

# Chapter 10

## On the Early Days of Usenet: The Roots of the Cooperative Online Culture

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“Without a historical perspective, it’s quite easy to get the wrong impression of how all this came to pass. It is the result of the work of a large number of individuals, some of whom have been at it for the last 20 years.”

Lauren Weinstein, 1990

“Even if we have shifted away from discussing human networks, we are getting a first hand EXPERIENCE of what they are through this mailing list. No amount of ‘a priori’ theorizing of their nature, has as much explanatory power as personal experience. By observing what happens when connectivity is provided to a large mass of people in which they can FREELY voice their ideas, doubts, and opinions, a lot of insight is obtained into very important issues of mass intercommunication.”

Human-Nets Mailing List, 03 June 1981, Jorge Phillips,  
Subject: administrivia

Usenet was born in 1979. It has grown from a design conceived of by two graduate students Tom Truscott and Jim Ellis, at Duke University in North Carolina, to a logical network linking millions of people and computers to over 9,500 different newsgroups and millions of bytes of articles available at any given time at hundreds of thousands of sites around the world. Yet little is generally known about how Usenet began and how it developed.

### Computer Chess - The Mini Slays the Mainframe

Tom Truscott had a dream. As a kid he had read the book *Danny Dunn and the Homework Machine*. He decided that it would be neat to have a homework machine. Some things caught his imagination and this particular goal not only set him on a course that would affect his future, but it also would have an unexpected impact on the rest of the world. By the summer of 1970, before his senior year in high school, Truscott had enrolled in a summer computer program that gave him his first chance to use a computer and to learn to program in BASIC. “My first large program played checkers,” he remembers of that summer.<sup>1</sup> “It didn’t play all that well,” he admits, but it introduced him to some of the power of computers. As a college freshman at Duke University the next year Truscott met another student in his chemistry lab who was an excellent chess player. Truscott describes how he told his chemistry lab partner Bruce Wright that “we could write a computer chess program that would beat Bobby Fischer.” Wright “didn’t think so, but we started writing the program anyway.” Truscott continues, “I was interested because of the computing challenge and no doubt the fame we would garner by defeating Fischer, and I guess Bruce was interested because he wanted to learn computing.” Truscott describes how the two undergraduates spent “a LOT of time” writing

their chess program and in the process they learned a lot about how not to write programs.

Truscott was interested in how game programs were like robots since they functioned as autonomous creatures. “At tournaments,” he points out, “the program tells me what moves to make for it, asks me how much time it has left on the clock,” etc. And writing a software robot, Truscott observes, “is a lot easier than building a real one.”

Once Truscott and Wright had set their sights on creating a championship chess program, Truscott set out to research what work had been done on the problem. He found that Claude Shannon had written “a very early paper on how to construct a chess playing machine.”<sup>2</sup> “It was remarkably farsighted given the state of computing then,” Truscott remembers. The next oldest paper he found was from 1958 by someone who implemented a program similar to Shannon’s proposal. “It played terribly,” he recalls.<sup>3</sup>

Also, by Spring of 1974, Truscott had joined the Association for Computing Machinery (ACM) to receive notification of the computer chess tournaments. Reading through the journal *Communications of the ACM* in 1974, he came across an article about a new operating system created by research programmers at Bell Labs.<sup>4</sup> In the article, he noticed that a program created by a Bell Labs team ran in the background sopping up idle CPU time and solving simple chess end-games (for example King and Rook vs. King). Truscott explains how there was no chance he and Wright could do something like that on the mainframe computer they were using, since it cost 20 cents per second. But he notes that their mainframe was about the fastest there was and could compute rings around the DEC PDP-11 that the Unix operating system ran on.

He and Wright created their program for an IBM System 370 Model 165 MVT/TSO mainframe computer system at Duke. It had three megabytes of main memory, which Truscott notes was later upgraded to “4 megabytes for a mere \$100,000.” That was, according to Truscott, “Pretty much the top of the line at the time. We did our development in batch mode,” he remembers, “The source code was on punched cards and the compiled code was stored on disk.” And in tournaments, he and Wright used the IBM time-sharing mode TSO.

The first computer chess tournament Truscott and Wright competed in was the North American Chess Championships held at the ACM Annual Conference in San Diego, California in November 1974. By then, Truscott was in his senior year at Duke. He and Wright named their chess program Duchess.

Following is Truscott’s description of his first tournament and how he met one of the most respected programmers in the Unix community during that tournament. Truscott writes: “There were twelve teams competing in the tournament. We were on a stage in a large room with seating for spectators. Each team had a computer terminal (something like a dot-matrix printer with a keyboard in front and an acoustic modem on the back). And a telephone. Boy were those phone calls expensive. But the ACM was picking up the tab, and Duke was giving us the computer time.

At the 1974 tournament, we knocked off MIT's TECH-II in the first round. They had come in second the previous year, and we were a newcomer, so that was something of an upset. In the second round we got clobbered by the perennial champ, CHESS 4.0 from Northwestern University.

In the third round we played Bell Labs' Belle. It was called T. Belle at that point. I had met the author earlier, before the second round, when he showed me how good his program was at solving mating problems. I wasn't that interested in chess, but humored him while he pulled a chess position out of a library and had the program find a mate in 5 (or some such). I guess if I actually played chess I would have been impressed.

So when the third round began, Bruce Wright and I were on one side of a table, and Ken Thompson and someone else from Bell Labs (who years later I realized was Brian Kernighan), were on the other. I noticed that when Ken Thompson logged on, the Bell Labs computer printed: Chess tonight, please don't compute.

I mentioned that that was really neat to be able to get the comp center to put out a notice like that. He said something non-committal in response. So the game began. A few hours and a few thousand dollars later we really had Belle on the ropes. All it had left was a lone king and we were about to queen a pawn! But then our program ABENDED (core dumped) in a way that caused the phone line to drop. We dialed back in and set things up, same thing. Every so often it would actually make a move. But making the phone call was slow (we had to ask for an outside line from the hotel operator) and painful (rotary dial you know) and eventually our program lost on time."

After the tournament was over, Truscott and Wright examined what had happened and they observed that the problem was not with their program, but rather with a bug in the TSO operating system on their mainframe. "Thus was our mighty mainframe slain by a minicomputer," he admitted, as they had lost the competition because the operating system of their mainframe computer had proven inferior to the operating system of the mini-computer used by the Bell Labs Team. "But I didn't realize it was UNIX," Truscott recalls, noting that the victory went to the Bell Labs team and their mini-computer because of the power of the Unix operating system.

Truscott and Wright competed in every ACM Computer Chess Competition [CCC] from 1974 to 1980. The next time he met Ken Thompson was at the 1976 Unix Users Group meeting at Harvard. "That was great fun," he remembers. There were about 80 attendees. "Somewhere along the way I made the connection between Belle and Thompson and UNIX." By this time Truscott was a graduate student at Duke where he and others had just installed Unix Version 6 on the Computer Science Department computer.

"I was also at the 1978 UNIX Users Group meeting at Columbia University, and both Ken Thompson and Dennis Ritchie were there," Truscott continues, "Thompson also competed in the 1978 ACM CCC. He had some special chess hardware but it was no match for the much-improved mainframe programs."

“Because of our mutual interests,” Truscott recalls, “Thompson would even call up our computer at Duke from time to time, and ‘write’ me. That was pretty intense, my trying to pick perfect sentences to send along to the genius at the other end. I think it was during one of those ‘write’ sessions in early 1979, that he asked if I would be interested in a summer job.”

Truscott accepted Thompson’s offer and spent the summer of 1979 at Bell Labs in Murray Hill, New Jersey, the birthplace of Unix. That Summer, a distribution of the Unix Operating System, Unix Version 7 was made available to sites with licenses from AT&T to use Unix. Included in the Unix V7 distribution were a number of Unix tools such as “sed” “awk” “uucp” and the Bourne Shell. These tools were very helpful and would prove invaluable in the creation of Usenet.

Truscott found that Bell Labs provided an exciting and supportative environment. Following is his account of this important summer in 1979 that he spent playing volleyball, eating pizza and working on a daily basis with many of the pioneers of the Unix community. He writes: “Woke up at 11am. Got to Bell Labs at noon so I could play volleyball out on the front lawn with Mike Lesk and Steve Bourne and other folks. After a few weeks, the security folks told us they couldn’t have a regulated monopoly running around loose like that. Lunch at 1pm in the Bell Labs restaurant. Ken Thompson and Dennis Ritchie and Greg Chesson were regulars. They had lunch at 1pm because sometimes they didn’t get to work until then. Sometimes Dennis Ritchie would entertain us with some horror story about a non-UNIX system he dealt with recently....”

“At 2pm the day began, which involved doing pretty much whatever we wanted. Ritchie was working on ‘streams’. I think Ken Thompson was working on typesetting software but mostly working on a chess machine.... Often at 7pm a group would go out for dinner (they liked pizza). Occasionally someone would host dinner at their home. Afterwards I would go back to the Labs and work until midnight. And the next day I would get up ‘at the crack of noon’ as Thompson put it.”

As the summer ended, Truscott left Bell Labs and returned to Duke.

## **Using Unix to Create an Online Community**

Truscott, describing his return to Duke, writes, “Of course when the summer was over and I was back at Duke, one of the first things I did was arrange a uucp connection to research. They called us nightly, which was great.” Truscott and Dennis Ritchie set up a uucp connection between “duke” a CS Department computer site at Duke in Durham, North Carolina, and “research” a computer site at Bell Labs in Murray Hill, New Jersey.

The uucp program that was part of the V7 distribution of Unix made it possible to send e-mail and files to other Unix sites using telephone lines as long as the sending computer had an auto-dialing modem and the receiving computer had an auto answering modem.

But these links did not make up for the fact that by Fall 1979, Truscott was back at Duke and no longer in the exciting environment of the birthplace of Unix. After having worked at Bell Labs for Ken Thompson where, as in Truscott’s words, “I was in UNIX heaven the whole time, returning

to Duke in the fall meant the end of that.” Also, that summer he had attended the Unix User’s Group meeting in Toronto, Canada. Once back at Duke the primary connection with the Unix community was through the USENIX newsletter; “Login:”. This newsletter, however, hadn’t appeared in a while. That Fall, another Duke graduate student, Jim Ellis installed the latest Unix (V7) edition on a Duke Computer Science computer. It broke many old programs, including a public domain ‘items’ program that had provided a local bulletin board. Truscott recalls how the program allowed items to be entered into one of several categories. “It had a number of problems,” he explains, “including a 512 byte limit per item, so we were thinking about writing a completely new program. Then we could contribute it to the next user group tape and hopefully achieve some minor level of fame.”

Truscott attributes the creation of Usenet to the confluence of these events in Fall 1979. He describes a long rambling conversation he and Ellis had one night considering these circumstances. The idea for Usenet developed during their discussion.

Soon afterwards, Truscott and Ellis met with two other local Unix enthusiasts, Dennis Rockwell, who was a graduate student and worked in the Physiology Department at Duke, and Steve Bellovin, who was a graduate student at the neighboring University of North Carolina (UNC) at Chapel Hill. They decided on the transfer format, i.e., on what an article would look like to make it possible to ship files via computers using uucp, and they agreed on the basic functionality of the software they would need to create an online network.

Bellovin wrote a shell script using Unix to test the design concept. Describing the early work to create Usenet, Bellovin writes: “The release of the uucp program with V7 UNIX provided the initial impetus. So did the Bourne shell. So the very first version of net news was a 3-page shell script. It supported multiple newsgroups, cross-postings, and subscription lists implemented as environmental variables. As best as I can tell, this script has not survived.”<sup>5</sup>

Bellovin emphasizes how the ease of testing software design facilitated by Unix made it possible to create Usenet. “It’s worth noting now that given the speed (or lack thereof) of the machines we had we utterly relied on the ease of writing shell scripts to experiment with protocol variants. Compilation would have taken much too long.”

Commenting about the early plan for Usenet, Bellovin notes: “We estimated a maximum size of 100 sites, and 1-2 articles a day, net-wide...you couldn’t read things out of order. The goal there (and in many other spots) was to have software free of databases. Instead, we chose to let the file system do the work.”

Bellovin recalls why a news program to replace the one they had used with Unix V6 was needed. “Another motivation,” he writes, “was some sort of local news system. On V6, Duke and UNC had a local news system that came from somewhere. But articles were limited to 512 bytes, and we didn’t carry it forward to V7. A prime requirement was that there be an efficient way to test for the presence of news (hence the checknews program).”

The Duke and University of North Carolina graduate students hoped to contribute their news program to the Usenet community to be used with Unix V7. According to Truscott, the shell script was slow, but worked. They also decided on terminology such as ‘newsgroups’ to describe the subject areas they would have as part of their network. “That was probably due to the newsletter analogy,” he explains since “this was...before the PC and bulletin boards.”<sup>6</sup>

Stephen Daniel, another Duke graduate student, soon became involved and made a substantial contribution to the work. Truscott writes that Daniel “created the dotted newsgroup structure that we know today,” for the newsnaming scheme (i.e. NET.xxxx and dept.xxxx) Also, Steve Daniel wrote one of the earliest versions of the netnews software in the C programming language. This came to be known as “A-News”.

Truscott and Wright continued to participate in the Chess Tournaments and in 1980 they competed in the 3<sup>rd</sup> world Computer Chess Championship held in Linz, Austria. Thompson and Joe Condon, who was a researcher at Bell Labs, were also in the competition. Truscott notes that Thompson and Condon “had completed their hardware chess machine and snagged first place. Duchess came in third. And Claude Shannon was in attendance, and even handed out the trophies at the awards ceremony. Afterwards we all went over to a TV studio to watch a West German TV special on computer chess and the championship. Claude Shannon and his wife were very engaging people. Someone took a photo of all of us, I have a copy buried somewhere.”

When Usenet was created, the newsgroup NET.chess was created as one of the early newsgroups. By developing Usenet, the Unix community became the force behind the creation of an online community to welcome participants into the cooperative culture so important in creating Unix. Graduate students at Duke and the University of North Carolina were able to use Unix to create an online community to provide needed technical and social support. They later named this users network Usenet. The earliest map for Usenet was made up of the first two computers that were sites for Usenet:

duke - unc

The sites were:

- 1) duke Duke University
- 2) unc University of North Carolina at Chapel Hill

Another computer at Duke joined the network. The site was “phs”. It was in the Physiology Department at Duke Medical School. The map of Usenet then became:

duke - unc  
  \   /  
  phs

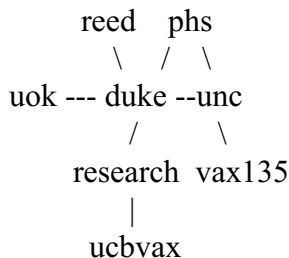
The third site was:

- 3) phs Physiology Department of the Duke Medical School

Soon connections were set up with computers at Bell Labs. The computer site “research” and

then “vax135” at the Labs were added to Usenet. In the summer of 1980, Mark Horton, a graduate student at the University of California at Berkeley, brought the computer site “ucbvax” onto Usenet.<sup>7</sup>

A map of Usenet during the Summer 1980 shows the sites then connected:



The additional sites were:

- 4) reed      Reed College
- 5) uok      University of Oklahoma
- 6) research   Bell Labs Murray Hill
- 7) vax135    Bell Labs Murray Hill
- 8) ucbvax    University of California at Berkeley

Bell Telephone Labs in Murray Hill, N.J. operating the computer named “research” was the first site to pick up the phone bills for calls between “ucbvax” at the University of California at Berkeley and “duke” at Duke University via “research.” Horton writes: “The first cross country link was from duke to research, then from research to ucbvax, all on research’s nickel.”<sup>8</sup>

Horton recalls how amazed he was to get e-mail messages from Usenet pioneers at Duke and the University of North Carolina just a few hours after he had sent them messages, thanks to the connectivity provided by the Bell Labs computer. “I remember,” he writes, “while at Berkeley, exchanging e-mail with the original ‘A-News’ developers and being amazed that I could get a reply back a few hours later, even though ‘research’ was polling both ‘duke’ and ‘ucbvax’ to pick up waiting mail.”

The first newsgroups on Usenet, according to Truscott, were known as NET.xxxx and dept.xxxx. After Horton joined Usenet, he began feeding mailing lists from the ARPANET into Usenet. Mailing lists from the ARPANET fed into Usenet were identified as FA.xxxx newsgroups. Truscott notes that, “Only when ‘ucbvax’ joined the net, did ‘fa’ appear.” Truscott explains that he didn’t know about the ARPANET mailing lists until Horton joined Usenet.

At first the Usenet community could only read these ARPANET mailing lists, but couldn’t contribute to them. “It was a one-way gateway – ARPANET into Usenet only, done with recnews, as I recall,” writes Horton.<sup>9</sup> But at least it was possible for the Usenet community to follow the interesting discussions carried on via the ARPANET mailing lists during this early period of Usenet.

Bellovin explains why feeding the ARPANET mailing lists into Usenet was so important for the development both of Usenet and of the ARPANET. “Actually in my opinion,” Bellovin writes, “one of the key elements in the early growth of Usenet was when Mark Horton started feeding the SF lovers and human-nets mailing lists into newsgroups. Those provided a critical mass of traffic and served as a lure to attract new sites.” He describes how “The ARPANET was supposed to be a self-contained entity, and only approved sites were allowed to connect.” Therefore, the connection between Usenet and the ARPANET broke important new ground. Bellovin writes, “Mail to and from Usenet only sites, was an interesting test case that \*wasn’t\* stamped out, though I think it skated on some very thin ice for a while.”

The “ucbvax” site at the University of California at Berkeley provided a crucial gateway between Usenet and the ARPANET. The University of California at Berkeley could provide the gateway because it was also a site on the ARPANET. The CS Department vax computer (csvax) became the site “ucbvax” on the UUCP network. An internal network Berknet was set up to connect “ucbvax” on the UUCP network to “Berkeley” on the ARPANET. Horton explains that Professor Michael Stonebraker and Professor Domenico Ferrari, who were doing research to develop the Ingres data base, had a pair of machines (ing70) and (ingvax) which were sites on the ARPANET. They allowed Horton to use these machines for Usenet. Ing70 was the site known as “Berkeley” on the ARPANET. Horton and two other graduate students, Eric Allman and Eric Schmidt, set up the gateway between Usenet and the ARPANET and made it work. Schmidt created the local net, Berknet, to connect the ARPANET and the UUCPnet. The ARPANET and UUCP computers were tied together by Schmidt’s Berknet. The path, Horton explains, went:

“Any ARPA machine to Berkeley via ARPANET mail  
Ing70 (aka Berkeley) to csvax via Berknet  
ucbvax (aka csvax) to any UUCP machine via UUCP.”<sup>10</sup>

## **Human-Nets and WorldNet**

The Human-Nets mailing list [known on Usenet as the newsgroup FA.Human-nets] provided a mass of interesting posts to attract Usenet readership at a crucial period in Usenet’s development. The mailing list Human-Nets, Truscott remembers, was a mailing list from the ARPANET for discussing the implications of world-wide ubiquitous networking. “This network of the future,” he recalls, was referred to as WorldNet. “It was a very interesting mailing list and possible only due to the ability of the network itself to permit those interested in this obscure topic to communicate.”<sup>11</sup>

A directory of the ARPANET mailing lists maintained at MIT during this period lists each of the mailing lists. Describing Human-Nets, it notes that this mailing list “has discussed many topics, all of them related in some way to the theme of a world-wide computer and communications network usually called WorldNet. The topics have ranged very widely from something like tutorials, to state of the art discussions, to rampant speculations about technology and its impact.”<sup>12</sup>

An article on Usenet in October 1982 about Human-Nets explained that “one reader expressed a wish for a ‘World Net’ to tie all sorts of computers worldwide together.”<sup>13</sup>



Another article in October 1982 described how WorldNet “was a nice idea to dream about”, but the writer was pessimistic that it could ever be implemented, at least within the next 10 years. He acknowledged, however, “Still, it’s a fun idea to think about,” and advised, “Maybe it should be tried on a smaller scale first (a distributed network of students with PCs at a university, perhaps a small city, or large community.) Who knows,” the poster observed, “with a PC in almost every home in a few years, maybe it’ll be possible and desirable.”<sup>14</sup>

One of the moderators of Human-Nets maintained how important it was to participate in such online discussion for those interested in developing ubiquitous world wide networking. Responding to a departing moderator’s complaint that the discussion on the list had diverged to a variety of topics, the new moderator disagreed. He retorted: “Even if we have shifted away from discussing human networks, we are getting a first hand EXPERIENCE of what they are through this mailing list. No amount of ‘a priori’ theorizing of their nature, has as much explanatory power as personal experience. By observing what happens when connectivity is provided to a large mass of people in which they can FREELY voice their ideas, doubts, and opinions, a lot of insight is obtained into very important issues of mass intercommunication.”

“The fact,” he continued, “that...dissimilar...topics have been discussed in our own instance of a human network says a lot about its nature and the interests and nature of its members and should not be considered as detracting from the quality of the discussion.”

“A human network,” he concluded, “is a springboard for human interaction and thus for human action. Let’s view it as such and keep repression and censorship at a minimum.”<sup>15</sup>

## **UUCPnet and the “Iron Curtain” of the ARPANET**

In contrast to the vision of ubiquitous human networking via computers discussed on the Human-Nets mailing list, the Usenet community faced a difficult battle when trying to communicate with those on the ARPANET. Posts on Usenet during the 1981 period reflect the constant efforts and the frustration experienced by those on Usenet who wanted to contribute to the ARPANET mailing lists.

Another popular ARPANET mailing list during this early period of Usenet was the Unix-wizards mailing list. It provided for discussion, the sharing of experiences, of problems, and of software, and for the debate over various issues that faced the Unix community. The mailing list was gatewayed from the ARPANET to Usenet and was available on Usenet as the newsgroup FA.unix-wizards.

Recognizing the early difficulty that those on Usenet had in posting to the ARPANET mailing lists, one user asked: “You mean saying -n fa.unix.wizards doesn’t get back to the ARPANET? Does it just get to Usenet? Or does it go anywhere?”<sup>16</sup>

Another post reported the frustration experienced by those on Usenet who were trying to send messages to mailing lists carried on the ARPANET. The person wrote: “With regard to the

ARPA/UUCP gateway problem, it appears that ARPANET sites refuse to process mail from UUCP machines, while UUCP machines typically don't bother checking who stuff comes from before passing it on. In most cases this costs real money in terms of phone rates, use of spool space, etc...."<sup>17</sup>

He proposed that UUCP sites retaliate so that transporting messages to Usenet from the ARPANET would be equally difficult: "We could have messages of the type: 'Gateway to UUCPnet Closed...Service Unavailable'"

He asked others on Usenet for "any ideas what kind of response would result if this was implemented?"

Responding to this proposal, another Usenet user offered his objection: "I'd rather see messages of this form going back to ARPA: 'Gateway to UUCPnet open...No Iron Curtain here'" "Or some such self-righteous garbage. Seriously, the interchange of information is too useful to get embroiled in hurt feelings. I get mad when Arpa blindly refuses stuff but would rather try to shame them (good luck!) than play the same game."<sup>18</sup>

There were those on the ARPANET who sympathized with the problems experienced by the Usenet community in trying to contribute to the ARPANET mailing lists. Commenting on the frustration, a user at a U.S. government site that was both on the ARPANET and on Usenet wrote: "I am also concerned about Usenet participants. We really need to be able to interact with them in a better way, yet UUCP gateways to the ARPANET are VERBOTEN".<sup>19</sup>

Often Usenet users would try to send messages to the ARPANET gateway only to get back notification that their message had bounced. Common messages notifying Usenet users that their efforts to send messages to the ARPANET mailing lists had failed included: "Sorry not an ARPANET gateway: Unable to deliver Mail" "unix-wizards@sri-unix...Mail has been disallowed between the ARPANET and Uucp net" "unix-wizards@sri-unix...Service unavailable"

Other messages on Usenet during this period describe similar problems. For example, one user describes how he sent out 5 e-mail messages to the mailing list FA.unix-wizards and each came back to him undelivered. He then tried to send the messages to the mailing list again, or in frustration gave up and posted them on Usenet in the newsgroup "net.general" so others could see the problems he was having. He reported: "It doesn't always work, folks! Last week I submitted 5 letters to ucbvax!unix-wizards; and got each one of them back the very next day, saying 'service unavailable.' Depending on the message I either shipped it back right away, or just put it in net.general in disgust."<sup>20</sup>

## **The ARPANET <=> UUCPnet gateway**

The path set up to make it possible for uucp users of Usenet to contribute to the ARPANET mailing list Unix-wizards was via uucp to "ucbvax", from "ucbvax" along Berknet to "Berkeley", the UCB site on the ARPANET, and from that site along the ARPANET via e-mail to "sri-unix",

a site on the ARPANET that would distribute the mailing list back to “Berkeley” or send it out on the ARPANET. The site “sri-unix” was a computer at the Stanford Research Institute. SRI was one of the earliest sites on the ARPANET. Describing how this gateway worked, a user from the University of California at Berkeley wrote: “Ucbvax is currently set up such that if you, as a UUCPnet (Usenet) user, send mail to ‘...ucbvax!unix-wizards’, the message will be \*automatically\* forwarded to unix-wizards@sri-unix (via our internal network and then via the ARPANET).”<sup>21</sup>

He describes how ‘sri-unix’ transported the message back to other sites: “The message is then redistributed by sri-unix to all sites on their ‘master’ list, which include ‘csvax.post-unix-wizards@Berkeley’.”

In this way, the message was sent out on Usenet. “When we at Berkeley,” he explained, “receive something addressed to this rather baroque-looking recipient, it is handed over to our network news program. From there, the message is redistributed via UUCPnet to the rest of the world.”

“ARPANET access,” he noted, “is not available (at least through Berkeley) for ‘private communications’, which would include someone on the UUCPnet attempting to respond to an INDIVIDUAL who submitted something via the ARPANET, or vice versa.”

A user at the Ballistics Research Labs (BRL) noted the burden the gateway imposed on both the University of California at Berkeley and SRI and offered to help if necessary. He wrote: “BRL has a strong commitment to UNIX, and we encourage discussions about UNIX. If SRI gets overwhelmed by the burden of distributing the list, or if we ‘clone’ several lists, we will be glad to take the task of mailing the stuff.”<sup>22</sup>

By September 1981, a post indicated that the ucb<=>sri-unix gateway for the Unix-wizards mailing list was being changed. “This is the last message you’ll be receiving on Unix-wizards through SRI-UNIX,” the writer reported. “Now the list will be mailed out of SRI-WARF(host 1/73);” he noted<sup>23</sup>. Posts could still be sent to “sri-unix”, but they would then be forwarded for transporting to “sri.warf”.

Numerous other users commented on the precariousness of this UUCPnet – ARPANET gateway used by the Usenet (uucp) community during this period. For example, Dave Farber, at the University of Delaware, warned, “As to relaying to the ARPANET, communications could be stopped easily by some agency stating to the sites doing the relaying under the table – to stop it.” Farber was part of the effort to have the National Science Foundation set up CSNET as a way to extend access to the ARPANET to NSF supported academic and industrial researchers. He expressed his hope that CSNET would become a force to change the frustrating situation.<sup>24</sup>

Usenet users had to use some kind of gateway to post to any ARPANET mailing list. “Certain newsgroups (fa.all),” a user on Usenet explained, “are not supposed to be posted to by people. Rather, you are supposed to mail to ucbvax!<newsgroup> to get it to the ARPANET people

too.... Another reason was the gateway restriction – direct replies didn't work!"<sup>25</sup>

ARPANET users also encountered difficulties with communication using the ARPANET. Describing the problem MIT experienced as a result of its efforts to support the ARPANET mailing lists, a user at MIT wrote: "There is always a threat of official or public accusations of misuse of the networks for certain mailing lists. This actually happened with a list called WINE-LOVERS and Datamation [a technical journal].... The fiasco, nearly resulted in MIT being removed from the network, and cost us several months of research time while we fought legal battles to show why our machines should not be removed from the ARPANET. We are all in the hands of our neighbors. The best thing to do is to ensure that we are all educated as to how to take care of each other and ourselves."<sup>26</sup>

## **Usenet as a Public Computer Users Network**

While the ARPANET was subject to the regulations and policies set by the U.S. Defense Communications Agency (DCA) during this period, Usenet was considered a public computer users network. Policies were proposed, and then were subject to discussion by the Usenet community.

For example, in October, 1981, Horton proposed the following statement of policy for Usenet:

Usenet is a public access network. Any User is allowed to post to any newsgroup (unless abuses start to be a problem). All users are to be given access to all newsgroups except that private newsgroups can be created which are protected. In particular, all users must have access to the net and fa newsgroups, and to local public newsgroups such as general [net.general].

He continued: "The Usenet map is also public at all times, and so any site which is on Usenet is expected to make public the fact that they are on Usenet, their Usenet connections (e.g. their sys file), and the name, address, phone number and electronic address of the contact for that site for the Usenet directory."<sup>27</sup>

In another post, the writer describing the wide range of topic areas on Usenet, explained: "The net represents a wide spectrum of interest (everything from the latest kill-the-millions-hardware to the latest sci-fi movies)."

He also noted the broad range of sites on Usenet, "The participants of the net, include major (and not so major) universities, corporations, think tanks, research centers, and the like."

"All these people seem to have one thing in common – the willingness to discuss any idea, whether it is related to war, peace, politics, science, technology, philosophy (ethics!), science fiction, literature, etc. While there is a lot of flame," he commented, "the discussion usually consists of well thought out replies to meaningful questions." (He gave examples such as "Should the Postal Service be allowed to control electronic mail?...")

And he added, "I am told that a lot of traffic on the net is not discussion, but real honest-to-goodness work. (Code, applications, ideas, and such.)"<sup>28</sup>

Those posting to Usenet included Unix users, ARPANET users, Usenet users working at Bell Labs, at other industrial sites, at University sites, at government sites, etc. For example, both Thompson and Ritchie, creators of Unix, sometimes responded to Usenet discussions. Thompson contributed to the NET.chess discussions and Ritchie contributed occasionally to fa.unix-wizards, among other newsgroups.

Following is a description of Usenet posted in March 1982.

"Usenet is an international network of UNIX sites with hookups into the ARPA network, too. It is basically a fancy electronic Bulletin Board System. Numerous BTL [Bell Telephone Labs] machines are connected at HO, IH, MH, with a few elsewhere, too. In addition, there are major sites at universities: U C Berkeley, Duke, U Waterloo, and so on (...) And at industry nationwide: DEC, Tektronics, Microsoft, Intel, etc. There are numerous bulletin board categories, set up in a hierarchy."<sup>29</sup>

The article describes how the "fa" newsgroups on Usenet "can reach a very large user community, including Usenet, sites on UUCP, Berknet, BLN, and the ARPANET, as well as sites on the ARPANET which are not on Usenet who get the news via direct electronic mailing." It explains that "Net.all newsgroups are available to all people on the entire network who read netnews." Though not all sites got every newsgroup, "Usenet is defined as all sites that net.all reaches."

Characterizing Usenet as a logical network, as opposed to a physical network, Horton explains that Usenet is a network of sites running Netnews software: "For those of you who don't know, Usenet is a logical network of sites running netnews. Netnews is a network oriented bulletin board, making it very easy to broadcast a query to a large base of people. Usenet currently has about 50 sites and is growing rapidly."<sup>30</sup>

Horton emphasizes that Usenet is a users' network. He explains: "Usenet exists for and by the users, and should respond to the needs of those users."<sup>31</sup>

He also notes that "Usenet is a cashless network." This meant that "No person or organization may charge another organization for news, except that by prearrangement." He explains that a site could charge only for the extra expenses incurred in sending Usenet to another site. And almost every site that received news had to be willing to forward it to at least two additional sites.

Horton's policy proposal suggested that articles should be of high quality, signed, and that offensive articles shouldn't be posted. "Peer pressure via direct electronic mail will, hopefully, prevent any further distasteful or offensive articles. Repeated violations," he noted, "can be grounds for removing a user or site from the network."

Common to many of the posts in these early years, is the encouragement that users participate and voice their concerns and opinions, both in the ongoing discussion in various newsgroups, as well as in determining the practices and policies guiding how Usenet functions. For example, Adam Buchsbaum, a high school student who played an important role in early Usenet, started the NET.columbia newsgroups, a newsgroup about space issues. He posted the opening message inviting participation: “Greetings fellow space enthusiasts! This newsgroup was designed to inform people on developments in our space program. Although named ‘columbia,’ it will contain articles about the entire space program, including the shuttle for which it is named. Please feel free to reply, comment, criticize, and submit your articles. Also, I hope this will serve as an open ground for discussion about events in the space program. Comments, etc. can be mailed to myself(research!sjb) or submitted directly into the newsgroup. In all, I hope that this will provide an atmosphere for people who are interested in the space program to discuss it and be informed of new events.”<sup>32</sup>

Such articles on Usenet, welcoming contributions from all participants, helped to set a firm foundation for interesting and lively discussion on early Usenet newsgroups.

## **Changing to B News**

The continuing expansion and popularity of Usenet was creating the need for changes in the software. Explaining some of the problems that the ever larger number of posts were creating for those using Netnews, Horton describes how A news recorded subscriptions as a one-line pattern, and a timestamp recorded which messages were read so that you were expected to read all new Netnews at once. He writes: “In the Spring of 1981, Usenet had grown to the point where it was awkward to use A News. It was important to read news in newsgroup order (not by time of arrival) and to quit in the middle leaving some news unread. Also, the user interface of A news resembled V7 /bin/mail, and users were expressing a preference for other e-mail styles (Mail, MH, etc.) and for the Berkeley msgs program.”<sup>33</sup>

At the time, Horton was finishing up his dissertation so he didn’t have the time to do the needed work. Fortunately, however, as Horton recounts, “One day, into my office walked Matt Glickman. He was a local high school student on spring break, looking for a computer project. We teamed up to design B news, and he did most of the coding that week. (The actual production release of B news was announced by Matt at the Winter 1982 USENIX.) I’ll never forget the smile on Matt’s face when he told me, “You know, you’ve made my spring break!”

Horton explains, “B News was patterned after the Rand MH e-mail program, and designed to be compatible enough that MH could be used to read the news. It put each newsgroup in a separate directory (causing a 14 byte limit on newsgroup names that lasted until years later when subgroups made subdirectories) and used a ‘.newsrc’ file to record newsgroup subscriptions and which messages were read.” He notes, “It defaulted to a msgs-style user interface and provided a read-it-all-now escape to a mail program like Mail. In those days it was also reasonable to dump it all to a printer and read it like a newspaper.”

In a post announcing B News, Glickman described the features of the new version of

Netnews software that was being written: “I’m working on a new netnews. It is not ready. It is taking a lot longer [then]...it should. I hope to have a rough version running locally this week. Initially, the major new features will be: 1) No more .bitfile, .uindex, or .nindex. Everyone has a .newsrsrc file in their home directory which contains a list of the articles they’ve already read. This will allow skipping articles and coming back to them later: random-access. The same interfaces are around: /bin/mail, msgs, and print. The -c option still works in the same way, but I’m beginning work on an improved interface with the Berkeley Mail program so that netnews will know which articles were looked at during Mail.”

Among the features Glickman describes are a new article format, an expire feature so articles could be read out of order, but would be cancelled at a determined date, and the netnews command was to be split into two commands, inews, to insert news, and readnews to read news. He also describes how B News provided directories for each newsgroup in a spool directory and all the articles had sequentially numbered filenames in their directories.

“I’ll try to keep you posted on late-breaking developments,” Glickman promised.<sup>34</sup>

## **Automating AT&T and Usenet**

In the summer of 1981, Horton received his graduate degree from the University of California at Berkeley and went to work in Columbus, Ohio at a Bell Labs facility there.

During this period AT&T was automating much of its operations and it recognized that helping to develop and participate in Usenet, and the UUCPnet that was being developed along with Usenet, could help AT&T solve some of the problems raised by its pioneering efforts developing large scale software systems.

Bob Rosin in a post on Usenet, described the difficulties that those working on large-scale software projects encountered and the important technological problem this represented: “There is no cheap, easy way to accumulate the years of experience necessary to deal with complex software based systems. One need only examine the ugly reinventions of assembly language generated by ignorant non-converts and to watch thousands of neophytes wallow in the pits of personal computer assemblers to realize that, while software is in its infancy, people who have studied and built software are way ahead of the great unwashed.”<sup>35</sup>

Recognizing difficulties inherent in large scale software projects, there were those at Bell Labs who labored to encourage management to improve the software development environment. This included adopting and spreading Usenet and e-mail among programmers. One such article posted on Usenet described these efforts: “There is a lot of effort going on now to try to convince management in Bell Labs to improve the software work environment. Good electronic mail and bulletin boards are an important part of that environment. There is a lot of interest in netnews here, with lots of people from management and even the legal department looking at it.”<sup>36</sup>

During this period, Bell Labs was doing work to develop and implement the 5 ESS switch

[Electronic Switching System]. Describing how the 5 ESS was an all purpose electronic switch that would replace the other switches that had been developed for particular purposes. John Hobson wrote in Human-Nets: “Yes, there is such a thing as a #5 ESS. This is a bigger and better ESS, designed to be a replacement for all others. That is, there is one basic configuration, and different versions depending on the capacity needed. This is an improvement over the #1/1A, #2, #3 and #4 ESSes, which are fundamentally different machines, each designed to cover one range of live trunk numbers. (#1/1A is used in large, metropolitan switching offices, #4 in small, rural ones.) The #5 ESS is expected to be out in the field sometime next year.”<sup>37</sup>

The 5 ESS project was a large scale programming project involving many programmers and millions of lines of computer code. Describing the 5 ESS project in a post that appeared on Usenet, the writer explains: “Our project (#5 ESS) uses a lot of remote command execution to support our multi-machine development scenario (13 11/70's + 2 VAXes + 1 IBM 3033 - AP). This environment is treated as though it is what it isn't, a single machine. That is we have developers spread across 7 - 9 PDP-11's + a 370 and they all work on the same project [We produce 'load modules' for 3 processor types...that way.]”<sup>38</sup>

Several articles on Usenet describe how difficult it often was for system administrators to convince their management that it was worthwhile to support Usenet at a work site. For example, describing the situation at Bell Labs, one poster wrote: “Much of the netnews distribution within bell labs is done without any explicit approval. I would be surprised to learn that many of other of the corporate participants in Usenet had explicit approval from management. This makes us all very vulnerable.”<sup>39</sup>

Another poster from ‘cincy’, a site at the University of Cincinnati, in the Department of Computer Science and Engineering, verified that this was the situation elsewhere. He wrote: “When I was at cincy, we had a HARD fight to get the administration to pay the bill.”<sup>40</sup>

Because of the difficulties that those at commercial sites had maintaining their participation in Usenet, a debate developed between those who felt that Usenet should be uncensored and those who felt that an uncensored Usenet might lead their management to cut off access to Usenet. One poster from “tektronix” explained the dilemma: “I am beginning to wonder about Usenet. I thought it was supposed to represent electronic mail and bulletins among a group of professionals with a common interest, thus representing fast communications about important technical topics. Instead it appears to be mutating into electronic graffiti. If the system did not cost anything, that would be fine, but for us here at Tektronix, at least, it is costing us better than \$200 a month for 300-baud long distance to copy lists of people's favorite movies, and recipes for goulash, and arguments about metaphysics and so on. Is this really appropriate to this type of system?”<sup>41</sup>

There were also those at University and government sites who were fearful that certain types of posts might jeopardize grants their sites received. Others maintained that Usenet should be uncensored, but that sites could decide what newsgroups they would carry or what posts they might read. For example, one Usenet user wrote: “What I would really like is to work out methods that



would allow as free a flow of information as possible. Some of the problem with the lack of control we have now (i.e. either too many newsgroups/lists or too many messages on one list) may be solvable by implementing new tools and conventions without resorting to brute force. I believe that there are limits to how much the group of users on one machine can store and comprehend, and that we ought to try to have this be what moderates groups (along with a certain amount of peer-pressure to keep the quality up). Something more along the lines of democracy or physical law than dictatorship, anarchy or even socialism.”<sup>42</sup>

Some sites felt that the content of Usenet should be restricted to topics that management or funding agencies would approve of. Others argued that a site could choose which newsgroups to carry, but that shouldn't limit the broad range of newsgroups that would be available. In summarizing a discussion on this issue that took place at Usenix, Horton noted that newsgroups that seem trivial to one site might be important to another and he reported that those discussing the problem at the USENIX meeting felt that sites could determine what they would carry, but shouldn't impose their tastes on all of Usenet.

A similar debate occurred on the Unix-wizards mailing list. A post reports that some Unix-wizards had dropped off the mailing list complaining about the trivia on the list. Others responded that they didn't want anyone deciding what they could read or not read, so they wanted the list to remain uncensored.

## **Cross Atlantic and Intercontinental Links**

Not only were links within North America difficult to establish, but Dik Winter, from Amsterdam in the Netherlands, describes how the first cross Atlantic Usenet link was delayed until 1982/83 because of the difficulty of acquiring an auto-dialer modem that conformed to European standards. “In Europe,” he writes, “the two people responsible for the link were Teus Hagen and Piet Beertema,” both at the Mathematisch Centrum, a research site in Amsterdam (now called CWI). The Mail link was between decvax <-> mcvax . It connected the site ‘decvax’ at Digital Equipment Corporation (DEC) in the U.S. with ‘mcvax’ in the Netherlands.

Beertema recounts how the early transport of News into Amsterdam was from “philabs” a site at Philips Laboratories, a North American research laboratory for the Dutch company Philips.

Hagen writes that European Unix users who met in European DEC meetings began to do networking in the late 1970's. He describes how relationships were established between Peter Collinson from the University of Kent in England, Keld Simonsen from the University of Copenhagen in Denmark, and the Mathematisch Centrum in Amsterdam.

Timothy Murphy from Trinity College in Dublin, Ireland, explains that a relationship was established between Peter Collinson at the University of Kent and the site “tcdmath” at Trinity, to connect Ireland and England. He remembers how he was one of the founding members of the EUUG (European Unix Users Group) when it was set up at University College in London, England. Describing how the link at Trinity was set up by Brendon Lynch, the first system administrator of

the Maths Department unix system, Murphy notes that this link “worked remarkably well – it was far more reliable than its successors, which used to be out of action for weeks at a time.” Murphy remembers that Brendan Lynch at Trinity, “set up an incredibly complicated link from our machine to Kent, which ran on X.25 via the University Dec-20. Our Unix box communicated with the Dec-20, which then communicated with Kent.” He writes that the “tcdmath” was the Irish backbone site for about 4 to 5 years, “maybe from 1980-1984.”<sup>43</sup>

Hagen recounts how links were established with others, including Yves Devilles from INDRIA in Paris, France, Johan Helsingius of the University of Helsinki in Finland, Daniel Karrenberg of the University of Dortmund in Germany and with other university and technical sites like the Technical University in Vienna, Austria, the University of Stockholm in Sweden and Siemens and Olivetti. Eventually email via UUCP was established with support from Armando Stettner at DEC laboratories. Those involved wanted also to have “a regular exchange of news articles (Usenet) as well,” Hagen adds. Usenet in Europe, he explains, “was born from a tape I took with me from [the] San Francisco USENIX conference...back to Amsterdam.” At a USENIX conference in San Francisco, Hagen met Dan Lorenzeni. Since Lorenzeni worked with Philips, whose Mother firm was from the Netherlands, and Hagen was from the Netherlands, an agreement was made to have Lorenzeni send Hagen tapes of news articles. Hagen describes how a 1200 baud UUCP intercontinental link was set up between “philabs” in the U.S. and “mc” in the Netherlands. He explains that they couldn’t use 2400 baud modems as that “equipment was unreliable, expensive, and modems from different manufacturers could not talk to each other.” On one occasion, Hagen remembers he came into the office “rather early (9:30 am) and noticed that the 1200 baud modem [was] still running. UUCP U.S. and UUCP Holland were sending each other resync messages.” It was running from 7 pm the previous night to the [next] morning. And phone charges were six dollars a minute. “Within 5 minutes,” Hagen remembers, he was in the Director’s Office “trying to explain the high phone bill” which they had run up using “equipment which was not even allowed” as the law in Holland didn’t allow use of a 1200 baud modem. “After that,” Hagen continues, “we made an arrangement with Dan to share more of the costs.”<sup>44</sup>

Lorenzeni, who helped to set up the news link between “philabs” and “mc” concurs. He describes how he worked with Hagen and Beertema to set up the link. “From the beginning,” he writes, “they only wanted certain newsgroups. So they supplied me with the list.” Lorenzeni notes, “From the start, I thought Usenet was a great thing and promoted it as much as possible. Over time the S/N [signal/noise] ratio got worse and worse, but it was always fun.”<sup>45</sup>

Hagen describes some of the frustration that European participants in Usenet experienced. “I can remember a fight in net.general,” he writes, “when someone in the U.S....complained about posts from Europe. The person,” Hagen recounts, said “we were dummies as we introduced errors in the date/time stamp” on the posts from Europe. “He was complaining,” Hagen continues, about “the fact that he was reading news articles which were replies” to posts though they were dated “a day earlier [than] the original post.” He forgot, Hagen notes, that the U.S. was in a different time zone.

Hagen details several other problems faced by the European Netnews community, such as high phone costs, leading them to work out a way all would share in the costs. This led to a well organized network of “backbones” connecting UNIX user groups in different countries. Also, language differences were a problem to be dealt with. One of the results, Hagen remembers, was in a message to all news readers noting that international meant “not everyone is speaking their own national language.” Hagen also describes how he presented the potential of a European net at a conference of EUUG in Paris with a presentation where he showed e-mail and news and made available some illegal modems which were subsequently spread throughout Europe.

In the following post from 1983, Jim McKie at Mathematisch Centrum, discusses some of the difficulties confronting these early European Usenet users. He writes: “Well, the net isn’t collapsing over here, and is already run on a pay-as-you-read basis. I can’t speak for the U.K., and I am sure, as in all things, the U.K. would not like somewhere else in Europe to speak for her (the U.K. is only GEOGRAPHICALLY close to Europe), but the U.K. gets it’s news free from vax135; I don’t know how much they get. And we get a small number of groups through ‘philabs’, ones which people asked us to get, not a blanket coverage anymore. Hopefully we will soon be getting some more news groups from ‘decvax’, and to those sites which ask for them, we will redistribute. Another major manufacturer has offered some free satellite time, which we are investigating.... We are in the fortunate position of starting up late and having someone (Teus Hagen) who put things on a nice footing.... But it means we have to keep trying to find cheaper ways to obtain the groups, so we can afford to make some mistakes and chuck them later. However, the real problem is that the (soon to be) 3 news feeds supply different groups, and there is no net.anything passed between the U.K. and Europe, so we would perhaps not get a fair and unbiased choice....”<sup>46</sup>

Several of the European Usenet pioneers report that Armando Stettner of DEC soon became involved in helping to get Usenet to Europe. DEC was willing to pay the intercontinental phone bills so e-mail and news traffic were shifted to DEC.

Winter also describes the difficulties that those working to provide a Usenet link to Australia faced to provide Australian – North American connectivity. Robert Elz, at the University of Melbourne in Australia, describes how working with Piers Lauder, news distribution was set up in Australia. The earliest international link was created when Ian Johnstone from UNSW [the University of New South Wales] was invited to Bell Labs in Murray Hill, N.J. in 1980 or 1981. “In any case,” Elz writes, Johnstone “arranged a link from Bell Labs...to an IBM mainframe...at the University of Waterloo. The University of Sydney (or UNSW) connected to there using X.25 (which was why Waterloo was chosen....) This link,” Elz remembers, “was basically pathetic – messages lost, and lots of manual work involved in transferring what did get transferred, yet it did allow messages through, and was kind of linked to the UUCP net in the U.S. (and Canada).”<sup>47</sup>

Elz explains that “It was probably '83 when the first Usenet news reached here (well, actually, before then I had dialed into Berkeley (ucbvax etc), saved news from time to time in my directory there – anything that looked interesting, and then had it added to the next tape coming back this way, either one I brought after a visit there, or one they were mailing me for some reason). I doubt that

counts as a real Usenet connection, but it is probably responsible for a rumor that occasionally makes the rounds about Australia getting news via mag tape, which never really occurred in any meaningful fashion.”

Piers Lauder writes that, “All news arrived via Robert’s machine in Melbourne University called ‘munnari’ which still exists in name, if not in original form...munnari acted as the gateway to the rest of Australia.”<sup>48</sup>

During this period, Elz attended Usenix conferences in the U.S., usually the summer meetings. While in the U.S. he would usually also spend some time at the Computer Science Research Group (CSRG) at the University of California at Berkeley. During one of the Usenix meetings, Elz writes that he and several UCB related people were hanging around the DEC stand at the conference with Armando Stettner, trying to get BSD unix to work on the (then) new Vax 11/730. “While doing that,” Elz writes, “Armando heard of our tenuous net link to the world, and offered to have ‘decvax’ call us for e-mail transfer.... I wasn’t about to say ‘no’ to that offer.”

“Having this free link (to us) available greatly increased use of the net in Australia,” Elz notes, crediting DEC, and Stettner, for “helping spread the network into the world outside North America.” And he points out that “the free links available to Australia, and Europe, without question encourage use that would never have happened had there not been this sort of access available – justifying paying for traffic without seeing how useful it can be is very hard to do. On the other hand,” he adds, “having this period of uncharged use allowed people to see the benefits, and get accustomed to it, which then allowed people to be able to justify meeting the bills when that eventually was required.”

Elz explains why it was fortunate that it was possible to have Usenet along with e-mail. “Usenet was just a ‘free optional extra’ (more or less) that came with the e-mail links. If it had ever been much in the way of particular effort, it might never have survived. Still, it did allow us to keep in touch much more actively with what the rest of the world was doing. Being a communal medium it allows one to notice things by accident, which person to person e-mail might never reveal,” he concluded.

## **Setting a Foundation for the Future**

Many of the academic, industrial and government sites participating in the early days of Usenet were involved with computer software or hardware research. The developing network of Usenet sites helped to provide the Unix community with the technical and social support they needed to keep computers functioning and to deal with the perennial upgrades as computer development advanced. Often people online would ask for advice or offer information or programs to others so that people could build on each other’s experiences, rather than “reinventing the wheel.”

In addition to such technical cooperation, newsgroups were developed to discuss a wide range of topics, including world-wide ubiquitous networking in the future (Human-Nets), science fiction (sf-lovers), computer games (NET.games), etc. Socializing was encouraged in NET.singles

(or NET.social), recipes were exchanged in NET.food. Music was discussed and recommended in NET.music. The developments and problems of the space program were discussed in NET.columbia (on Usenet) and NET.space (an ARPANET mailing list).<sup>49</sup>

As the interests of people were reflected in their suggestions for new newsgroups, online discussions developed over how to create a process that would make the desired groups possible. The early development of a newsgroup creation process and the discussion over how to structure that process help to demonstrate that a great deal of effort by many people was expended to create functional and democratic procedures for the early Usenet. The earliest newsgroups were all unmoderated. Everyone had the right to participate and contribute their views. A rich and interesting content emerged that surprised even the participants themselves.

The development and spread of computers require new means of communication like Usenet. A great deal of effort and discussion went into creating Usenet. This has provided Usenet with the strong foundation needed to support the technical and educational needs that result from the increasing use of computers in our times. Usenet has grown and flourished and in turn serves the needs of those using and developing computer technology.

The Unix community gave the world high tech software tools that could perform wondrous feats with simple programs.<sup>50</sup> The Usenet community took these tools and used them to open up and create channels for communication so that those in the online Unix community could help each other wield the tools. In a society that hopes to progress in this era of rapidly developing computer hardware and growing demands for computer software, more and more of the population needs to have access both to the tools and to the means of communication needed to wield these tools. This is the foundation of the cooperative and democratic culture that Usenet has pioneered and made possible. It is important to understand and build on these roots and to nourish and expand this cooperative culture. It is important to make this cooperative networking culture, this marriage of an ever larger network of computers and people, available to ever broader sectors of the population if the promise of computer technology to provide a better and more productive world is to be realized. We are much closer to the dream of a WorldNet today, than we were in 1979, thanks to the hard work of the Usenet pioneers in setting a firm foundation. We will need to build on the foundation they set if we hope to make the dream of a WorldNet, of ubiquitous computer networking, a reality.

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#### Notes for Chapter 10

1. The following account is from e-mail correspondence from Tom Truscott, which has been compiled into an unpublished interview “Interview with Tom Truscott: On the Environment and Early Days of Usenet News.”
2. The paper was by Claude E. Shannon, “A Chess-Playing Machine”, *Scientific American*, February 1950, p. 48.
3. The next oldest paper Truscott found was by Alex Bernstein and M. de V. Roberts, “Computer versus Chess-Player,” *Scientific American*, June 1958.
4. This was the July, 1974 paper by Dennis M. Ritchie and Ken Thompson, “The Unix Time-Sharing System”, published in *Communications of the ACM*, Vol. 17 no. 7, pp. 365-375. A reference to chess is on p. 375.

5. Usenet Archives, Steve Bellovin, Wed Oct 10 19:48 PDT 1990: Available via ftp: weber.ucsd.edu <usenet.hist>.
6. E-mail correspondence from Tom Truscott. Ward Christensen and Randy Seuss had set their bulletin board up in Chicago on February 16, 1978, predating Usenet. They operated on a North Star Horizon 4 Mhz Z-80 CP/M machine with a 5 Mb drive for posting and reading of messages. (See "The Online User's Encyclopedia" by Bernard Aboba, Reading, MA, p. 59)
7. E-mail correspondence with Mark Horton, August 1995. Horton like Truscott was introduced to programming using BASIC as a high school student in 1970. He writes that he learned to program in BASIC, "first on the GE system, but that was expensive. First Portland and then San Dieguito HS's got access to HP 2000 BASIC systems with unlimited usage."
8. Mark Horton, Mon Oct 15 19:49 PDT 1990, Usenet History Archives Available via ftp: weber.ucsd.edu <usenet.hist>.
9. Mark Horton, Tue Nov 24 04:51 PST 1992, Usenet History Archives.
10. E-mail communication from Mark Horton.
11. E-mail communication from Truscott.
12. Rich Zellich, 16 Feb. 1982, posted on Usenet in post by btempleton, watmath.2114, Subject: ARPANET mailing list directory.
13. 17 Oct 1982, Zaleski at Ru-Gren, Subject: Why not AT&T for World Net by Michael Zaleski.
14. 19 Oct 1982, Greg Skinner, <uc.bds at MIT-EECS at MIT-MC>, Subject: Worldnet responses.
15. 03 June 1981, Jorge Phillips, Subject: administrivia.
16. cincy.151, fa.unix-wizards, cincy!chris, Tue Apr 7 13:16:12 1981, Subject: to unix-wizards.
17. A. Feather, pur-ee.123, net.general, pur-ee!aef, Mon Aug 24 15:13:14 1981, Subject: UUCP gateway.
18. esquire.127, net.general, Wed Aug 26 09:48:51, UUCP gateway, Re: A Feather's suggestion.
19. ucbvax.2946, fa.unix-wizards, Re: PROPER FORUM, mike@bmd70@BRL, Fri Sep 4 14:55:10 1981.
20. ucbvax.2858, Sat Aug 29 10:17:34 1981, purdue!cak.
21. Geoff Peck, ucbvax.2842, fa.unix-wizards, ARPANET access.
22. ucbvax.2946, fa.unix-wizards, Re: PROPER FORUM, mike@bmd70@BRL, Fri Sep 4 14:55:10 1981.
23. FA.unix-wizards, ucbvax.3198.
24. ucbvax.2955, Sat Sep 5 07:34:34 1981, from farber@udel. See description of CSNET in Appendix IV.
25. Net.news, cbosgd.113, Sat Oct 3 19:51:41 1981, Re news.
26. ucbvax.5782, fa.digest-p, Thu Jan 14 05:46:13 1982, From cStacey@MIT.AI.
27. NET.news, cbosgd.120, Tue Oct 13 20:56:30 1981, cbosgd!mark, Subject: Whether the sys and uuname files are

public.

28. NET.news, wolfvax.53, net.news, wolfvax!jcz, Mon Nov 2 21:47:32 1981, Net Names, In Real Life: Carl Zeigler, Location NCSU, Raleigh.

29. ucbarpa.1182, net.sources, Subject: ARPAVAX: Usenet, Tue, Apr 20, 1950:48 1982, misc/newsinfo, from eiss!ladm, Fri Mar 19 16:20:27.

30. Mark Horton, fa.unix-wizards, ucbyax.4080, Sun Sep 27 22:04:41 1981, Usenet membership.

31. NET.news, cbosgd.794, Wed Dec 23 21:28:32 1981, Subject: Proposed Usenet policies.

32. net.columbia, research!sjb, Thu Sep 17 07:28:50 1981, Adam Buchsbaum kept the official list of newsgroups and published it regularly to the net for several years in the mid 1980s.

33. E-mail correspondence from Mark Horton, Mon Jul 24 1995. MH "Mail Handler" was developed by Bruce Borden of the Rand Corp, with help from Stockton Gaines and Norman Shapiro, to be used on the ARPANET. (See "UNIX Communications" by Bart Anderson, Byran Costales & Harry Henderson, Carmel, Indiana, 1991, p.198.)

34. Aucbyonyx.118 NET.news utzoo!duke!decvax!ucbvax!Onyx:glickman Fri May 16 10:29:40 1980 New Netnews.

35. Bob Rosin, Bell Labs, Linroft, N.J., houxf.148, NET.general, houxf!rosin, Fri May 7 09:26:53 1982, Re: debugging microcode in writable control store.

36. NET.news, ihns.995, net.news, ihns!warren, Subject: Misconceptions about Bell Labs Netnews Content.

37. Human-Nets Digest, 28 May 1981.

38. NET.blfp, alanr, Subject: Remote Command Execution, File Installation, Tues Jul 21 10:42:15.

39. ihns!warren, ihns.995, Subj: Misconceptions about Bell Labs, Netnews Content.

40. purdue.139, net.general, net.news, cak, Sat Dec 17 19:27:08 1981, Subj: Freedom of the dataways.

41. NET.misc, dadlaA.98, net.misc, dadlaA!steve, Mon Mar 15 21:56:49 1982, Subject: Trivia on the Net.

42. Asri-unix.429, net.news, utzoo!decvax!ucbvax!menlo70!sri-unix!knutsen Tue Jan 5 17:46:42 1982, USENET policy, reposted from Date: 15 Dec 1981 at 1522-PST, From: Andrew Knutsen <knutsen@SRI-UNIX>, Subject: Re: read-only newsgroups (net.news cbosg.193)

43. E-mail from Timothy Murphy at the Trinity College. Murphy did the technical work to split uucp into 2 processes, which was necessary "as it was too large to run in the 64k (data+text) allowed on our pdp-11 under Unix edition 6," he explains.

44. E-mail correspondence from Teus Hagen, August 1995.

45. E-mail correspondence from Dan Lorenzeni, August 1995.

46. Dec. 15 1981 at 1522, Andrew Knutsen <knutsen@SRI-UNIX>. From: rti!mcnc!unc!duke!decvax!linus!philabs!mcvax!jim Wed, 3-Aug-83 01:12:41 EDT Jim McKie Mathematisch Centrum, Amsterdam ... {decvax|philabs}!mcvax!jim (mcvax.5322) net.news : Re: cost of sending netnews to aliens.

47. E-mail from Robert Elz, October, 1995. Elz remembers that “Johnstone arranged a link from Bell Labs. This one worked by Bell Labs using cu [call unix, i.e. an application to allow dialing out from one host to connect to another – telnet over phone lines, and had some primitive capture and send mechanisms, with no correctness checking] – with a back end process filtering the output so as not to overrun the IBM after end of line and such.”

48. E-mail from Piers Lauder.

49. A listing of all the newsgroups available by March, 1982 is in the appendix.

50. See for example the thunderclap in the Appendix III.

---

Thank you to Tom Truscott, Mark Horton, Rob Scott, Dik Winter, Russell Lowell and others on Usenet for their comments on an earlier draft and their helpful suggestions. In addition, thank you to Teus Hagen and Dan Lorenzeni for their helpful info about setting up the Cross-Atlantic link, Timothy Murphy for background on the link to Ireland, and to Robert Elz and Piers Lauder for information about the link from North America to Australia. Also, thanks to Henry Spencer and others at the University of Toronto for archiving early Usenet posts so folks can understand the early days of Usenet when it was possible to read every post. Also thanks to the Usenet pioneers and to Bruce Jones for setting up the Usenet history Archives at [weber.ucsd.edu <usenete.hist>](http://weber.ucsd.edu/~usenete.hist) and for making material available online.

---

## Appendix I

One of the Usenet pioneers, Henry Spencer, at the Zoology Department at the University of Toronto in Canada, archived Usenet from the date his site “zoo” joined Usenet in May 1981 to recent times. The earliest posts he archived are contained in the A-News archive, which covers posts that appeared on Usenet from May 1981 to 1983.

Another important source of early Usenet history has been gathered by a graduate student at the University of San Diego (UCSD) in California. Bruce Jones who began work to document the sociology of Usenet for his Ph.D. thesis, collected recollections and background from several of the Usenet pioneers and made them available online via anonymous ftp from [weber.ucsd.edu](http://weber.ucsd.edu) in the directory [<usenete.hist>](http://weber.ucsd.edu/~usenete.hist).

---

## Appendix II

### Two Early Lists of Newsgroups Appearing in Usenet in 1982

```
net.news.group
utcsrgv!utzoo!decvax!duke!chico!harpo!mhtsa!ihnss!cbosg!teklabs!t ekmdp!azure!curts
Tue Jan 26 13:50:13 1982
grouplist
```

FA groups are “from the ARPANET” and are mostly copies of mailing lists or “digests” distributed on that network. (A digest is a collection of mail put together by an editor and sent out every so often. It is much like a newsletter.)

A special convention applies to submissions to FA newsgroups. As previously described, you should not post directly to the newsgroup, since this will be seen by people on Usenet but not by the people on the arpanet who get the list directly mailed to them. Instead, send mail to the name of the group on site.

For example, to post an article to [fa.human-nets](mailto:fa.human-nets), you might mail to [chico!ucbvax!human-nets](mailto:chico!ucbvax!human-nets) (if chico is the proper route to get to ucgvax – this route varies depending on your system). FA groups and their corresponding mailing lists can reach a very large user community, including Usenet sites on UUCP, Berknet, BLN, and the ARPANET, as well as sites on the ARPANET which are not on Usenet, who get the news via direct electronic mailing.



The following is a list of digests:

NEWSGROUP	Description
fa.arms-d	Discussion and info on strategic weapons.
fa.arpa-bboard	Announcements that are posted to all arpanet bboards   are also fed into this newsgroup.
fa.digest-p	People who deal with digests. Mostly the people who   moderate them.
fa.editor-p	Interest group in computer editors, both text and program.
fa.energy	Topics relating to alternate energy production,   conservation, etc.
fa.human-nets	A daily moderated digest with discussions of computer-aided   human-to-human communications. Probably the most widely read   ARPANET publication.
fa.info-cpm	CP/M and other operating systems for micro computers.
fa.info-micro	Microprocessor and microcomputer discussions.
fa.info-terms	Opinions/queries about what's a good/bad computer terminal.
fa.info-vax	VAX interest group. Seems to be mostly VMS issues, but some   hardware discussions too.
fa.poli-sci	Political Science discussions digest.
fa.sf-lovers	Science Fiction book/movie reviews, etc.
fa.space	Digest containing comments on the space program and outer   space in general.
fa.tcp-ip	Digest relating to the TCP and IP network protocols.
fa.telecom	Technical topics relating to telecommunications, especially   the telephone system. A digest recently spun off from   fa.human-nets.
fa.teletext	Teletext discusses all aspects of "esoteric" data systems.   This includes teletext, viewdata, closed-captioning, and   digicasting.
fa.unix-cpm	CPM/UNIX discussions.
fa.works	Interest group on personal workstations (e.g. Apollo, Perq,   Xerox Star, etc).

Newsgroups are intended to be available to all people on the entire network who read netnews. This does not mean they go to every machine, since some machines restrict the volume of news that comes in. It is assumed that users of such restricted machines can read news on another machine on which they have a login. Newsgroups reach all of Usenet (including Usenet sites on the ARPANET) but do not reach any sites that are not on Usenet. That is, Usenet is defined as all sites that net.all reaches.

NEWSGROUP	Description
net.general	General information.
net.applic	Applications programs for UNIX. Discussions seem to center around functional programming languages.
net.auto	General Information for automobile owners.
net.auto.vw	Subgroup net.auto – for owners of Volkswagon Rabbits.
net.aviation	General information about aviation.
net.bugs	General information about bug reports and fixes.
net.bugs.2bsd	Subgroup net.bugs – 2nd Berkley Software distribution
net.bugs.4bsd	Subgroup net.bugs – 4th Berkley software distribution
net.bugs.v7	Subgroup net.bugs – Version 7 or UNIX System III
net.chess	General information about computer chess. Gatewayed to ARPANET mailing list but appears as newsgroup rather than a digest.
net.columbia	General information on space shuttle and space programs
net.cycle	General information about motorcycles.
net.eunice	General information for sites running SRI Eunice system   which simulates UNIX on VMS.
net.games	Information and discussion on computer games.
net.games.rogue	Subgroup net.games – rogue
net.games.frp	Subgroup net.games – fantasy role playing games
net.games.trivia	Trivia contests and results.
net.ham-radio	Topics of interest to amateur radio operators.
net.jokes	The latest “good” joke you’ve heard?
net.lan	Local area network interest group.
net.lsi	Large Scale Integrated Circuit discussions.
net.misc	Miscellaneous discussions that start in net.general but   are not permanent enough for their own newsgroup.
net.movies	Movie reviews by members of Usenet.
net.music	Computer generated music.

-----  
net.news | Discussion of netnews itself.  
-----  
net.news.b | Subgroup net.news – specific to bnews.  
-----  
net.news.directory | to post all or part of the Usenet directory,  
-----  
net.news.group | for discussions about proposed new newsgroups,  
-----  
net.news.map | for discussions about maps of newsites.  
-----  
net.news.newsite | to announce a new site.  
-----  
net.news | for discussion of Usenet policies.  
-----  
net.oa | Office Automation/Word Processing interest group.  
-----  
net.periphs | Queries and discussions about particular peripherals. (“Does anyone have a driver for a framus-11?”)  
-----  
net.rec | General info on recreational (participation) sports.  
-----  
net.rec.bridge | Subgroup of net.rec – contract bridge.  
-----  
net.rec.scuba | Subgroup of net.rec – scuba diving.  
-----  
net.rec.ski | Subgroup of net.rec – skiing.  
-----  
net.records | Info and opinions about records (and tapes ?).  
-----  
net.rumor | For posting of rumors.  
-----  
net.sources | A place for sources and the distribution of material  
| in large volume. More for software distribution that | for general info.  
-----  
net.sport | General info about spectator sports.  
-----  
net.sport.baseball | Subgroup of net.sport – for baseball.  
-----  
net.sport.football | Subgroup of net.sport – for football.  
-----  
net.sport.hockey | Subgroup of net.sport – for hockey.  
-----  
net.taxes | Tax advice and queries.  
-----  
net.test | Test messages are posted here.  
-----  
net.travel | Requests, suggestions, and opinions about traveling  
-----  
net.ucds | Circuit drawing system.  
-----  
net.unix-wizards | ARPANET mailing list for UNIX Wizards. Anything and  
| everything relating to UNIX is discussed here. This

| list is gatewayed to the ARPANET mailing list  
| but appears like a regular newsgroup to Usenet.

---

This is the first pass at establishing a list of newsgroups. My intent is to update the list every week or so. Although this list is incomplete, it seemed that a partial list at the right time might be better than a complete list that arrives too late. If you have additions, corrections, or suggestions, please send them to me at:

ucbvax!teklabs!tekmdp!curts

Curt

>From cbosg!harpo!npois!eiss!ladm Fri Mar 19 16:20:27 1982

Subject: newsinfo.shell

Newsgroups: net.sources

Newsgroup naming conventions:

NO prefix= LOCAL ONLY

btl. = Bell Labs

net. = USENET wide categories

fa. = from ARPA-Net (no return feed, except via mail)

\_\_\_\_.all= everything in category "\_\_\_\_".

The netnews newsgroups of most interest are:

general: local general information

btl.all : BTL Everything.

net.general: general net-wide announcements

net.bugs.v7: reports of bugs and/or solutions to UNIX V7

net.news.b: news about our version of netnews

FA groups are "From the ARPANET" and are mostly copies of mailing lists or "digests" distributed on that network. (A digest is a collection of mail put together by an editor and sent out every so often. It is much like a newsletter.)

NEWSGROUP | Description last update 3/19/82

---

fa.arms-d | Discussion and info on strategic weapons.

fa.arpa-bboard | Announcements that are posted to all arpanet bboards  
| are also fed into this newsgroup.

fa.digest-p | People who deal with digests. Mostly the people who  
| moderate them.

fa.editor-p | Interest group in computer editors, both text and program.

fa.energy | Topics relating to alternate energy production,  
| conservation, etc.

fa.human-nets | A daily moderated digest with discussions of computer-aided  
| human-to-human communications. Probably the most widely read  
| ARPANET publication. AVAILABLE PRINTED ONLY.

fa.info-cpm | CP/M and other operating systems for micro computers.

fa.info-micro | Microprocessor and microcomputer discussions.

fa.info-terms | Opinions/queries about what's a good/bad computer terminal.  
fa.info-vax | VAX interest group. Seems to be mostly VMS issues, but some  
| hardware discussions too.  
fa.poli-sci | Political Science discussions digest. TURNED OFF.  
fa.sf-lovers | Science Fiction book/movie reviews, etc. PRINTED ONLY.  
fa.space | Digest containing comments on the space program and outer  
| space in general. This is fed to net.space, ALSO PRINTED.  
fa.tcp-ip | Digest relating to the TCP and IP network protocols.  
| TURNED OFF.  
fa.telecom | Technical topics relating to telecommunications, especially  
| the telephone system. A digest recently spun off from  
| fa.human-nets. PRINTED ONLY.  
fa.teletext | Teletext discusses all aspects of "esoteric" data systems.  
| This includes teletext, viewdata, closed-captioning, and  
| digicasting.  
fa.unix-cpm | CPM/UNIX discussions.  
fa.works | Interest group on personal workstations (e.g. Apollo, Perq,  
| Xerox Star, etc).

---

NEWSGROUP | Description last update: 3/19/82

---

net.general | General information.  
net.followup | follow-up articles to those posted in net.general  
net.applic | Info - applicative language and related architecture.  
net.auto | General Information for automobile owners.  
net.auto.vw | Subgroup net.auto - for owners of Volkswagon Rabbits.  
net.aviation | General information about aviation.  
net.bugs | General information about bug reports and fixes.  
net.bugs.2bsd | Subgroup net.bugs - 2nd Berkley Software distribution  
net.bugs.4bsd | Subgroup net.bugs - 4th Berkley software distribution  
net.bugs.v7 | Subgroup net.bugs - Version 7 or UNIX System III  
net.columbia | General information on space shuttle and space programs  
net.cooks | Interest group - food, cooking, cookbooks, and recipes.  
net.cse | Computer Science Education  
net.cycle | General information about motorcycles.  
net.dcom | data communication - modems,multiplexers,port selectors etc.  
net.eunice | Info on sites using SRI Eunice - simulates UNIX on VMS  
net.games | Information and discussion on computer games.  
net.games.rog | (net.games.rogue) Subgroup net.games - rogue  
net.games.frp | Fantasy Role Playing games  
net.games.triv | (net.games.trivia) Trivia contests and results.  
net.ham-radio | Topics of interest to amateur radio operators.  
net.jokes | The latest "good" joke you've heard?  
net.lan | Local area network interest group.  
net.lsi | Large Scale Integrated Circuit discussions.  
net.math | mathematical discussions (eg. what is  $\lim_{x \rightarrow 0} \log(x) - \log(x)$ )  
net.micro | micro-computers, see also fa.info-micro.  
net.misc | Discussions not permanent enough for a newsgroup.  
net.movies | Movie reviews by members of USENET.  
net.music | Computer generated music.  
net.news | Discussion of netnews itself, and its policies

net.news.b | Subgroup net.news - specific to bnews.  
net.news.direc | (net.news.directory) all or part of the USENET directory  
net.news.group | for discussions about proposed new newsgroups.  
net.news.map | for discussions about maps of newsites.  
net.news.newsi | (net.news.newsite) to announce a new site.  
net.ia | Office Automation/Word Processing interest group.  
net.periphs | Queries and discussions about particular peripherals.  
net.rec | General info on recreational (participation) sports.  
net.rec.boat | boating (sail and motor???)  
net.rec.bridge | contract bridge.  
net.rec.scuba | scuba diving.  
net.rec.ski | skiing.  
net.rec.skydiv | (net.rec.skydive) sky diving  
net.records | Info and opinions about records (and tapes ?).  
net.rumor | For posting of rumors.  
net.sf-lovers | Science Fiction Lovers - undigested from fa.sf-lovers  
net.sources | For large volume material, source program distribution  
net.space | Space programs and research - undigested from fa.space  
net.sport | General info about spectator sports.  
net.sport.base | (net.sport.baseball) Subgroup of net.sport - for baseball.  
net.sport.foot | (net.sport.football) Subgroup of net.sport - for football.  
net.sport.hock | (net.sport.hockey) Subgroup of net.sport - for hockey.  
net.taxes | Tax advice and queries.  
net.test | Test messages are posted here.  
net.travel | Requests, suggestions, and opinions about traveling  
net.ucds | Circuit drawing system.  
net.unix-wiza | (net.unix-wizards) Discussion of UNIX - gatewayed to ARPANET  
net.wines | Info and recommendations about wines and alcoholic beverages

-----  
from ucbarpa.1182, net.sources,  
utzoo!decvax!duke!harpo!npois!ucbvax!ARPAVAX:usenet, Tue Apr 20  
19:50:48 1982, misc/newsinfo

---

### Appendix III

“Like a thunderclap from the sky, the pipeline slays the problem.”

Following is a script provided by Tom Truscott. Such particularly powerful pipelines have been referred to by Ken Thompson as “hunderclaps”.\*\*\*\*

To find how often each word appears in files named book.1, book.2, ...:

```
cat book* | tr -cs '[A-Z][a-z]' '\012' | sort | uniq -c | sort -nr | more
```

-----

Truscott notes “Alas, thanks to so many \*IX variants this pipeline doesn’t always work, on some the underlined text needs to be ‘[\012\*]’.”

---

### Appendix IV

1983 Post on CSNET

Relay-Version: version B 2.10 5/3/83; site utzoo.UUCP  
Posting-Version: version B 2.10 5/3/83; site utcsrgv.UUCP  
Path: utzoo!utcsrgv!peterr  
From: peterr@utcsrgv.UUCP (Peter Rowley)  
Newsgroups: net.news  
Subject: Usenet Inc == CSNET ?  
Message-ID: <1857@utcsrgv.UUCP>  
Date: Sun, 31-Jul-83 05:48:11 EDT  
Article-I.D.: utcsrgv.1857  
Posted: Sun Jul 31 05:48:11 1983  
Date-Received: Sun, 31-Jul-83 08:27:27 EDT  
Organization: CSRG, University of Toronto  
Lines: 65

>From literature and a presentation given at the Toronto USENIX, my impression is that CSNET is...a form with as little bureaucracy as possible, and with non-profit status. Some excerpts from "csnet news", no. 1 (may 83):

"CSNET was established in 1981 with a 5 year grant from the National Science Foundation. From the beginning, the goal of the project has been to create an independent network, fully supported by membership dues and service fees. With this in mind, NSF has adopted a schedule of dues and fees for 1983, and the Coordination and Information Centre (CIC) has developed models of expected service charges. ...

CSNET dues support software maintenance and development, hardware, tech.staff, and other expenses associated with shared resources such as the PhoneNet relays, the Name Server facility, and the CIC. Dues also defray the costs of documentation, network management, and network governance activities. Each member of CSNET is required to pay yearly dues to support CSNET operation."

Here are the current dues:

Industrial: \$30K/yr    Government: \$10K/yr    Univ: \$5K/yr

The two relays mentioned are at Rand Corp. in Santa Monica and U. Delaware. A PhoneNet site dials into the closest relay, except where a site has been moved to the other relay for load balancing. An X25Net (Telenet) site accesses CSNet by buying special hardware from Telenet, getting X.25/TCP-IP sw from Purdue (runs only on BSD) and paying Telenet \$1000/mo. for a 4800 baud line, packet charges not included. The break-even point for phone/telenet is about \$22K/yr.

PhoneNet sites pay service fees too:

	Day	Evening/Night
Dial-out	.80	.40
Dial-in	.10	.10

These are on top of any telco charges and are in terms of \$/connect-minute. The CSNet model predicts service fees of between \$125 and \$625 a year for light-heavy PhoneNet mail users (note that there is no news). X25 service fees have not been established yet.

All the details can't be gone into in the space of a news article, but it appears that CSNET provides the reliable mail and name server services desired, and could handle news.

The bureaucracy involved is the 6 member management committee, which appears to be responsible to the NSF, and the >=4 member staff of the CIC, located at BBN in Cambridge Mass.

---

Comment:

It appears that a lot of work has gone into setting CSNET up, together with a good deal of money from the NSF. For this to happen again with Usenet would probably require private, for-profit funding (public funders would say "Use CSNET"), resulting in a for-profit organization probably more expensive than CSNET.

The obvious statement to make is that sites who want a "Usenet Inc." should cough up the CSNET dues and join that network, then help/urge them to get news going. Note that this would not satisfy the user-pay advocates, as univ's (and government sites) get a break on dues. I would suggest, however, that Usenet as it is, with no bureaucracy at all, is a valuable thing to preserve. It has an active, informed community capable of contributing software and manpower to the net. If a new news/mail pkg is created, no bureaucracy need be convinced of its worth...all that must be done is to post it to net.sources. Those who feel it can be used, in the given environment (with all requisite compatibility problems), may use it. This seems as democratic as one could hope for.

peter rowley, U. Toronto CSRG

{cornell,watmath,ihnp4,floyd,allegra,utzoo,uw-beaver}!utcsrgv!peterr  
or {cwruecmp,duke,linus,lsuc,research}!utzoo!utcsrgv!peterr

Relay-Version: version B 2.10 5/3/83; site utzoo.UUCP  
Posting-Version: version B 2.10 5/3/83; site umcp-cs.UUCP  
Path: utzoo!linus!decvax!harpo!seismo!rlgvax!cv!umcp-cs!chris  
From: chris@umcp-cs.UUCP  
Newsgroups: net.news  
Subject: CSNet  
Message-ID: <1341@umcp-cs.UUCP>  
Date: Mon, 1-Aug-83 18:09:10 EDT  
Article-I.D.: umcp-cs.1341  
Posted: Mon Aug 1 18:09:10 1983  
Date-Received: Mon, 1-Aug-83 22:49:50 EDT  
Organization: Univ. of Maryland, Computer Science Dept.  
Lines: 18

CSNet, as it stands now, would collapse instantly under the weight of netnews. Without some way of distributing the load, the two relays would not be able to handle all the traffic. That's the basic trouble with a centralized system, and is the reason for all the research into distributed computing. You can only squeeze so much into a single system.

- Chris

PS Don't get me wrong, I think CSNet is actually doing quite well. It hasn't been around long enough to solve the initial problems (like slow software). Supposedly MMDF II is a big step in increasing speed. - ACT

--

In-Real-Life: Chris Torek, Univ of MD Comp Sci  
UUCP: {seismo,allegra,brl-bmd}!umcp-cs!chris  
CSNet: chris@umcp-cs

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