is beginning to exemplify Mill's principle that democracy requires the "use of the cheapest means of communication, and, we add, the free use of those means." (Mill, pg.20)

This is an exciting time to see the democratic ideas of some great political thinkers beginning to be practiced. James Mill wrote that for government to serve the people, it must be watched by the people utilizing an uncensored press. Freedom of the press also makes possible the debate necessary for the forming of well-founded opinions by the people. Usenet and Freenet are examples of the contemporary electronic practice of the uncensored accessible press required by Mill. These networks are also the result of hard work by many people aspiring for more democracy. However, they still require more help from those dedicated to the hard fight against tyranny.

Bibliography

Anderson, Bart, Bryan Costales, and Harry Henderson, *Unix Communications* Indiana, 1991.

Hauben, Michael, "Interview with a Staff Member," *The Amateur Computerist*, vol. 4 no. 2-3.

Mill, James, *Essays on Government, Jurisprudence, Liberty of the Press, and Law of Nations*, reprint, Kelley Publishers, New York, 1967.

Mill, John Stuart, "On Liberty" in *Three Essays*, Oxford, 1975.

Paine, Thomas, *The Rights of Man* in *Two Classics of the French Revolution*, Anchor Books, Doubleday. New York, 1989.

Watkins, Beverly T, "Freenet helps Case Western fulfill its Community-Service Mission," April 29, 1992, *Chronicle of Higher Education*, pg. A21.

CityNet in Wellington, New Zealand

From: Steve.Withers@bbs.actrix.gen.nz
Subject: Re: Networks as Social Change Tool

Another good example is the Wellington City Council's "CityNet" here in New Zealand's capital city. CityNet offers seven dial-in lines with 24 hour access to unlimited telnet, ftp, Usenet, IRC and other Internet services world-wide and free of charge.

Public terminals are available in the Wellington City Main Library for people who do not own computers. There is also Senior Net, run by Wellington City Council and Telecom New Zealand. Senior Net allows elderly people to converse in real-time with other seniors in the US and around the world via computer. The computers are Digital PC's and are located at a convenient central location.

Back to CityNet. Local planning regulation, by-laws, and other documents of interest are available for rate-payers to read online or download. Ratepayers can also send e-mail to the mayor or City Councilors or other city administrators.

This is a great concept. The rate payers pay for the service in the first place – so why not let the ratepayers use it? Sounds like common sense to me, yet this is very rare among municipalities.

Steve Withers, Wellington, New Zealand

Learning About Usenet and Freenet

From: urkastig@uxa.ecn.bgu.edu (Robert Kastigar)
Subject: HELP learning

I saw your name and address in a new conference that popped up on my...Hell, I don't even know what to call it! It was a conference or something on a university computer. It suggested new computer users and computer training. I thought I'd look.

When it mentioned the outgrowth of a joint union/management program (that was discontinued) it REALLY got my attention.

When I saw your name, and your affiliation with the Cleveland Freenet, I decided to send you this message. The funny thing is, I'm not even sure I'm going to be able to mail it!

Let me introduce myself: I'm a 30-year member of a labor union, the International Brotherhood of Electrical Workers, Local 1220.

I work as a technician in television. I've been active both in my union and my trade. I bought my first computer about 13 years ago. The more I learn, the dumber I realize I seem to be getting.

I have taught groups in computer technology, both within our union and company. I started a public-access dial-up Bulletin Board for our

local union about five years ago, with moderate success.

I am also a student at Northeastern Illinois University in Chicago, an undergraduate. I could have graduated some time ago, but I haven't finished my education yet.

As "sysop" of our local's Bulletin Board, I am continuously looking for material for the BBS related to labor. I stumbled across the Cleveland Freenet some time ago – and decided that this might well be a mother-load of material. One drawback: it was a long-distance call.

Then I heard of the Internet (from the Cleveland Freenet) and found out that, as a student, I had access to it! However, there was another drawback: learn UNIX, not DOS.

At my advanced age, is there no end to this learning?

So my question, which I hope you can help me with, is this: Is it possible for me to "log onto" the Cleveland Freenet via this Internet connection courtesy of the local college? If so, how?

I realize that 'the local college' and this Internet itself, and this TRN (TRN is a Usenet News newsreader -ed) service is a vast repository of information, but I don't know how to access it! At least the Cleveland Freenet BBS was user-friendly, even at the cost of a long-distance phone call.

I do have an account at the Cleveland Freenet; my logon name is ce763. My logon name and address at North-eastern Illinois University is urkastig@uxa.ecn.bgu.edu. My real-life name is Bob Kastigar! (It occurs to me that maybe I ought to get rid of one of those two computer names to avoid mail getting sent to the wrong place. But if I do that, then I won't have a name and password to get into that system! Is this a problem?)

I really don't expect you to be my 'personal tutor' – just tell me where to go to get started learning. If you did THAT in your newsletter, that would be a service. (See article *Two Books to Help Users* elsewhere in this issue –Editor)

By the way, can I quote/ borrow/ steal from your newsletter material and use it on my Local's BBS, if I give credit for the source? Is this 'legit' to do from other TRN (i.e. Usenet News -ed.) conferences?

I mentioned my local union is one of technicians. You would be amazed at how few of them realize that the computer can be a useful

tool for communications! Do work, write letters, operate machine, balance checkbooks – computers are fine for that. But to use a computer to learn, get information, or write epistles to other PEEPUL? to communicate? Somehow it strikes terror in some people.

Thank you for any help you can offer.

(Sorry about the double-spacing of this message. I composed it off-line. Is this like chat? talk?)

(Editor's note: The IBEW Local 1220 BBS can be reached at (708) 292-1223)

Freenet BBS's

There are several Freenet computer BBS's that have become available to computer users who can access the Internet. Also, these BBS's have local telephone numbers. Following are some of these BBS's, their Internet addresses and their telephone numbers:

Cleveland Freenet
freenet-in-a.cwru.edu
216-368-3888
(sign in as fnguest)

Youngstown Freenet
yfn.ysu.edu
216-742-3072
(log in as visitor)

Heartland Freenet (Peoria Illinois)
heartland.bradley.edu
309-674-1100
(visitor ID is: bbguest)

Lorain County Freenet
(Lorain County, Ohio)
Lorain: 216-277-2359

Elyria: 216-366-9753
(visitor ID is: guest)
Medina County Freenet
(Medina, Ohio)
216-723-6732
Tri-State Online
(Cincinnati, Ohio)
513-579-1990
(visitor ID is: visitor)

Part II – USENET NEWS

Usenet News is a world wide public conferencing network that makes it possible for computer users around the world to have public discussions, raise questions or problems so they can get help, or send e-mail (i.e. electronic mail) to each other in short spans of time. One user explains that it is like a newspaper where "everyone's letter to the editor is printed."[1] Usenet News has also been described as a series of electronic magazines. "These magazines," called `newsgroups,' are devoted to particular topics, ranging from questions about UNIX, programming languages, and computer systems to discussions of politics, philosophy, science, and recreational activities."[2] Usenet News has been compared to an electronic town meeting of the world or to a series of electronic soap boxes. Others have observed that "It's now as if everyone owns a printing press" or even better "a publishing house."

Computer users with access to Usenet can read articles on a broad range of topics. They can contribute their responses or post articles of their own on any subject in an appropriate newsgroup. Their submissions are then copied electronically to computers around the world which are also part of the Usenet network. Usenet News demonstrates what happens when people are encouraged and allowed to develop computer technology.

When it was first initiated in 1979, the Usenet logical network was

made possible as a result of the capabilities built into the UNIX operating system (developed at Bell Labs) and its networking capacity known as UUCP. (i.e. UNIX to UNIX CoPy) Today, however, this netnews network involves most of the great variety of computers and operating systems in use. This network traffic is carried on a variety of physical networks including the Internet and UUCP.

Usenet News is estimated to involve 3,000,000 users world wide and the number of users is continually growing. It was initiated in 1979 by Tom Truscott and James Ellis, graduate students at Duke University, and Steve Bellovin, a graduate student at the neighboring University of North Carolina. According to accounts of the early days that have been circulated on the Net (as Usenet News is sometimes called), Truscott and Ellis thought of hooking remote computers together, using homebrew autodial 300 baud modems connected to telephones. They envisioned creating a poor man's ARPAnet (i.e. The U.S. Department of Defense Network, only available to those involved with DoD research contracts).[3] An informal conference was convened by Truscott, Ellis and Bellovin, where interested people hashed out the basic principles and needs, and then Bellovin went on to write the first version of Usenet News in a period of about two weeks. The program was installed and operating at the first 2 sites: "unc" (i.e. the University of North Carolina's Computer Science Department) and "duke" (Duke University's Computer Science Department). Another site "phs" (the Duke University Medical School's Department of Physiology) was added early in 1980. They got the software to work at these three "original sites." A rewritten version of NetNews software by Stephen Daniel, called "A" version, was later placed on the conference tape at the Academic UNIX users association USENIX, at a meeting in 1980.[4]

The early software included the capacity to automatically swap, via telephone and modem, updated message files among remote machines. The initial software developed in 1979 was written in the script language built into the UNIX shell. "The original shell script implementation involved simply checking the time stamps on files and sending the files that had changed since the last check to some other machine," explains Gregory G. Woodbury in his account of these early days.

He writes, "Under the conditions of the academic UNIX licenses in

those days, the software was placed in the `public domain' and it was the most popular program from that (USENIX) Conference Tape. I do not recall that anyone was quite expecting the explosion that followed."[5]

The original assumption of the programmers of Usenet was that it would provide a way for a local group of machines to share news. "The model," Woodbury writes, "was that a campus of a university would have a news network, and it might be shared with another university that was logically and physically close to it, but spatially inconvenient for folks to get together physically, and that netnews would allow them to share information in a timely manner."[6]

What developed, though, took everybody by surprise. Woodbury recounts, "When the direction of evolution took an unexpected turn, and a continental network emerged, spanning the continent from California to North Carolina, and Toronto to San Diego, it was sort of a shock to realize what had happened."[7]

This phenomenal and surprising growth is explained by two elements. The most important Woodbury emphasizes is "that people wanted to communicate and would cooperate in effecting that communication."[8]

The second important element, according to Woodbury, is that the early Usenet News program was created under the conditions of the academic UNIX license which then provided that the program be put into the public domain. And since everyone involved at the time was working in an academic environment (including Bell Labs which Woodbury notes was "academic really") where information was shared, the emphasis was on communication, not on copyright or other proprietary rights. "Everyone wanted to be on the Net," he notes, "and it was clear they were cooperating in doing so."[9]

The phenomenal growth of Usenet News during the early 1980's was an acknowledgment that it was a superior means of dealing with the growing mailing lists on various subjects that had developed on the early ARPAnet network, created under the auspices of the U.S. Dept. of Defense for its research purposes. The original script files had been rewritten in "C" by Steve Bellovin for use at "unc" and "duke," according to Gene Spafford's history of the period. Stephen Daniel, Spafford explains, "did another implementation in 'C' for public

distribution."[10] After Tom Truscott made modifications in this program, the software became known as the "A" news release of the Usenet News program.

"Under the strain of being an international network," Woodbury explains, "with several new machines being added daily, certain limitations in the basic assumptions made themselves painfully obvious." The continuing expansion led to a rewriting of the software in 1981 by University of California at Berkeley graduate student Mark Horton and high school student Matt Glickman. This version was released to the public as "B" News, version 2.1 in 1982. Then in 1985, the still ever expanding nature of Usenet News led Henry Spencer and Geoff Collyer at the University of Toronto to set to work on what is now known as "C" News which they released in 1989. Spencer and Collyer paid very careful attention to the performance aspects of "C" News. The result is that it has been able to handle the phenomenal expansion of Usenet News which continues today.[11]

The administration and coordination of this world wide network depends to a great extent on the cooperation and diligent work of the system administrators at the participating sites. In the early development of Usenet News some of these administrators knew each other and worked together to establish a series of general procedures for processes like adding newsgroups. Known as the "backbone cabal," this group worked together to hash out ways to deal with problems that threatened the voluntary, cooperative nature of the net.

This informal structure would contact new site administrators who joined the Net. The character of the Net as a voluntary association of people who posted because they wanted to communicate was conveyed. And the fact that posts were entered into the "public domain" was established as an essential principle of the Net.[12]

Usenet News is now made up of thousands of newsgroups organized around different topics. The number of groups is constantly growing as there is a democratic procedure established to provide for new groups. If 100 more users vote for a new group than vote against it, the group can be started.[13] This procedure governs new groups in what is known as the "Seven Sisters" hierarchy which was the collection of the seven newsgroups at one point known as Usenet News. Some people

have defined Usenet News as those sites receiving the seven main groups; comp, misc, news, rec, sci, soc, and talk newsgroups, and the group news.announce.important. Others have defined Usenet News as those sites that receive at least one of the newsgroups that appears on the list of Usenet News newsgroups. There is also an alternate hierarchy which includes alt, gnu, and other groups. A more informal procedure is provided for creating an alt group. The guidelines provide for posting a proposal to the alt.config newsgroup and then the newsgroup can be set up as an alt group when a new newsgroup control message is posted to the control newsgroup.

The phenomenal growth and richness of Usenet News demonstrates the important role "arte" still plays in the development of social achievements. Many of the people using and contributing to Usenet News are people who have respect for and work with computer technology. Many of these people have a need for Usenet News to get help with problems they encounter in dealing with computer technology. One of the early functions of Usenet News was to help identify bugs in new technology and to identify and propagate ways to deal with the problems.[14]

My experience using Usenet News has been inspiring. I was interested in discussions involving economics and the history of economic thought. When I first got onto Usenet News I couldn't figure out where such discussions would take place. I managed to get access to the misc.books.technical newsgroup. I didn't know what the other newsgroups were or how to find out. Not knowing how to proceed I entered the following post:

From: au329@cleveland.Freenet.Edu
(Ronda Hauben)
Newsgroups: misc.books.technical
Date: 10 Jan 92 07:48:58 GMT
Organization: Case Western Reserve University, Cleveland, Ohio, (USA)
Nntp-Posting-Host: cwns9.ins.cwru.edu

I am interested in discussing the history of economics – i.e.

mercantilists, physiocrats, adam smith, ricardo, marx, marshall, keynes etc. With the world in such a turmoil it would seem that the science of economics needs to be reinvigorated.

Is there anyplace on Usenet News where this kind of discussion is taking place? If not is there anyone else interested in starting a conference .economics and how would I go about doing this. This is my first time on Usenet News.

Ronda
au329@cleveland.freenet.edu

One of the many responses I received said:
"Start discussing on sci.econ. We're all ears."[15]

I received several other responses via e-mail also pointing me to the sci.econ newsgroup or indicating interest in the topic. Also, a computer user from California sent me e-mail with a list of all the news-groups that existed. Another user from Scotland wrote telling me the name of the news file which listed the names of the newsgroups. It is considered good NETIQUETTE (i.e. Network Etiquette) to help new users and many of the experienced users are very willing to do so.

A few users suggested that I might want to try to start a newsgroup for the history of economics, but that it would probably be a wise idea to either wait awhile until I got used to netnews before trying to initiate a group, or else try to get a user with more experience to help.

The list of newsgroups posted on Usenet News in various news newsgroups like news.misc contains descriptions of each group. Sci.econ is described as "the science of economics."(See also *UNIX Communications*, pg.248)

I have found the discussions in this newsgroup valuable. There are often debates over important economic questions. Many of the questions discussed concern broad social issues – for example, wage slavery, the development of different social forms of society, whether economics is a science, whether the so called "free market" has ever existed to regulate production, etc. There has been discussion of a variety of economic and political issues – like social security, rent control, strikes in Germany, national health care reform, the need for shorter hours of

work, the GM plant closures, taxes, the economic programs of presidential candidates, the role of markets in setting prices, the economic program of Henry George, etc.

Many of the other newsgroups on Usenet News are related to computers and computer subjects. There are newsgroups where one can ask questions regarding access to Usenet News, or about books that are recommended for people who want to learn more about UNIX or any other area of computer usage, etc. It is also possible to write to someone who has posted a question and ask them to forward a copy or summary of the responses they receive so the post doesn't have to be duplicated. There are also newsgroups dealing with political issues, social issues, current events, hobbies, science, education, etc.

When someone posted a critique of GM plant closures the night that GM announced that it would lay off 70,000 people, several people sent e-mail to the person who entered the comment saying that it was good to see the post. Thus when someone makes an interesting post, it is possible to send e-mail to the person and begin to correspond, or just encourage the user to continue.

Also there are political components being developed. For example, there was an announcement that a vote was in progress to determine whether or not there should be a classics newsgroup. If one wrote voting "yes" or "no," the user would then be told to verify that the vote was accurately recorded when the list was posted announcing the final totals. Thus a procedure has been worked out on Usenet News acknowledging that votes can't be by secret ballot, but must be open and posted, with the person voting having the ability to verify the outcome.

Unfortunately there are also frustrating aspects of Usenet News. The great variety and number of posts can take considerable time to survey and thus it is difficult to keep up with the volume at times. A variety of software readers have been created, to help deal with this problem.[16] Though these readers have been copyrighted, many are freely available as long as they are being used for personal use, not for profit. Despite the difficulty keeping up with volume and other problems that have developed in the course of building the netnews network,[17] many of the users on Usenet News are willing to be active participants in the development and working out of the content and form of the network.

Many people send e-mail or post public responses when they have something to say about a post. In this way, communication is encouraged and exciting as one person builds on another's contribution, and all become more knowledgeable through the process of democratic discussion and debate.

Usenet News has thus evolved a functioning governing structure that is democratic and open in ways that have only been dreamed of in the past. Many of the details of the copying, distribution and propagation of Usenet News are done via automatic machinery and programs which require that the system administrators who make the system function work together to solve their common problems. This same kind of cooperative relationship has been encouraged by these system administrators among the users of Usenet News and this cooperative standard of activity is known as Netiquette.

Many on Usenet News call the structure which functions anarchy. But, Jean Jacques Rousseau, in *A Discourse on Political Economy*, explains that the best laws are those which the population implements voluntarily rather than via force. Thus "Netiquette" is a system of rules or standards that users on the Net are encouraged to follow. Also, commercial traffic and commercial uses of netnews have been strictly limited and circumscribed for several reasons. Among these have been the need since the early days of Usenet News to keep commercial self-serving traffic from both escalating the phone costs and the noise (i.e. proportion of useless information to useful information) of Usenet News. When the Internet became one of the major transport mechanisms of Usenet News traffic, the prohibitions against commercial traffic arising from the public funding of the NSF backbone became a factor.[18] This restriction of self serving and private profit making commercial purposes has resulted in the open communication and cooperation which proprietary self serving corporate agendas would make impossible. Thus the governing laws (Netiquette) and structures (cooperative and helpful) are the demonstration that more democratic government is now possible and can achieve significant social advances and also facilitate the development of technological labor saving breakthroughs ('arte'). On the net, the participants gain from being active and from helping each other. People who post or send e-mail are contributors to the culture and

all gain from each other's active efforts. A vibrant and informative bottom up, interactive grassroots culture has been created and a broad, worldwide, informative and functioning telecommunications network is the product of their labors.

Thus the intellectual ferment that David Hume describes as the result of one's participation in the development of technology, is an appropriate description of the phenomenal growth and achievement of Usenet News. This ferment is the needed support for the development of technology and the development of this technology makes possible the needed political and social changes that are required to have the technology function. The study of economic writers who discuss the importance of such technology is helpful in assessing the significance of such practical developments of our contemporary times.

In the 2nd half of an "Interview with a Staff Member" in *The Amateur Computerist* (vol 4, no 4), there was the prediction that connecting to Usenet News would be a significant leap forward, as it would represent the connection for computer users with the world. That prediction has been fulfilled by the exciting world of computers that is available to a user who has access to Usenet News.[19] Also, the achievement of Usenet News demonstrates the importance of facilitating the development of uncensored speech and communication – there is debate and discussion – one person influences another – people build on each other's strengths and interests, differences, etc.

Traditionally, it would require the labor of many people, much paper, ink, and other supplies to accomplish such a massive communication network via traditional means of newspapers or magazines, etc. With Usenet News, however, this communication among people and computers is accomplished via a high degree of automation. By participating in Usenet News, millions of people and their computers are connected into a machine that is part of "the largest machine that man has ever constructed – the global telecommunications network."[20] Also, Usenet News makes it possible for people to print up their own copies of what is available online, without using all the paper or ink that has traditionally been required for a press.

So Welcome to the Wonderful World of Usenet News – it's happening and it is one of the most important achievements of the 20th

Century. It is very exciting to be connected with it and just as David Hume observed over 200 years ago, participating in the world of technology and automation being used for telecommunications and Usenet News is indeed the basis for beginning to do the work needed to bring the better world that the computer is now making possible.

Ronda (ae547@yfn.ysu.edu)

Notes:

* UNIX and AT&T are registered trademarks of AT&T Bell Labs.

1. See "Interview with Staff member," *The Amateur Computerist*, vol 4, no 2/3, pg.10.

2. *Unix Communications*, by Bart Anderson, Brian Costales, and Hart Henderson, Indiana, 1991, pg.213.

3. This account of the early days of Usenet News is taken from two articles: Gene Spafford's "Usenet Software: History and Sources" and Gregory G. Woodbury's "Net Cultural Assumptions".

4. Accounts differ as to when Usenet News was first introduced to the Unix users community. Gene and Greg place the introduction of Usenet News software on the USENIX conference tape at the Winter, 1980 meeting. Communication received from other Usenet News pioneers like Tom Truscott, Steve Bellovin, Henry Spencer and Geoff Collyer, however, suggests that Jim Ellis made a short presentation about Usenet News at the Winter, 1980 USENIX Conference in Boulder, Colorado, and handed out a five page description "Invitation to a General Access Unix Network." The Usenet News software, however, did not appear on the conference tape until the Summer, 1980 USENIX meeting which was held in Delaware. Communication from Bruce Jones, who is writing a thesis about the history of Usenet News, supports the later chronology.

5. Gregory G. Woodbury, "Net Cultural Assumptions".

6. Greg cites a communication with Steve Bellovin agreeing with this model and adds that "At the most they had envisioned local clusters of machines sharing local groups and perhaps sharing ONE group with a wider audience."

7. Gregory G. Woodbury, "Net Cultural Assumptions".

8. ibid.

9. But he does take note of the concern of some people at Bell Labs that AT&T's rights in and to UNIX source code and proprietary information be protected. Greg however emphasizes that individual posters were concerned with the ability to communicate, not with copyright protection.

10. Spafford's "USENET Software: History and Sources".

11. Details are described in the article "News Need Not Be Slow," by Geoff Collyer and Henry Spencer, Winter 1987 "USENIX Conference Proceedings".

12. Woodbury's article "Net Cultural Assumptions" describes how the 'public domain assumption' changed when the U.S. government revised its copyright law and became a Berne signatory in the late 1980s. The implications of this change have been debated on Usenet News in the past year.

13. But whether the new newsgroup will be carried has traditionally depended upon the system administrators of the largest systems and the new group's inclusion in the list of newsgroups.

14. Per conversation in August, 1992, with Henry Spencer about the early days of the net.

15. Per e-mail from Adam Grossman.

16. See Gene Spafford's "USENET Software: History and Sources" for a history and description of many of the software readers now available.

17. Various problems have been developed for users to deal with. Some involve the efforts to impose copyright restrictions on posts on Usenet which would make the copying and propagation impossible; there are some users who try to intimidate people who post by attacking them (called 'flaming'), etc. But these problems must be looked at in the context of the significant advance that this netnews network represents.

18. The National Science Foundation (NSF) has had an Appropriate Use Policy (AUP) governing what is allowed to be transported across the nets that it funds with public moneys. It has limited usage basically to research and education activities. As Usenet has been transported across the NSFnet backbone, this policy of the NSF has helped Usenet to develop as an educational rather than commercial network. (It is questionable whether a commercial network could have been developed, given the secret and proprietary activities of commercial enterprises.) However the AUP is being challenged now by the growing commercial use of networks like ANS (Advanced Networks and Services) a company founded by MCI and IBM that is now part of the MERIT, NSF, ANS organizational chain, which is opening up access to commercial traffic

endangering the development and education and research function that the net thus far has achieved. Also, many large corporations, though seemingly restricted in their use of the net to educational and research purposes, are also the backbone sites along which netnews is transferred. Some corporations use Usenet for their research and educational functions, but run a separate private net alongside of their Usenet News operation for their commercial purposes.

19. A system of Freenets, including Cleveland Freenet and Youngstown Freenet in Ohio, USA, Ottawa Freenet in Canada, etc. some of which provide public access to Usenet News, are beginning to develop. These are open to the public and Usenet News is fairly easy to access from these once one has set up an account which is available at no charge.

20. Ithiel de Sola Pool, *Technology Without Boundaries*, ed. Eli Noam, (Cambridge, 1990) pg.56.

Special thanks to the many people on Usenet News who commented on this article in its various draft stages and for their helpful comments and criticisms. Also thanks to the pioneers of Usenet who answered questions and made material available for the part about the early days of Usenet News.

Two Books to Help Users: *Using UUCP and Usenet News* and *The Whole Internet User's Guide and Catalog*

The Town Meeting of the World: Usenet News, UUCP & InterNet

A worldwide computer users network has developed into a series of democratic electronic town meetings on different topics that are available to users around the world. Known as Usenet News, this netnews network has evolved into a set of forums on different subjects where participants can discuss and debate their differing viewpoints in an effort to find solutions to some of the very difficult problems in today's world.

Several books give some background of the origin of this worldwide netnews network and provide users with advice about how to obtain and use software that makes it possible to participate. Usenet News is a logical network which is transported via physical networks like the Internet and UUCP. Beginning in this special issue of the *Amateur Computerist* we will attempt to introduce some of the books that provide users with the information and help needed to take part in these technological advances.

The book *Using UUCP and Usenet News* by Grace Tolino and Dale Dougherty (O'Reilly & Associates, Inc., 1986, corrected 1991), is an introduction to the wonderful world of Usenet News. "Usenet," they tell the reader, stands for "user's network." Originally it was "a collection of UNIX systems that runs the netnews software." (pg.12) Usenet, which now runs on many other operating systems, "is a worldwide network of computers that run the netnews software," they explain.(pg.99)

The authors describe the origin of Usenet News. "Usenet News," they write, grew out of UNIX users network (Usenet). (pg. xii)

One of the networking facilities for the UNIX operating system is known as UUCP (which stands for Unix-to-Unix CoPy). "UUCP," the authors explain, "is a networking facility for the UNIX operating system. It's software consists of files and programs for configuring and administering this facility and a number of programs that give users access to it."(pg. 2)

Many of the news reading programs, though copyrighted, are freely available for the personal use of computer users who have access to UNIX. And there are also programs that mimic the capability of these programs that are available for other types of computers such as IBM and Macintosh.

By posting a question or opinion or response to another post on Usenet News, the computer user in Dearborn, Michigan, for example, becomes connected with computer users in Berlin, Germany, or Palo Alto, California, or Oslo, Norway, etc. The set of public posts are passed on around the U.S. and around the world, via a worldwide network that has developed in the past decade.

The authors of *Using UUCP and Usenet News* explain how Usenet News, functions:

"The net (as it is commonly called) is a public forum for the exchange of ideas in the form of news articles that are broadcast to member sites. Net users can post articles, forward mail, send followup articles to previous articles, or simply read the news using netnews programs." (pg. 12)

At the time *Using UUCP and Usenet News* was written (there have been several updates), the authors, Grace Todino and Dale Dougherty, reported that a posting was transmitted all over North America within two hours of being posted.

"The net is a noncommercial network," they note. Probably this accounts for the amazing growth and development of Usenet News within the short period of a decade. Most of the participants are often unpaid and they make every effort to help new users and to encourage what they feel are constructive developments. "When used properly," the writers of *Using UUCP and Usenet News* explain, "the net is a unique way to stay informed and up-to-date on categories from UNIX to politics." (pg. 13)

There is the benefit of first hand information on a strike in Germany or how to teach a course in physics. "When you use Usenet," they write, "you don't just receive it; you interact with it." Thus Usenet has led to the existence of a world wide network of computers and a world wide network of computer users.

The book also describes the UUCP network which formed the physical foundation on which Usenet News was developed. "The UUCP network currently consists of thousands of UNIX installations world-wide, and they can be reached if you know the network path names to them. Your link to the UNIX network becomes your link to the world and the world's link to you." (pg. 11)

The book explains how this network functioned, basing itself on backbone sites. "You can think of a backbone site as the center of a web with local networks growing into and out of it. News that is sent to a backbone site is passed on to other backbone sites as quickly as possible, so that it gets transmitted over a wide area in a short time." (pg. 12)

"The articles on the net," write the authors, "are classified into 'newsgroups,' according to subject matter. You can think of a news-group," they explain, "as a bulletin board or forum devoted to one

topic." There are groups on using various programs or computers, groups devoted to different programming languages, groups discussing politics, or economics or the developments in Eastern Europe, etc.

At one time, newsgroups were divided into two different categories, "net, consisting of groups to which anyone could post," and "mod, consisting of groups in which postings had first to be approved by a moderator." (See footnote pg.101) By November, 1986, newsgroups were organized into seven major categories. These major categories were:

comp- Groups relating to some aspect of computer science (e.g. comp.programming).

sci- Groups relating to science or technology (e.g. sci.physics or sci.math)

news- Groups relating to netnews or of interest to all Usenet News users (e.g. news.misc)

rec- Groups discussing recreational activities. (e.g. rec.backcountry)

soc- Groups discussing social issues (e.g.soc.culture.usa, soc.culture.german)

talk- Groups discussing controversial issues (e.g. talk.politics.theory, talk.politics.misc)

misc- Groups that are outside the other categories (e.g. misc.politics.activists, misc.jobs)

Other areas are also represented on the net, especially a large classification of groups called alt. which are groups that can be set up temporarily or more quickly than the standard newsgroups in other categories. For example, an alt.rodney.king group was set up during the rebellion in Los Angeles in May, 1992. Other alternative groups include:

gnu- Groups devoted to the Free Software Foundation which has pioneered a battle for open programming code to encourage the exchange of ideas among programmers.

bionet- Groups involved with the exchange of

Appendix D of the book provides a list of the newsgroups that were available in 1990, many of which are still functioning. This list gives a sense of the great variety and diverse interests represented on Usenet News. About 600 different groups are described in this list. (There are now estimated to be about 2,500 newsgroups.)

Also, the book tells the user how to acquire and use the software necessary to participate in Usenet News. There are directions for using some of the programs that are commonly used to read Usenet News, such as rn, readnews, or vnews. Procedures used for posting on Usenet News are described, using postnews and Pnews. The book also describes how to transfer files between networked UNIX systems. And it describes how to use the electronic mail capabilities of Unix to send mail via the networks across the world.

The authors of *Using UUCP and Usenet News* recognize that it is "more than anything... the people who give much of the flavor and color to the net." (pg. 12) It is the computer users on the Net who have, working together, and building on each other's contributions and differences, shown that the primary achievement of early New England, the New England Town Meeting, is now possible and what's more, it's happening, on a much broader and diverse basis. The Net now makes possible a Town Meeting of the World via computers.

The Whole Internet User's Guide & Catalog by Ed Krol, (O'Reilly & Associates, California, 1992) updates the earlier O'Reilly publication about Usenet News and also describes the Internet, one of the networks that Usenet News is carried on. Krol gives some history of the Internet in Chapter II. He explains that the origin of the Internet lies in the ARPAnet set up by the U.S. Defense Department 20 years ago as an "experimental network designed to support...research." (pg. 11) The book guides the reader through how to use the Network News (called nn) newsreader for Usenet, from setting up an nn directory to posting a Usenet article, to sending replies via e-mail.

Using directions in this book about how to do a subject or author search of Usenet News with netnews, I located an article by one of the founders of Usenet News. After sending him e-mail, he was particularly

helpful in both answering questions and in suggesting how to trace out further information.

Also, the book has sections on electronic mail and Net utilities available on the Internet like ftp, archie, gopher and wais. It guides the reader through how to use Unix programs like *talk* and *chat*. It also contains a section called "The Whole Internet Catalog" which describes some of the resources available on the Internet and how to access them. *The Whole Internet User's Guide & Catalog* is a welcome addition to the scarce literature for users about the treasures being made available by the telecommunications revolution.

The disappointment of Krol's book is that it encourages commercialization and privatization of the Internet. For example, Krol writes "...commercial use of the Internet will become especially good for small business.... Most people in the networking community think that privatization is a good idea." (pg. 17) But such changes are contrary to the 20 year development and history of the networks. The terms 'commercialization' and 'privatization' as applied to the Internet are relatively recent and were coined two years ago at a workshop in 1990 at Harvard University, according to Eric M. Aupperle. (See "Internet and NSFNET Evolution," *Internet Society News*, Summer, 1992, vol 1, no 3, pg. 3) Previous to that proposed change in direction, the research and education mandate of the National Science Foundation's Acceptable Use Policy restricted commercial and private interests using the net to research and education purposes. At the same time, academic and educational institutions were encouraged to utilize the network. The goal was set of broadening public use and accessibility of the Internet by making it available to all school children in the U.S. but this has not yet been achieved. Nor has any serious legislation or plan been put forward to implement this goal. The current promotion of private and commercial purposes or ownership of the InterNet or parts of it is in conflict with this goal of increased public accessibility. It also threatens to impede the continued development of this technological breakthrough.

The technological and other educational functions of the Internet, which have served to support computer users and developers by providing a community of people to help solve problems, are threatened by any detour from the research and education orientation which has

nourished network development. It is *not* that "most of the people in the networking community think that privatization is a good idea," as Krol writes. (pg. 17) Rather there is much concern and opposition, particularly among academic and noncommercial network users, to efforts by certain commercial users to try to appropriate the benefits of much publicly funded research and development for the narrow private profit making interests of a few commercial users. The issue of how best to support the continued development and evolution of networking technology and connectivity is a serious question that needs to be broadly discussed and debated. The Internet and its prototypes like the ARPAnet have been developed by U.S. government agencies via a large expenditure of public funds and resources. Also, these advances have benefitted from a great deal of volunteer labor of computer users of these networks.

The contributions of time, information, discussion, and involvement of computer users around the world, as well as the programs developed and made available by computer programmers to make the net a reality, demonstrate the important capability of the UNIX world that most home computer users have not yet become acquainted with. Currently, there is pressure on the U.S. Congress to privatize the networks that Usenet News is built on. (See for example "Congressional Hearings on Internet Held March 12," *The Boardwatch*, May, 1992, pg. 53-4)

The history of the evolution of the ARPAnet and then the Internet shows that these technological breakthroughs were only possible because commercial traffic and participation were actively restricted and private profit making interests were not permitted to impede technological development. The future direction of the Internet is a serious concern which needs to be examined and discussed in the light of its historical evolution. Krol's comments on this issue lack this historical perspective and fail to provide the needed all sided discussion of the controversy over the future direction of the Internet. There is a need for the public to know how the network developed and for the future course to build on the lessons of this history so that this technological advance can continue to evolve and so that it will be used to benefit the public and the computer users who made such an important breakthrough possible.

Krol's support and encouragement of commercialization and

privatization is a detracting aspect, but in general, Krol's book is helpful because together with *Using UUCP and Usenet*, it is helping to spread the use of Usenet News, UUCP and the Internet.

Just as the development and spread of industry and commerce played a pivotal role in the development of more democratic political institutions in the 1700s, communication and the broad ranging public discussions which are daily occurring on Usenet News are the basis to introduce order and good government into our modern world in the 1990s. And just as Adam Smith in *The Wealth of Nations* (Modern Library edition, pg. 385) realized that very few people understood the new political institutions developing in his day, similarly, today, very few people recognize the important political legacy of modern telecommunications technology, especially of computer networks, i.e. of Usenet News and of the Internet.

Liberation Technology Equal Access Via Computer Communication

by Norman Coombs
e-mail: nrcgsh@ritvax.isc.rit.edu

Western Civilization has had a centuries' long romance with technology and has often worshiped it as the "savior of mankind." Alternately, anti-utopians, ever since Shelly conjured up Frankenstein, have depicted it as the destroyer of humankind and human values. Technology is power and, as such, can serve many purposes. Whereas an earlier vision of the computer predicted an Orwellian "big brother" utilizing a centralized computer system to control society, the advent of the personal computer has turned this power pyramid on its head. Increasing thousands of people have a computer on their desk with as much capability at their fingertips as once was housed in an expensive

and complicated mainframe. Obviously, the decentralization of power is no guarantee that the people will make good or wise use of it.

Computer telecommunications contain the potential for removing barriers to social access for many disadvantaged persons. Traditional means of helping such people have usually been paternalistic in nature. Today, more and more of the disadvantaged are asking for empowerment so they can help themselves. They want the freedom to compete with the rest of society on a more nearly even playing field.

I am a blind professor, at the Rochester Institute of Technology and I use a computer with a speech synthesizer. I regularly teach a class of students online with a computer conference. Most of these students have no physical handicap. Some of them, however, are hearing impaired, and some are totally deaf. I have team taught another course at the New School for Social Research, some 350 miles away, with a teacher who is confined to a wheelchair and who is both blind and partially paralyzed. On the computer screen, our handicaps of blindness and mobility make no difference.

One of the courses I teach online is in African American history. In that class, some of the students are white, some are black, others are Asian and still others are Native American. Obviously, some of the class members are male and others female. All of these differences, like those of handicaps described above, become unimportant on the computer screen. It isn't that these distinguishing characteristics disappear because participants share their identities, their views and feelings freely. However, these differences no longer block communication and community. In fact, conference members often feel free to make such differences one of the topics for discussion. A student in my Black History course said that what he liked about conducting class discussion on the computer was that it didn't matter whether a person was male, female, black, white, red, yellow, blind or deaf. He appreciated that his comments were accepted for their own worth and not judged by some prior stereotype.

The standard myth about the computer is that it is cold, depersonalizing and intimidating, the mystical province of a few wizards. When I began utilizing the computer to communicate with students, I had no idea of its potential to change my life and my teaching. First, it began by

liberating me, a blind teacher, from my dependence on other people. As I now have all my assignments submitted through electronic mail including frequent take-home exams, I have very little need for human readers. This experience prepared me to become a member of a pilot study using computer conferencing to replace classroom discussion for students in some continuing education courses. Those with a personal computer and modem could work from home or the office. This freed them from the time and bother of commuting and also let them set their own schedule. The computer conference was available online 24 hours a day.

We are using the conference system, VAX Notes produced by the Digital Equipment Corporation. It does facilitate a genuine group discussion without the class having to be in the same place nor having to be connected at the same time. I found it easy to send frequent short personal notes to individual students, and, in the evaluation questionnaire, the students rated my helpfulness and availability at 4.8 out of 5 points. I, too, felt I had more contact with individual students than is usual in a face-to-face classroom. This system had immediate appeal for three groups of our students. Off-campus continuing education students were happy not to have to commute. Those who had been taking mainly television or correspondence courses valued the easy exchange of information both between themselves and their teacher and between themselves and other students. The third group turned out to be regular day students with scheduling problems. This kind of flex scheduling is especially valuable for those students whose schedules are filled by laboratory courses.

Although computer conferencing had obvious benefits for me, a blind professor, I had failed to grasp its significance for disabled students in general. Only when a deaf student joined the class did I come to realize its potential. This young deaf woman said that this was the first time in her life that she had con-versed with one of her teachers without using an interpreter intermediary. She further commented that this had been her most valuable course in her college experience because she could share in the discussions so easily and totally. Computer conferencing, because it avoids commuting, can be a benefit to persons with mobility impairments. They can go to school while they stay at home.

The distance involved could be anything from a few miles to all the way across the continent or across an ocean. Students with motor impairments can also use this system. There are a variety of alternate input devices to let motor impaired persons use a computer even though they cannot handle a keyboard.

Like others who use computer communications, I discovered that it liberates more than the physically disabled. Students became free to share more of themselves than in a classroom, and shy students found themselves less inhibited. Once students got over any initial computer phobia, many shy students found it easier to share this way. Where there is no stage then there is no stage fright. While some educators prefer to keep the teaching process academic and objective, others are convinced that students learn more and better when they become emotionally engaged in the process. I was surprised and pleased to find my classes sharing experiences about their families and themselves. In a discussion on welfare, one woman in her twenties confessed to being on welfare and described her feelings about it. In a Black History course, students described personal experiences as victims of racism. White students admitted to having been taught to be prejudiced and asked for help and understanding. Black students shared that they had prejudices about various shades of color within their own community. As a teacher, I often felt that I was treading on privileged ground. These were experiences I had never had in the 29 previous years of my teaching career. The students, themselves, became aware of what they were doing and usually began to discuss their interaction as one of the class topics. They appreciated that they were sharing in an unusual way and thanked me for creating the opportunity for them.

Freedom to speak one's mind is a two-edged sword. Computer communications is infamous for people making thoughtless and irresponsible attacks on one another, often known as "flaming." In my experience, happily, there has been almost none of this. First, the teacher has the opportunity to set ground rules and, more importantly, an emotional and professional atmosphere. Second, a computer conference is different than electronic mail. Once a mass mailing has been sent, it is irretrievable. While the contents of a computer conference are posted publicly for all its members to see, a message can be removed. On very

rare occasions I have removed a posting before it was read by most of the class. Usually, I prefer to leave controversial material on the conference and utilize it as a group learning experience. Actually, most students seemed intuitively aware of the potential for misunderstanding and, before criticizing someone, they frequently asked questions to be sure that they understood what had be meant by the previous author.

Am I suggesting that computer conferencing and allied technologies will become the "savior" of American higher education? Not really! It is only one teaching methodology among many. Most students would not choose to pursue their entire college degree using computer communication. However, it will have a growing significance in special situations. First, its asynchronous format is a way to solve scheduling conflicts. Second, it permits students living in remote locations the opportunity to get a quality education from a reputable institution. Third, when moderated carefully, it provides a safe setting for students to share their feelings on controversial topics. This can be helpful in courses related to sensitive social issues. The teacher can continue to focus on academic content while the class may explore its relevance to their personal lives.

Finally, I am personally excited about the ability of computer networking to provide more equal access to education and information for many persons with physical disabilities. In the fall of 1991, The Rochester Institute of Technology and Gallaudet University in Washington will conduct an experiment involving two courses: one taught from Rochester and the other from Washington, DC. Students from both campuses will be enrolled in both classes. While some use will be made of videos and movies, class discussions and meetings between a student and a teacher will all be done with computer telecommunications using Internet as the connecting link. Some students will be hearing impaired, and one teacher will be blind. In the future, such systems could include learners from anywhere with an Internet access.

Computer communications has other important implications for both the print handicapped and those with motor impairments. Library catalogs can already be accessed from a personal computer and a modem. Soon, growing numbers of reference works will be available online also. While the copyright problems are complex, it seems

inevitable that large amounts of text material from periodicals and books will also be accessible on a computer network. I still have vivid memories of the first time I connected my computer to a library catalog and found my book was really there. It was only a year ago that I had my first personal, unassisted, access to an encyclopedia. Not only is this technology liberating to those of us who have physical impairments, but in turn, it will help to make us more productive members of society.

Not all handicapped persons rush to join the computer world. Many have become dependent on human support systems. Some of the hearing impaired students in my classes were very slow to become involved. Sometimes, independence is frightening, and handicapped students may need special assistance to get started. One such student complained that such a computer course would be good for someone who had more self discipline than he had. Another problem is cost. While the personal computer has decentralized power and is seen as a democratizing force in society, it works mainly for the middle class. Unless there is a deliberate policy to the contrary, such technology will leave the under class further behind.

Visually impaired computer users, at present, have one growing worry. They fear that graphic interfaces and touch screens may take away all that the computer has promised to them. Recently passed federal legislation has tried to guarantee that future computer hardware and software be accessible to all the physically disabled. However, there is no real mechanism to enforce this. Besides, voluntary awareness and cooperation by computer providers is a far better approach to the problem. Educom has established EASI to work within the academic community for software access, and it is having an important impact on voluntary compliance. Others believe that adaptive software and hardware can be produced which can adequately interpret graphic interfaces for the visually impaired.

Physical disabilities serve as an isolating factor in life. They also create a tremendous sense of powerlessness. Computer communications, however, serves to bring the world into one's home and puts amazing power at one's fingertips. Not only can this empowerment liberate the handicapped to compete in society more equally, but the sense of power changes how one feels about oneself.

(Reprinted with permission from *EDU* Magazine, Digital Equipment Corporation)

In Memorial

The Editors and Staff of the *Amateur Computerist* want to express our condolences to one of our Founding and Current Editors, William Rohler and to his family on the death of his father, Roy Rohler. Roy Rohler attended the Henry Ford Trade School and worked at Ford Motor Company for 42 years, following in the footsteps of his father, and William's grandfather, Roman Rohler, who also worked at Ford. William is thus a third generation Ford worker.

Though we are saddened by the loss, we are grateful for the contributions made by Roy Rohler both to his family and to the production that has built the U.S.

The Editors and Staff of the *Amateur Computerist* also want to express our condolences to another Founding and Current Editor, Norman O. Thompson and to his family, on the death of his father, Ernest Thompson. Ernest Thompson was born in South Carolina, and worked at many different jobs. In 1926 he came to Detroit. In 1943 he hired in at Rockwell International and worked there for 25 years, retiring in 1968. The obituary read at his funeral explained that he was "self-educated and knew all about life." Ernest was a UAW member, acting as shop steward for a while during the early days of the union. Thus Norman is a second generation UAW member. Ernest was one of the generation of workers known as tough cookies who were hardened by their years of work in pre union days. This generation was responsible for the many gains made by the unsung pioneers who built the UAW. We are saddened by the loss, but grateful for the strength and integrity Ernest Thompson passed on to his family and friends.

The opinions expressed in articles are those of their authors and not necessarily the opinions of the *Amateur Computerist* newsletter. We welcome submissions from a spectrum of viewpoints.

ELECTRONIC EDITION

ACN Webpage:

http://www.ais.org/~jrh/acn/

All issues of the *Amateur Computerist* are on-line.
Back issues of the *Amateur Computerist* are available at:
http://www.ais.org/~jrh/acn/Back_Issues/

All issues can be accessed from the Index at:
http://www.ais.org/~jrh/acn/NewIndex.pdf

EDITORIAL STAFF

Ronda Hauben
William Rohler
Norman O. Thompson
Michael Hauben (1973-2001)
Jay Hauben

The *Amateur Computerist* invites submissions. Articles can be submitted via e-mail: jrh@ais.org