BigDum

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Contents

Chapter 1

BigDum

1.1 Big Dummy's Guide to the Internet Edition 1.1

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                                     Big Dummy's Guide to the Internet
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TABLE OF CONTENTS

 Welcome              Foreward                    Preface
by Shari Steele      by Mitchell Kapor            by Adam Gaffin
EFF                  co-founder                   reporter
                     Electronic Freedom Foundation  Middlesex News


 Chapter 1:    Setting up/getting connected/jacking in.
 Chapter 2:    E-mail.
 Chapter 3:    Usenet I -- the Global watering hole.
 Chapter 4:    Usenet II
 Chapter 5:    Mailing lists and Bitnet.
 Chapter 6:    Telnet (Mining the Net, part I)
 Chapter 7:    FTP (Mining the Net, part I)
 Chapter 8:    Gophers, WAISs and the World-Wide Web
 Chapter 9:    Advanced E-mail.
 Chapter 10:   News of the world.
 Chapter 11:   IRC, MUDs and other diversions.
 Chapter 12:   Education and the Net.

 Conclusion:   The end?
 Appendix A:   Lingo
 Appendix B:   Lists and info: Net sites, Unix commands ...
Electronic Frontier Foundation Information
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1.2 Welcome

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Welcome to the Big Dummy's Guide to the Internet.

The genesis of the Big Dummy's Guide was a few informal conversations,
which included Mitch Kapor of the  Electronic Frontier Foundation  (EFF)
and Steve Cisler of Apple Computer, Inc. in June of 1991.  With the
support of Apple Computer, EFF hired a writer (Adam Gaffin) and actually
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took on the project in September of 1991.

The idea was to write a guide to the Internet for folks who had little or
no experience with network communications. We intended to post this Guide
to "the 'net" in ASCII and HyperCard formats and to give it away on disk,
as well as have a print edition available for a nominal charge. With the
consolidation of our offices to Washington, DC, we were able to put the
Guide on a fast track. You're looking at the realization of our dreams --
version one of the Guide. At the time I'm writing this, we're still
fishing around for a book publisher, so the hard-copy version has not yet
been printed. We're hoping to update this Guide on a regular basis, so
please feel free to send us your comments and corrections.

EFF would like to thanks the folks at Apple, especially Steve Cisler of the
Apple Library, for their support of our efforts to bring this Guide to you.
We hope it helps you open up a whole new world, where new friends and
experiences are sure to be yours. Enjoy!

Shari Steele
ssteele@eff.org
Director of Legal Services and Community Outreach
Electronic Frontier Foundation
July 15, 1993

1.3 Foreward

Foreward

By Mitchell Kapor,
co-founder, Electronic Frontier Foundation.

        "As a net is made up of a series of ties, so everything in
    this world is connected by a series of ties. If anyone thinks
    that the mesh of a net is an independent, isolated thing, he is
    mistaken. It is called a net because it is made up of a series
    of interconnected meshes, and each mesh has its place and
    responsibility in relation to other meshes."

                                                    -- Buddha

    New communities are being built today. You cannot see them, except
on a computer screen. You cannot visit them, except through your
keyboard. Their highways are wires and optical fibers; their language a
series of ones and zeroes.
    Yet these communities of cyberspace are as real and vibrant as any
you could find on a globe or in an atlas. Those are real people on the
other sides of those monitors. And freed from physical limitations,
these people are developing new types of cohesive and effective
communities - ones which are defined more by common interest and purpose
than by an accident of geography, ones on which what really counts is
what you say and think and feel, not how you look or talk or how old you
are.
    The oldest of these communities is that of the scientists, which

actually predates computers. Scientists have long seen themselves as an
international community, where ideas were more important than national
origin. It is not surprising that the scientists were the first to adopt
the new electronic media as their principal means of day- to-day
communication.

     I look forward to a day in which everybody, not just scientists, can
enjoy similar benefits of a global community.

     But how exactly does community grow out of a computer network? It
does so because the network enables new forms of communication.

     The most obvious example of these new digital communications media
is electronic mail, but there are many others. We should begin to think
of mailing lists , newsgroups , file and document archives, etc. as
just the first generation of new forms of information and communications
media. The digital media of computer networks, by virtue of their design
and the enabling technology upon which they ride, are fundamentally
different than the now dominant mass media of television, radio,
newspapers and magazines. Digital communications media are inherently
capable of being more interactive, more participatory, more egalitarian,
more decentralized, and less hierarchical.

     As such, the types of social relations and communities which can be
built on these media share these characteristics. Computer networks
encourage the active participation of individuals rather than the passive
non-participation induced by television narcosis.

     In mass media, the vast majority of participants are passive
recipients of information. In digital communications media, the vast
majority of participants are active creators of information as well as
recipients. This type of symmetry has previously only been found in
media like the telephone. But while the telephone is almost entirely a
medium for private one-to-one communication, computer network
applications such as electronic mailing lists , conferences, and
bulletin boards, serve as a medium of group or "many-to-many"
communication.

     The new forums atop computer networks are the great levelers and
reducers of organizational hierarchy. Each user has, at least in theory,
access to every other user, and an equal chance to be heard. Some U.S.
high-tech companies, such as Microsoft and Borland, already use this to
good advantage: their CEO's -- Bill Gates and Philippe Kahn -- are
directly accessible to all employees via electronic mail. This creates a
sense that the voice of the individual employee really matters. More
generally, when corporate communication is facilitated by electronic
mail, decision-making processes can be far more inclusive and
participatory.

     Computer networks do not require tightly centralized administrative
control. In fact, decentralization is necessary to enable rapid growth
of the network itself. Tight controls strangle growth. This
decentralization promotes inclusiveness, for it lowers barriers to entry
for new parties wishing to join the network.

     Given these characteristics, networks hold tremendous potential to
enrich our collective cultural, political, and social lives and enhance
democratic values everywhere.

     And the Internet, and the UUCP and related networks connected to
it, represents an outstanding example of a computer network with these
qualities. It is an open network of networks, not a single unitary
network, but an ensemble interconnected systems which operate on the
basis of multiple implementations of accepted, non-proprietary
 protocols , standards and interfaces.

   One of its important characteristics is that new networks, host

systems, and users may readily join the network -- the network is open to
all.
     The openness (in all senses) of the Internet reflects, I believe, the
sensibilities and values of its architects. Had the Internet somehow
been developed outside the world of research and education, it's less
likely to have had such an open architecture. Future generations will be
indebted to this community for the wisdom of building these types of open
systems.
     Still, the fundamental qualities of the Net, such as its
decentralization, also pose problems. How can full connectivity by
maintained in the face of an ever-expanding number of connected networks,
for example? What of software bugs that bring down computers, or human
crackers who try to do the same? But these problems can and will be
solved.
     Digital media can be the basis of new forms of political discourse,
in which citizens form and express their views on the important public
issues of the day. There is more than one possible vision of such
electronic democracy, however. Let's look at some examples of the
potential power, and problems, of the new digital media.
      The idea of something called an "electronic town meeting" received
considerable attention in 1992 with Ross Perot's presidential campaign
(or, at least, its first incarnation).
     Perot's original vision, from 20 or so years ago, was that viewers
would watch a debate on television and fill out punch cards which would
be mailed in and collated. Now we could do it with 800 telephone numbers.
     In the current atmosphere of disaffection, alienation and cynicism,
anything that promotes greater citizen involvement seems a good idea.
People are turned off by politicians in general -- witness the original
surge of support for Perot as outsider who would go in and clean up the
mess -- and the idea of going right to the people is appealing,
     What's wrong with this picture? The individual viewer is a passive
recipient of the views of experts. The only action taken by the citizen
is in expressing a preference for one of three pre-constructed
alternatives. While this might be occasionally useful, it's
unsophisticated and falls far short of the real potential of electronic
democracy. We've been reduced to forming our judgments on the basis of
mass media's portrayal of the personality and character of the candidates.
     All this is in contrast to robust political debates already found on
various on-line computer systems, from CompuServe to Usenet . Through
these new media, the issues of the day, ranging from national security in
the post-Cold War era to comparative national health care systems, are
fiercely discussed in a wide variety of bulletin boards, conferences, and
 newsgroups .
     What I see in online debate are multiple active participants, not
just experts, representing every point of view, in discussions that
unfold over extended periods of time. What this shows is that, far from
being alienated and disaffected from the political process, people like
to talk and discuss -- and take action -- if they have the opportunity to
do so. Mass media don't permit that. But these new media are more akin
to a gathering around the cracker barrel at the general store -- only
extended over hundreds, thousands of miles, in cyberspace, rather than in
one physical location.
     Recent years have shown the potential power of these new media. We
have also seen several of examples where talk translated into action.
     In 1987, the Federal Communications Commission proposed changing the
way certain online providers paid for access to local phone service.
Online, this quickly became known as the modem tax and generated a

storm of protest. The FCC withdrew the idea, but not quickly enough: the
"modem tax" has penetrated so deeply into the crevices of the Net that it
has taken up a permanent and ghostly residence as a kind of virtual or
cognitive virus, which periodically causes a re-infection of the systems
and its users. FCC commissioners continue to receive substantial mail on
this even though the original issue is long dead; in fact, it has
generated more mail than any other issue in the history of the FCC.
     More recently, Jim Manzi, chairman of Lotus Development Corp.,
received more than 30,000 e-mail messages when the company was getting
ready to sell a database containing records on tens of millions of
Americans. The flood of electronic complaints about the threat to
privacy helped force the company to abandon the project. Issues of narrow
but vital interest to the online community give a hint of the organizing
power of the Net.
     In August, 1991, the managers of a Soviet computer network known as
Relcom stayed online during an abortive coup, relaying eyewitness
accounts and news of actions against the coup to the West and to the rest
of Russia.
     And many public interest non-profit organizations and special
interest groups already use bulletin boards heavily as a means of
communicating among their members and organizing political activity.
     But all is not perfect online. The quality of discourse is often
very low. Discussion is often trivial and boring and bereft of
persuasive reason. Discourse often sinks to the level of "flaming," of
personal attacks, instead of substantive discussion. {" Flaming " link Chap4/ ↩
   FLAMES 0}. Those with
the most time to spend often wind up dominating the debate – a triumph of
quantity of time available over quality of content.
     It seems like no place for serious discussion. Information overload
is also a problem. There is simply far too much to read to keep up with.
It is all without organization. How can this be addressed?
     Recent innovations in the design of software used to connect people
to the Net and the process of online discussion itself reveal some hope.
     Flaming is universal, but different systems handle it in different
ways. Both the technology and cultural norms matter.
     On Usenet , for instance, most news reader applications support a
feature known as a "killfile," which allows an individual to screen out
postings by a particular user or on a particular subject. It is also
sometimes referred to as "the bozo filter." This spares the user who is
sufficiently sophisticated from further flamage, but it does nothing to
stop the problem at its source.
     Censorship would be one solution. But what else can be done without
resorting to unacceptably heavy-handed tactics of censorship? There is a
great tradition of respect for free speech on these systems, and to
censor public postings or even ban a poster for annoying or offensive
content is properly seen as unacceptable, in my opinion.
     Some systems use cultural norms, rather than software, to deal with
flame wars. These online communities have developed practices which
rely more on a shared, internalized sense of appropriate behavior than
on censorship, for instance. The WELL (Whole Earth 'Lectronic Link) is
a relatively small online conferencing system based in the San Francisco
Bay area. On the WELL, individuals who get into a fight are encouraged
to move the discussion out of the public conference and into e-mail. The
encouragement is provided not only by the host of the conference, but
also by the users. It is part of the culture, not part of the technology.
     WELL hosts are volunteers who facilitate the discussion of a
particular subject. While they have the power to censor individual

postings, the power is very rarely used and only as a last resort, as it has been found that dispute resolution by talking it out among the parties is a superior method of problem solving in the long run.

It is not an accident that the WELL has a uniquely high quality of conversation. Nor is it coincidental that it developed as a small and originally isolated community (now on the Net) which gave it a chance to develop its own norms or that key management of the system came from "The Farm," a large, successful commune of the 1960's and 1970's led by Stephen Gaskin.

We still know very little about the facilitation of online conversations. It is a subject well worth further formal study and experimentation.

Some problems have to do with the unrefined and immature format and structure of the discussion medium itself. The undifferentiated stream of new messages marching along in 80 columns of ASCII text creates a kind of hypnotic trance. Compare this with the typical multiplicity of type fonts, varied layouts, images, and pictures of the printed page.

New media take time to develop and to be shaped. Reading text on a terminal reminds me of looking at the Gutenberg Bible. The modern book took a century to develop after the invention of printing with movable type and the first Western printed books. Aldus Manutius and the inventions of modern typefaces, pagination, the table of contents, the index, all of which gave the book its modern form, came later, were done by different people, and were of a different order than the invention of printing with movable type itself. The new electronic media are undergoing a similar evolution.

Key inventions are occurring slowly, for example, development of software tools that will allow the dissemination of audio and video across the Net. This type of software has usually been sone so far by volunteers who have given away the results. It's a great thing, but it's not sufficient, given how hard it is to develop robust software. Innovation in the application space will also be driven by entrepreneurs and independent software vendors at such point as they perceive a business opportunity to create such products (it would be nice if creators did it for art's sake but this seems unlikely).

There are some requirements to provide incentives to attract additional software development. This requires a competitive free market in network services at all levels to serve the expanding user demand for network services. It requires a technologically mature network able to support these services.

And there must be a user population, current or prospective, interested in paying for better applications -- and not just the current base of technically sophisticated users and students, though they will absolutely benefit.

There are multiple classes of new application opportunities.
 e-mail is overloaded because there aren't readily available alternatives yet. New and different kinds of tools are needed for collaborative work. Computer conferencing, as it evolves, may be sufficient for discussion and debate. But by itself, it cannot really support collaborative work, in the sense of readily enabling a group to make decisions efficiently, represent and track the status of its work process. Trying to run an organization via email mailing list is very different than trying to have a discussion.

Computer networks can only fully realize their potential as innovative communications media in an environment which encourages free and open expression.

In some countries, legal principles of free speech protect freedom

of expression in traditional media such as the printed word. But once
communication moves to new digital media and across crosses international
borders, such legal protections fall away. As John Perry Barlow, the
co-founder of EFF puts it: "In Cyberspace, the First Amendment is a
local ordinance." There is no international legal authority which
protects free expression on trans-national networks. Article 19 of the
Universal Declaration of Human Rights calls for the protection of free
expression in all media, but the declaration falls far short of being
binding.
     And if we're to take seriously the idea of the electronic online
forum, we have to deal with the access issue. if the only people with
access to the medium are well-educated, affluent, techno-literate elite,
it won't be sufficiently inclusive to represent all points of view.
     We also need, fundamentally, a better infrastructure (the highway
system for information). As we move from the high-speed Internet to the
even more powerful National Research and Education Network, we need to
look at how to bring the power of these new media into the homes of
everybody who might want it. Addressing this "last mile" problem (phone
networks are now largely digitized, fiber-optic systems, except for the
mile between your home and the nearest switching station) should be a
prioarity.
     Computer networks will eventually become ubiquitous around the
world. We should therefore be concerned with the impact on society that
they have, the opportunities to improve society, and the dangers that
they pose.   Fundamentally, we are optimists who believe in the potential
of networks to enhance democratic values of openness, diversity, and
innovation.
     Because the medium is so new, it is important now to develop
policies at the national and international level that help achieve the
potential of computer networks for society as a whole. By the time
television was recognized as a vast wasteland it was already too late to
change. There is a rare opportunity to develop policies in advance of a
technologically and economically mature system which would be hard to
change.

1.4 Preface

By Adam Gaffin,
Senior Reporter, Middlesex News, Framingham, Mass., adamg@world.std.com

     This book will help you join the global village known as Cyberspace
or the Net. Millions of people around the world already spend parts of
their lives in this land without frontiers,

    @{ " What this book is for " link WHATFOR   }
    @{ " How the Net started   " link FIRSTLINKS }
    @{ " How the Net works   " link HOWWORKS   }

FYI:

     Steven Levy's book, "Hackers: Heroes of the Computer Revolution,"
(Anchor Press/Doubleday, 1984). describes the early culture and ethos
that ultimately resulted in the Internet and Usenet.
     John Quarterman's "The Matrix: Computer Networks and Conferencing

Systems Worldwide" (Digital Press, 1990) is an exhaustive look at
computer networks and how they connect with each other.
    "FYI on Where to Start - A Bibliography of Internetworking
Information," by Tracy LaQuey, Joyce K. Reynolds, Karen Roubicek, Mary
Stahl and Aileen Yuan (August, 1990), is an excellent list of articles,
books, newsletters and other sources of information about the Internet.
It's available via ftp from nic.ddn.mil in the rfc directory as
rfc1175.txt (see the FTP chapter for information on getting documents
through FTP).

The following people, whether they know it or not, helped put this
together. My thanks, especially to Nancy!

Rhonda Chapman, Jim Cocks, Tom Czarnik, Christopher Davis, David
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Phillips, Nancy Reynolds, Helen Trillian Rose, Barry Shein, Jennifer
"Moira" Smith, Gerard van der Leun, Scott Yanoff.

1.5   Preface (1 of 3) -- What this book is for

    With this book, you will be able to use the Net to:

    = Stay in touch with friends, relatives and colleagues around the
      world, at a fraction of the cost of phone calls or even air
      mail.

    = Discuss everything from archaeology to zoology with people from
      around the world.

    = Tap into hundreds of information databases and libraries
      worldwide.

    = Retrieve any of thousands of documents, journals, books and
      computer programs.

    = Stay up to date with wire-service news and sports, and
      government weather reports.

    = Play live, "real time" games with dozens of other people at once.

    And you will have become the newest member of this ever growing
community. If you stay and contribute, the Net will be richer for it --
and so will you.
    But it will take a sense of adventure, a willingness to learn and an
ability to take a deep breath every once in awhile.
    Visiting the Net today is a lot like journeying to a foreign
country. You know there are many things to see and do, but everything at
first will seem so, well, foreign.
    When you first arrive, you won't be able to read the street signs.
You'll get lost. If you're unlucky, you may even run into some natives
who'd just as soon you went back to where you came from. If this weren't

enough, the entire country is constantly under construction; every day,
it seems like there's something new for you to figure out.

    Here's where you take a deep breath. Fortunately, most of the
natives are actually friendly. In fact, the Net actually has a rich
tradition of helping out visitors and newcomers. With few written guides
for ordinary people, the Net has grown in large part one person at a time
-- if somebody helps you learn your way around, it's almost expected
you'll repay the favor some day by helping somebody else.

    So when you connect, don't be afraid to ask for help. You'll be
surprised at how many people will try to direct you around.

    And that leads to another fundamental thing to remember:

                    You can't break the Net!

    As you travel the Net, your computer may freeze, your screen may
erupt into a mass of gibberish. You may think you've just disabled a
million-dollar computer somewhere -- or even your own personal computer.
Sooner or later, this feeling happens to everyone -- and likely more than
once. But the Net and your computer are hardier than you think, so relax.
You can no more break the Net than you can the phone system. You are
always in the driver's seat. If something goes wrong, try again. If
nothing at all happens, you can always disconnect. If worse comes to
worse, you can turn off your computer. Then take a deep breath. And
dial right back in. Leave a note for the person who runs the computer to
which you've connected to ask for advice. Try it again. Persistence pays.

1.6   Preface (2 of 3) -- FIRST LINKS

    In the 1960s, researchers began experimenting with linking computers
to each other and to people through telephone hook-ups, using funds from
the U.S Defense Department's Advanced Research Projects Agency (ARPA).
    ARPA wanted to see if computers in different locations could be
linked using a new technology known as packet switching, which had the
promise of letting several users share just one communications line.
Previous computer networking efforts had required a line between each
computer on the network, sort of like a train track on which only one
train can travel at a time. The packet system allowed for creation of a
data highway, in which large numbers of vehicles could essentially share
the same lane. Each packet was given the computer equivalent of a map
and a time stamp, so that it could be sent to the right destination,
where it would then be reassembled into a message the computer or a human
could use.
    This system allowed computers to share data and the researchers to
exchange electronic mail, or e-mail. In itself, e-mail was something of
a revolution, offering the ability to send detailed letters at the speed
of a phone call.
     As this system, known as ARPANet, grew, some enterprising college
students (and one in high school) developed a way to use it to conduct
online conferences. These started as science-oriented discussions, but
they soon branched out into virtually every other field, as people
realized the power of being able to "talk" to hundreds, or even
thousands, of people around the country.
    In the 1970s, ARPA helped support the development of rules, or
protocols, for transferring data between different types of computer

networks. These "internet" (from "internetworking") protocols made it
possible to develop the worldwide Net we have today.

    By the close of the 1970s, links developed between ARPANet and
counterparts in other countries. The world was now tied together in a
computer web.

    In the 1980s, this network of networks, which became known
collectively as the Internet, expanded at a phenomenal rate. Hundreds,
then thousands, of colleges, research companies and government agencies
began to connect their computers to this worldwide Net. Some
enterprising hobbyists and companies unwilling to pay the high costs of
Internet access (or unable to meet stringent government regulations for
access) learned how to link their own systems to the Internet, even if
"only" for e-mail and conferences. Some of these systems began offering
access to the public. Now anybody with a computer and modem -- and
persistence -- could tap into the world.

    In the 1990s, the Net grows at exponential rates. Some estimates
are that the volume of messages transferred through the Net grows 20
percent a month. In response, government and other users have tried in
recent years to expand the Net itself. Once, the main Net backbone in
the U.S. moved data at 1.5 million bits per second. That proved too slow
for the ever increasing amounts of data being sent over it, and in recent
years the maximum speed was increased to 45 million bits per second. Even
before the Net was able to reach that speed, however, Net experts were
already figuring out ways to pump data at speeds of up to 2 billion bits
per second -- fast enough to send the entire Encyclopedia Britannica
across the country in just one or two seconds.

1.7   Preface (3 of 3) -- HOW IT WORKS

    The worldwide Net is actually a complex web of smaller regional
networks.

    To understand it, picture a modern road network of trans-
continental superhighways connecting large cities. From these large
cities come smaller freeways and parkways to link together small towns,
whose residents travel on slower, narrow residential ways.

    The Net superhighway is the high-speed Internet. Connected to this
are computers that user a particular system of transferring data at high
speeds. In the U.S., the major Internet backbone theoretically can
move data at rates of 45 million bits per second (compare this to the
average home modem, which has a top speed of roughly 2400 bits per
second). This internetworking "protocol" lets network users connect to
computers around the world.

    Connected to the backbone computers are smaller networks serving
particular geographic regions, which generally move data at speeds around
1.5 million bits per second.

    Feeding off these in turn are even smaller networks or individual
computers.

    Nobody really knows how many computers and networks actually make up
this Net. Some estimates say there are now as many as 5,000 networks
connecting nearly 2 million computers and more than 15 million people
around the world. Whatever the actual numbers, however, it is clear they
are only increasing.

    There is no one central computer or even group of computers running
the Internet -- its resources are to be found among thousands of
individual computers. This is both its greatest strength and its

greatest weakness.   The approach means it is virtually impossible for
the entire Net to crash at once -- even if one computer shuts down, the
rest of the network stays up. But thousands of connected computers can
also make it difficult to navigate the Net and find what you want. It is
only recently that Net users have begun to develop the sorts of
navigational tools and "maps" that will let neophytes get around without
getting lost.
       The vast number of computers and links between them ensure that the
network as a whole will likely never crash and means that network users
have ready access to vast amounts of information. But because resources
are split among so many different sites, finding that information can
prove to be a difficult task -- especially because each computer might
have its own unique set of commands for bringing up that information.
       While the Internet was growing, parallel networks developed. Large
commercial services such as CompuServe and GEnie began to offer network
services to individuals. Phone companies developed their own
electronic-mail services. Some universities started their own
international network. Hobbyists began networks such as Fidonet for MS-
DOS computers and UUCP for Unix machines.
       Today, almost all of these parallel networks are becoming connected.
It is now possible to send electronic mail from CompuServe to MCIMail,
from Internet to Fidonet, from Bitnet to CompuServe. In some cases,
users of one network can now even participate in some of the public
conferences of another.
       But the Net is more than just a technological marvel. It is human
communication at its most fundamental level. The pace may be a little
quicker when the messages race around the world in a few seconds, but
it's not much different from a large and interesting party. You'll see
things in cyberspace that will make you laugh; you'll see things that
will anger you. You'll read silly little snippets and new ideas that
make you think. You'll make new friends and meet people you wish would
just go away.
       Major network providers continue to work on ways to make it easier
for users of one network to communicate with those of another. Work is
underway on a system for providing a universal "white pages" in which you
could look up somebody's electronic-mail address, for example. This
connectivity trend will likely speed up in coming years as users begin to
demand seamless network access, much as telephone users can now dial
almost anywhere in the world without worrying about how many phone
companies actually have to connect their calls.
       And as it becomes easier to use, more and more people will join this
worldwide community we call the Net.
       Being connected to the Net takes more than just reading conferences
and logging messages to your computer; it takes asking and answering
questions, exchanging opinions -- getting involved.
       If you chose to go forward, to use and contribute, you will become a
citizen of Cyberspace. If you're reading these words for the first time,
this may seem like an amusing but unlikely notion -- that one could
"inhaibit" a place without physical space. But put a mark beside these
words. Join the Net and actively participate for a year. Then re-read
this passage. It will no longer seem so strange to be a "citizen of
Cyberspace." It will seem like the most natural thing in the world.

1.8 Afterward: The revolution is just beginning.

New communications systems and digital technologies have already meant dramatic changes in the way we live. Think of what is already routine that would have been considered impossible just ten years ago. You can browse through the holdings of your local library -- or of libraries halfway around the world -- do your banking and see if your neighbor has gone bankrupt, all through a computer and modem.

Imploding costs coupled with exploding power are bringing ever more powerful computer and digital systems to ever growing numbers of people. The Net, with its rapidly expanding collection of databases and other information sources, is no longer limited to the industrialized nations of the West; today the web extends into once remote areas from Siberia to Zimbabwe. The cost of computers and modems used to plug into the Net, meanwhile, continue to plummet, making them ever more affordable.

Cyberspace has become a vital part of millions of people's daily lives. People form relationships online, they fall in love, they get married, all because of initial contacts in cyberspace, that ephemeral ``place'' that transcends national and state boundaries. Business deals are transacted entirely in ASCII. Political and social movements begin online, coordinated by people who could be thousands of miles apart.

Yet this is only the beginning.

We live in an age of communication, yet, the various media we use to talk to one another remain largely separate systems. One day, however, your telephone, TV, fax machine and personal computer will be replaced by a single ``information processor'' linked to the worldwide Net by strands of optical fiber.

Beyond databases and file libraries, power will be at your fingertips. Linked to thousands, even millions of like-minded people, you'll be able to participate in social and political movements across the country and around the world.

How does this happen? In part, it will come about through new technologies. High-definition television will require the development of inexpensive computers that can process as much information as today's work stations. Telephone and cable companies will compete to see who can bring those fiber-optic cables into your home first. High- speed data networks, such as the Internet, will be replaced by even more powerful systems.

Vice President Albert Gore, who successfully fought for a landmark funding bill for a new high-speed national computer network in 1990, talks of creating "information superhighways.''

Right now, we are in the network equivalent of the early 1950s, just before the creation of the Interstate highway system. Sure, there are plenty of interesting things out there, but you have to meander along two-lane roads, and have a good map, to get to them.

Creation of this new Net will also require a new communications paradigm: the Net as information utility. The Net remains a somewhat complicated and mysterious place. To get something out of the Net today, you have to spend a fair amount of time with a Net veteran or a manual like this. You have to learn such arcana as the vagaries of the Unix cd command.

Contrast this with the telephone, which now also provides access to large amounts of information through push buttons, or a computer network such as Prodigy, which one navigates through simple commands and mouse clicks.

Internet system administrators have begun to realize that not all people want to learn the intricacies of Unix, and that that fact does not make them bad people. Coming years will see the development of simpler

interfaces that will put the Net's power to use by millions of people,
just as the number of host systems offering public access to the Net will
skyrocket.

Gophers and Wide-Area Information Servers have become two of the
fastest growing applications on the Net. They are relatively simple to
use and yet offer access to vast amounts of information. Mail programs
and text editors such as Pico and Pine promise much of the power of older
programs such as emacs at a fraction of the complexity.

Some software engineers are looking at taking this even further, by
creating graphical interfaces that will let somebody navigate the
Internet just by clicking on the screen with a mouse or by calling up an
easy text editor, sort of the way one can now navigate a Macintosh
computer -- or a commercial online service such as Prodigy.

Then there are the Internet services themselves.

For every database now available through the Internet, there are
probably three or four that are not. Government agencies are only
slowing beginning to connect their storehouses of information to the Net.
Several commercial vendors, from database services to booksellers, have
made their services available through the Net.

Few people now use one of the Net's more interesting applications.
A standard known as MIME lets one send audio and graphics files in a
message. Imagine opening your e-mail one day to hear your
granddaughter's first words, or a "photo" of your friend's new house.
Eventually, this standard could allow for distribution of even small
video displays over the Net.

All of this will require vast new amounts of Net power, to handle
both the millions of new people who will jump onto the Net and the new
applications they want. Replicating a moving image on a computer screen
alone takes a phenomenal amount of computer bits, and computing power to
arrange them.

The legislation pushed by Gore in 1991 will eventually replace the
existing Internet in the U.S. with the National Research and Education
Network.

At the center of NREN will be a backbone that, in one second, will
be able to move as much as 3 billion bits of information from coast to
coast -- the equivalent of shipping the contents of a large encyclopedia
from New York to Los Angeles electronically. That seems like a silly
thing to do. But that kind of speed allows for widespread distribution
of complex files, such as video loops, without bogging down the entire
Net. Its capacity will let millions more people onto the Net.

As these "superhighways" grow, so will the "on ramps," for a high-
speed road does you little good if you can't get to it.   The costs of
modems seem to fall as fast as those of computers. High-speed modems
(9600 baud and up) are becoming increasingly affordable. At 9600 baud,
you can download a satellite weather image of North America in less
than two minutes, a file that, with a slower modem could take up to 20
minutes to download. Eventually, homes could be connected directly to a
national digital network. Most long-distance phone traffic is already
carried in digital form, through high-volume optical fibers. Phone
companies are ever so slowly working to extend these fibers the "final
mile" to the home. The @" Electronic Frontier Foundation " link EFF} is working ↵
    to
ensure these links are affordable.

Beyond the technical questions are increasingly thorny social,
political and economic issues. Who is to have access to these services,
and at what cost? If we live in an information age, are we laying the

seeds for a new information under class, unable to compete with those
fortunate enough to have the money and skills needed to manipulate new
communications channels? Who, in fact, decides who has access to what?
As more companies realize the potential profits to be made in the new
information infrastructure, what happens to such systems as Usenet ,
possibly the world's first successful anarchistic system, where everybody
can say whatever they want?
        What are the laws of the electronic frontier? When national and
state boundaries lose their meaning in cyberspace, the question might
even be: WHO is the law? What if a practice that is legal in one country
is "committed" in another country where it is illegal, over a computer
network that crosses through a third country? Who goes after computer
crackers?
        What role will you play in the revolution?

1.9   Appendix A: Lingo

ASCII   Has two meanings. ASCII is a universal computer code
                for English letters and characters. Computers store
                all information as binary numbers. In ASCII, the
                letter "A" is stored as 1000001, whether the computer
                is made by IBM, Apple or Commodore. ASCII also refers
                to a method, or protocol, for copying files from one
                computer to another over a network, in which neither
                computer checks for any errors that might have been
                caused by static or other problems.

ANSI   Computers use several different methods for deciding
                how to put information on your screen and how your
                keyboard interacts with the screen. ANSI is one of
                these "terminal emulation" methods. Although most
                popular on PC-based bulletin-board systems, it can also
                be found on some Net sites. To use it properly, you
                will first have to turn it on, or enable it, in your
                communications software.

 ARPANet   A predecessor of the Internet. Started in 1969 with
                funds from the Defense Department's Advanced Projects
                Research Agency.

 backbone   A high-speed network that connects several powerful
                computers. In the U.S., the backbone of the Internet is
                often considered the NSFNet, a government funded link
                between a handful of supercomputer sites across the
                country.

Baud   The speed at which modems transfer data. One baud is
                roughly equal to one bit per second. It takes eight
                bits to make up one letter or character. Modems rarely
                transfer data at exactly the same speed as their listed
                baud rate because of static or computer problems. More
                expensive modems use systems, such as Microcom Network
                Protocol (MNP), which can correct for these errors or

                            which "compress" data to speed up transmission.

 BITNet   Another, academically oriented, international computer
                 network, which uses a different set of computer
                 instructions to move data. It is easily accessible to
                 Internet users through e-mail, and provides a large
                 number of conferences and databases. Its name comes from
                 "Because It's Time." "

Bounce   What your e-mail does when it cannot get to its
                 recipient -- it bounces back to you.

Command line   On Unix host systems, this is where you tell the
                 machine what you want it to do, by entering commands.

 Communications A program that tells a modem how to work.
 software

Daemon   An otherwise harmless Unix program that normally works
                 out of sight of the user. On the Internet, you'll most
                 likely encounter it only when your e-mail is not
                 delivered to your recipient -- you'll get back your
                 original message plus an ugly message from a "mailer
                 daemon.

 Distribution   A way to limit where your Usenet postings go. Handy for
                 such things as "for sale" messages or discussions of
                 regional politics.

Domain   The last part of an Internet address , such as "news.com."

Dot   When you want to impress the net veterans you meet at
                 parties, say "dot" instead of "period," for example: "My
                 address is john at site dot domain dot com."

Dot file   A file on a Unix public-access system
                 that alters the way you or your messages interact with
                 that system. For example, your .login file contains
                 various parameters for such things as the text editor you
                 get when you send a message.   When you do an ls command,
                 these files do not appear in the directory listing; do ls
                 -a to list them.

Down   When a public-access site runs into technical trouble,
                 and you can no longer gain access to it, it's down.

 Download   Copy a file from a host system to your computer. There
                 are several different methods, or protocols, for
                 downloading files, most of which periodically check the
                 file as it is being copied to ensure no information is
                 inadvertently destroyed or damaged during the process.
                 Some, such as XMODEM, only let you download one file at
                 a time. Others, such as batch-YMODEM and ZMODEM, let
                 you type in the names of several files at once, which
                 are then automatically downloaded.

 EMACS   A standard Unix text editor that beginners hate.

E-mail   Electronic mail -- a way to send a private message to
                  somebody else on the Net. Used as both noun and verb.

Emoticon   See smiley.

F2F   Face to Face. When you actually meet those people you
                  been corresponding with/flaming.

FAQ   Frequently Asked Questions. A compilation of answers to
                  these. Many Usenet newsgroups have these files, which
                  are posted once a month or so for beginners.

Film at 11   One reaction to an overwrought argument: "Imminent death
                  of the Net predicted. Film at 11."

Finger   An Internet program that lets you get some bit of
                  information about another user, provided they have first
                  created a .plan file.

Flame   Online yelling and/or ranting directed at somebody else.
                  Often results in flame wars, which occasionally turn into
                   holy wars

Followup   A Usenet posting that is a response to an earlier
                  message.

Foo/foobar   A sort of online algebraic place holder, for example: "If
                  you want to know when another site is run by a for-
                  profit company, look for an address in the form of
                  foo@foobar.com."

Fortune cookie   An inane/witty/profund comment that can be found around
                  the net.

Freeware   Software that doesn't cost anything.

FTP   File-transfer Protocol. A system for transferring files
                  across the Net.

Get a life   What to say to somebody who has, perhaps, been spending a
                  wee bit too much time in front of a computer.

GIF   Graphic Interchange Format. A format developed in the
                  mid-1980s by CompuServe for use in photo-quality graphics
                  images. Now commonly used everywhere online.

GNU   Gnu's Not Unix. A project of the Free Software
                  Foundation to write a free version of the Unix operating
                  system.

Handshake   Two modems trying to connect first do this to agree on
                  how to transfer data.

Hang   When a modem fails to hang up.

Holy war   Arguments that involve certain basic tenets of faith,

about which one cannot disagree without setting one of
these off. For example: IBM PCs are inherently superior to
Macintoshes.

Host system   A public-access site; provides Net access to people
               outside the research and government community.

IMHO   In My Humble Opinion.

 Internet   A worldwide system for linking smaller computer
               networks together. Networks connected through the
               Internet use a particular set of communications
               standards to communicate, known as TCP/IP.

 Killfile   A file that lets you filter Usenet postings to some
               extent, by excluding messages on certain topics or from
               certain people.

Log on/log in Connect to a host system or public-access site.

Log off   Disconnect from a host system.

Lurk   Read messages in a Usenet newsgroup without ever saying
               anything.

 Mailing list Essentially a conference in which messages are delivered
               right to your mailbox, instead of to a Usenet newsgroup.
               You get on these by sending a message to a specific e-
               mail address, which is often that of a computer that
               automates the process.

MOTSS   Members of the Same Sex. Gays and Lesbians online.
               Originally an acronym used in the 1980 federal census.

Net.god   One who has been online since the beginning, who knows
               all and who has done it all.

Net.personality Somebody sufficiently opinionated/flaky/with plenty of
               time on his hands to regularly post in dozens of
               different Usenet newsgroups, whose presence is known to
               thousands of people.

Net.police   Derogatory term for those who would impose their
               standards on other users of the Net. Often used in
               vigorous flame wars (in which it occasionally mutates to
               net.nazis).

Netiquette   A set of common-sense guidelines for not annoying others.

Network   A communications system that links two or more
               computers. It can be as simple as a cable strung
               between two computers a few feet apart or as complex
               as hundreds of thousands of computers around the world
               linked through fiber optic cables, phone lines and
               satellites.

Newbie   Somebody new to the Net. Often used derogatorily by

                          net.veterans who have forgotten that, they, too, were
                          once newbies who did not innately know the answer to
                          everything.

 Newsgroup   A Usenet conference.

NIC   Network Information Center. As close as an Internet-
                 style network gets to a hub; it's usually where you'll
                 find information about that particular network.

NSA line eater   The more aware/paranoid Net users believe that the
                 National Security Agency has a super-powerful computer
                 assigned to reading everything posted on the Net.   They
                 will jokingly (?) refer to this line eater in their
                 postings.

NSF   National Science Foundation. Funds the NSFNet, the
                 backbone of the Internet in the U.S.

Offline   When your computer is not connected to a host system
                 or the Net, you are offline.

Online   When your computer is connected to an online service,
                 bulletin-board system or public-access site.

Ping   A program that can trace the route a message takes from
                 your site to another site.

.plan file   A file that lists anything you want others on the Net to
                 know about you. You place it in your home directory on
                 your public-access site. Then, anybody who fingers
                 you, will get to see this file.

Post   To compose a message for a Usenet newsgroup and then
                 send it out for others to see.

Postmaster   The person to contact at a particular site to ask for
                 information about the site or complain about one of
                 his/her user's behavior.

 Protocol   The method used to transfer a file between a host
                 system and your computer. There are several types,
                 such as Kermit, YMODEM and ZMODEM.

Prompt   When the host system asks you to do something and
                 waits for you to respond. For example, if you see
                 "login:" it means type your user name.

README files   Files found on FTP sites that explain what is in a given
                 FTP directory or which provide other useful information
                 (such as how to use FTP).

Real Soon Now   A vague term used to describe when something will
                 actually happen.

RFC   Request for Comments. A series of documents that

describe various technical aspects of the Internet.

ROTFL   Rolling on the Floor Laughing. How to respond to a
                 particularly funny comment.

ROT13   A simple way to encode bad jokes, movie reviews that give
                 away the ending, pornography, etc. Essentially, each
                 letter in a message is replace by the letter 13 spaces
                 away from it in the alphabet. There are online decoders
                 to read these; nn has one built in.

RTFM   Read the, uh, you know, Manual. Often used in flames
                 against people who ask computer-related questions that
                 could be easily answered with a few minutes with a
                  manual. More politely: RTM.

 Screen capture A part of your communications software that
                 opens a file on your computer and saves to it whatever
                 scrolls past on the screen while connected to a host
                 system.

 Server   A computer that can distribute information or files
                 automatically in response to specifically worded e-mail
                 requests.

Shareware   Software that is freely available on the Net, but which,
                 if you like and use it, you should send in the fee
                 requested by the author, whose name and address will be
                 found in a file distributed with the software.

.sig file   Sometimes, .signature file. A file that, when placed in
                 your home directory on your public-access site, will
                 automatically be appended to every Usenet posting you
                 write.

.sig quote   A profound/witty/quizzical/whatever quote that you
                 include in your .sig file.

Signal-to-noise The amount of useful information to be found in a given
ratio   Usenet newsgroup. Often used derogatorily, for example:
                 "the signal-to-noise ratio in this newsgroup is pretty low."

Snail mail   Mail that comes through a slot in your front door.

Sysadmin/   The system administrator/system operator; the person
sysop   who runs a host system.

TANSTAAFL   There Ain't No Such Thing as a Free Lunch.

TCP/IP   Transmission Control Protocol/Internet Protocol. The
                 particular system for transferring information over a
                 computer network that is at the heart of the Internet.

 Telnet   A program that lets you connect to other computers on
                 the Internet.

 Terminal   There are several methods for determining how your

```
 emulation      keystrokes and screen interact with a public-access
                site's operating system.  Most communications programs
                offer a  choice of "emulations" that let you mimic the
                keyboard that would normally be attached directly to
                the host-system computer.

Upload          Copy a file from your computer to a host system.

User name       On most host systems, the first time you connect you
                are asked to supply a one-word user name.  This can be
                any combination of letters and numbers.

UUCP            Unix-to-Unix CoPy.  A method for transferring  Usenet
                postings and e-mail that requires far fewer net resources
                than TCP/IP, but which can result in considerably slower
                transfer times.

VT100           Another  terminal-emulation  system.  Supported by many
                communications program, it is the most common one in
                use on the Net.  VT102 is a newer version.
```

1.10   Information & lists

```
As you have probably discovered, the Net is massive and complex. These
lists may help you begin your journey through its mazes. You will find
other lists on the Net itself. Remember to ask -- ask a friend, ask on
 Usenet , ask your system administrator -- ask if there is something you
```

want but can't find. It's probably out there somewhere.

```
Internet resources:
    List of public-access sites
    Telnet sites
    Telnet BBSs
    FTP sites

Unix commands:
    7 essential Unix commands
    rn newsreader commands
    nn newsreader commands
    IRC commands

    [Press -Retrace- to return to this menu from the chosen node]
```

1.11   General Information About the Electronic Frontier Foundation

The Electronic Frontier Foundation (EFF) is a membership organization
that was founded in July of 1990 to ensure that the principles embodied
in the Constitution and the Bill of Rights are protected as new
communications technologies emerge.

>From the beginning, EFF has worked to shape our nation's communications
infrastructure and the policies that govern it in order to maintain and
enhance First Amendment, privacy and other democratic values. We believe
that our overriding public goal must be the creation of Electronic
Democracy, so our work focuses on the establishment of:

o   new laws that protect citizens' basic Constitutional rights as
they use new communications technologies,

o   a policy of common carriage requirements for all network
providers so that all speech, no matter how controversial, will be
carried without discrimination,

o   a National Public Network where voice, data and video services
are accessible to all citizens on an equitable and affordable basis, and

o   a diversity of communities that enable all citizens to have a
voice in the information age.

Join us!

I wish to become a member of the Electronic Frontier Foundation. I enclose:

$_____   Regular membership -- $40
$_____   Student membership -- $20

Special Contribution

I wish to make a tax-deductible donation in the amount of $_____ to
further support the activities of EFF and to broaden participation in the
organization.

Documents Available in Hard Copy Form

The following documents are available free of charge from the Electronic
Frontier Foundation. Please indicate any of the documents you wish to
receive.

____   Open Platform Proposal – EFF's proposal for a national
telecommunications infrastructure. 12 pages. July, 1992

____   An Analysis of the FBI Digital Telephony Proposal – Response of
EFF-organized coalition to the FBI's digital telephony proposal of Fall,
1992. 8 pages. September, 1992.

____   Building the Open Road: The NREN and the National Public Network – A
discussion of the National Research and Education Network as a prototype
for a National Public Network. 20 pages. May, 1992.

____   Innovative Services Delivered Now: ISDN Applications at Home, School,
the Workplace and Beyond – A compilation of ISDN applications currently in
use. 29 pages. January, 1993.

____   Decrypting the Puzzle Palace – John Perry Barlow's argument for strong
encryption and the need for an end to U.S. policies preventing its
development and use. 13 pages. May, 1992.

____   Crime and Puzzlement – John Perry Barlow's piece on the founding of
the Electronic Frontier Foundation and the world of hackers, crackers and
those accused of computer crimes. 24 pages. June, 1990.

____   Networks & Policy – A quarterly newsletter detailing EFF's activities
and achievements.

Your Contact Information:

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similar goals. However, we respect an individual's right to privacy and
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