Toward an Ethics and Etiquette for Electronic Mail

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Rand

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Toward an Ethics and Etiquette for Electronic Mail

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PREFACE

Electronic mail and message systems are playing an increasing role in the work we perform. The effects, and side-effects, of this new communication medium can be substantial. This report discusses a number of issues related to the use of electronic mail and presents a set of guidelines that should help lead to its effective use.

The report is not an introduction to electronic mail systems, computers, or communication systems. It does not survey existing mail systems or compare and contrast them. Rather, it is a discussion of some important general attributes of such systems, and the effects of those attributes on the quality and appropriateness of communication. The authors discuss the "etiquette" of sending and receiving electronic mail, drawing on personal observation of inappropriate or counterproductive use of these systems. By presenting some initial guidelines for their use, the authors hope to accelerate the process by which social customs and behavior appropriate to electronic mail become established, and thereby to accelerate the effective use of such systems.

The intended audience is persons possessing some familiarity with electronic mail systems, or considering adopting them for individual or institutional use. The guidelines discussed here may ease their transition to, and understanding of, this new and quite fundamentally different communication medium. In addition, the authors hope that the discussion will stimulate reflection by experienced users on their own evolving rules, and thus promote an exchange of views on appropriate electronic mail behavior.

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SUMMARY

Electronic mail and messaging systems, and electronic bulletin boards, are an incredibly powerful and effective means of communication. Because of this, they will grow and become one of the primary means of communication for most of us.

These media are quite different from any other means of communication. Some of the dimensions along which they differ are: speed (of initiating contact, and of transmitting information once contact is established); permanence of the message; cost of distribution, to individuals and to groups; an organization's desire and ability to filter, channel, record, and control messages; experience of both an individual and of our culture in dealing with this new medium.

Perhaps the most important phenomenon in electronic mail systems is the likelihood that the recipient will react negatively or inappropriately in reading material that might well have been misinterpreted. The misinterpretation results from several attributes of the medium that allow casual and formal messages to look superficially the same; that allow near-instantaneous, rather than reasoned, response; that don't permit feedback during the delivery of a message (as in personal conversation); and that require modification to many old traditions of communication. A related phenomenon is "flaming," in which emotions are expressed via electronic mail, sometimes labelled as such, and sometimes not. There is a need, even a greater willingness, to express emotion in electronic mail; if misused (for example, in hastily responding to a misinterpreted message), it impedes or even blocks communication.

A second very important phenomenon is the noncontrollability of who will see a message. Electronic messages seem quite evanescent, but in fact they can live on for years on disk archives, to reappear later in a variety of printed forms, some of which might be much more formal than was ever intended or foreseen.

Old rules of behavior in communicating do not automatically apply to this new medium. Some rules we have found useful for electronic mail (not all of which are unique to this medium) include:

In sending messages

- Create single-subject messages whenever possible
- Assume that any message you send is permanent
- Have in mind a model of your intended audience

- Keep the list of recipients and Cc:s to a minimum
- Separate opinion from non-opinion, and clearly label each
- If you must express emotion in a message, clearly label it
- Other content labels are useful
- Think about the level of formality you put in a message
- Identify yourself and your affiliations clearly
- Be selective in broadcasts for information
- Do not insult or criticize third parties without giving them a chance to respond.

In receiving and responding to messages

- If you receive a message intended for another person, don't just ignore it
- Avoid responding while emotional
- If a message generates emotions, look again
- Assume the honesty and competence of the sender
- Try to separate opinion from non-opinion while reading a message, so you can respond appropriately.
- Consider whom you should respond to
- Consider alternative media
- Avoid irrelevancies

In acting as a coordinator/leader of an interest group

- Perform relevant groupings
- Use uniform packaging, especially in the "Subject:" line
- Exercise reasonable editorship
- Timeliness is important.

Electronic mail is in its infancy, as is our understanding of it. We have collected some guidelines that seem to point in proper directions, and have personally used them in our own use of the medium. Many of them appear to be common sense in a new guise, but they are included because we've seen them violated in practice too often to ignore.

Electronic mail and messaging systems have novel characteristics that will lead toward their becoming a key, even dominant, communication medium in the coming decades. Understanding the unique attributes of this medium, and their effect on users, will help us all to avoid unwanted side-effects while obtaining the benefits from this new and important means of communication.

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I. AN EXAMPLE

Recently the following message[1] appeared in the electronic inbox of one of the authors:

```
Received: From RAND-RELAY by RAND-UNIX at Fri May 27 20:07:55 1983
Date: Friday, 27 May 1983 20:05-PDT
To: ISD-ALL at RAND-UNIX
Subject: I'm puzzled!
From: hearn at RAND-RELAY

Does anyone know this guy, or the report to which he refers?

------- Forwarded Message

Date: Friday, 27 May 1983 14:15-PDT
From: trw-unix!csuf!dlm
Received: from rand-unix by rand-relay.ARPA ; 27 May 83 18:48:39 PDT (Fri)
To: trw-unix!randvax!hearn@Rand-Relay

Subject: Sun Microstation

        I was given a copy of your trip report concerning SUN workstations
        dated Feb 2, 1983.  We are thinking of getting a couple of them
        ourselves, and I was wondering if you wouldn't mind giving me
        some updated impressions.  Have you dealt with SUN any more
        since then?

        Thanks in advance,

                        David L. Marks
                        Johnson International
                        ...!csuf!dav

------- End of Forwarded Message
```

In many respects, this is a typical electronic message. It is one of hundreds received each week by each author, and by thousands of other electronic mail users throughout the country. For example, the recipient's mail directory around that same time also contained:

---

[1]Some of the messages in this report have had names and affiliations altered to protect the privacy of the correspondents. All are based on real messages that have been sent or received by the authors. Any resemblance to actual people and places is probably the result of sporadic editing.

```
260   5/18   tora              Re: Danger! Psychologists at Work
261   5/19   francine          telephone message  <<Please call Mrs. Cutl
262   5/19   talbert           Re: /r/anderson/ARPA/sim.modeling ...
263   5/22   norm              Editor evaluations  <<------- Forwarded Me
264   5/26   norm              Darpa visit  <<------- Forwarded Message D
265   5/26   To:drezner         CPC matters  <<(1) One of the reasons I wa
266   5/26   drezner           Re: CPC matters  <<'m sorry I have not don
267   5/27   To:drezner         Latest Version of Draft CPC Report
268   5/27   hearn@RAND-RELAY   I'm puzzled!  <<Does anyone know this guy,
269   5/29   norm              A disappointing issue of CACM
270   5/29   edhall            Re: I'm puzzled!  <<The letter is from a f
271   5/30   norm              Moran's non-reply  <<It is of interest to
272   5/31   talbert           Re: schedule (revision of previous message
273   5/31   talbert           Proposal DARPA Meeting  <<Nancy, Please ar
274   5/31   nancy             Re: Proposal DARPA Meeting  <<I have reser
275   5/31   norm              Archival Films  <<When Bob Anderson left R
```

The message is typical because: It illustrates the ease with which messages can be forwarded to third (or fourth, . . .) parties; it shows some confusion resulting from this forwarding, in that the recipient doesn't know the sender or the context for the message; it contains rather complex message routing paths, showing that the message has gone through at least two separate electronic networks (ARPAnet and UUCP); and it illustrates the broadcast power of the medium—to resolve the question regarding the context of the message, the recipient (hearn) broadcast it to all members of the Information Sciences Department at The Rand Corporation, in an attempt to get an answer. Doing this was no more trouble than sending it to one person.

Our use of this example also illustrates some subtler aspects of electronic mail. We edited the form of the forwarded message slightly (but not the content) to fit within the format of this report. But the reader has no way of knowing how we changed the message before passing it on. There is a volatility to the medium, and yet a strange permanence.

II. WHAT THIS REPORT IS ABOUT

The authors of this report have each used electronic mail[1] for over 15 years. For this particular medium, that is a long time. In the longer cultural history of us all, it is a very short time. The medium is in its infancy, and is about to undergo an explosive expansion. Tens of thousands of people—secretaries, managers, professionals, school kids—will begin using electronic mail in the next decade, on their personal computers at home and professional workstations at work.

We believe that electronic mail is a fundamentally new medium. It is very different from telephone calls, interoffice memos, written letters, and face-to-face conversations. It has different uses and a different etiquette, borrowing in many cases from familiar ways of communicating, but permuting the rules in the process.

As our title suggests, we address both the ethics and etiquette of electronic communication. Ethics because certain behavior in dealing with electronic mail can have useful or adverse effects on the society as a whole and its members; etiquette because certain standard social norms must be reinterpreted and extended to cover this quite novel medium.

In this report, we explore how electronic mail is different, and give guidelines we've evolved or observed regarding its appropriate use. By doing this, we hope to accelerate a consensus about the development of appropriate rules of behavior for this medium. At the same time, we intend to make what we hope are interesting observations in general about the interactions between people and interactive electronic message systems. As one result, we hope to ease new users' introduction to this exciting medium, and make the process more pleasurable and useful to all concerned.

One emphasis in this report concerns the emotions that arise in both senders and recipients of electronic mail. Of course, emotions may be positive (e.g., joy, pleasure, pride in work) or negative (e.g., anger, disappointment, confusion). We emphasize guidelines that avoid generating negative emotions, because of their more harmful effects. We, as well as others involved in the medium, have found that strong, often negative emotions may arise in continued electronic mail

[1]In this report, we use the term *electronic mail* to cover both "traditional" electronic mail systems and electronic bulletin boards. There may be characteristics unique to electronic bulletin boards that are relevant to these guidelines, but we are not prepared to make that distinction at this time.

interactions—emotions that in retrospect may be inappropriate, and whose transmission (or lack of transmission) via the medium lead to further misunderstandings. A word, "flaming," has come into use to represent expressions of emotion in (and often caused by) electronic mail. We feel that this phenomenon is important, with many ramifications, and discuss it at some length.

This report is not, however, a tutorial on electronic mail or computers. We assume the reader is a regular user of interactive computer systems, and has probably been exposed to at least one electronic mail system. We do not define electronic mail, or survey existing systems. For our purposes, an electronic mail system is simply one that permits (at least) the creation, sending, receiving, filing, printing, and deleting of electronic messages, where a message may be one line of text or a multi-page document. Most systems also allow forwarding of messages received, scanning of the subject lines of a series of received messages, and the creation of lists of addressees that can act as mailing lists to simplify distribution of a message to a standard group of recipients.

From our examples a more inexperienced reader can pick up many of the key attributes of the medium. But unless you've used it, you will probably not understand why we emphasize some seemingly minor points and harp on rules of behavior that seem either obvious or strange. Until you've received too much electronic junk mail, or been offended by a message, or have inadvertently offended someone else (and wondered why), you will miss part of our message.

Incidentally, all the examples we use are real. We have only changed names and institutions at times when we could not contact the author and recipient to receive permission to use their name or their message.

III. ELECTRONIC MAIL IS A FUNDAMENTALLY NEW MEDIUM

A electronic message often looks very ordinary. What is the difference between receiving:

```
Date: Thursday, 19 May 1984 11:45-PDT
To: anderson at rand-unix
Subject: telephone message
From: francine at rand-unix

Please call Mrs. Cutler.  621-3208

francine
```

and having a pink telephone call slip put on your desk? Seemingly not much. But then again, you can log in from home or a hotel room while on a trip and get this message at 11 pm, and you can file it electronically so that six months later you can retrieve it by the word "Cutler" in case you mislay the phone number. Are these differences important? Not always, but at times they can crucially change the way you organize your work—which has some effect on the way you organize your life.

The most obvious "media" with which to compare electronic mail are face-to-face conversation, telephone calls, notes, interoffice memos, and regular mail. (We could add telegrams, telephone answering machines, etc., but at the risk of making ponderous what we hope is a brisk, readable analysis.)

Some of the key dimensions along which electronic mail (EM) should be compared with these other media are:

- Speed (to generate a message, to transmit one, to respond to one)
- Permanence (of the resulting message, with respect to both the sender and the recipient)
- Cost of distribution (to an individual, or a group)
- Organizations' desire and ability to filter, channel, record, and control messages for the perceived good of the organization
- Experience (of an individual with the medium, and of the culture in preparing an individual to use it)

- Accessibility
- Security and privacy
- Accountability and attributability.

We discuss each of these dimensions briefly below.

SPEED

Telephone calls are nearly instantaneous, *if you get through.* Note that there are two aspects of speed that we're concerned with: (1) the time to initiate a communication and (2) the immediacy of the feedback obtained during or after the communication. Only about 30 percent of calls reach the intended recipient on the first try. Sometimes "telephone tag" takes days to reach someone, whereas that same person might be selectively available—*at his or her convenience*—to read an electronic message before being in the right place at the right time to make a telephone connection. Due to the delays often experienced in establishing a telephone call, EM and telephone calls may be comparably fast, with EM having a slight advantage in convenience, and telephone calls having the advantage if subtlety, humor, or privacy (non-attributability) is required.

Face-to-face conversation is usually fastest and best, except when you have to travel to do it. Then it's one to three orders of magnitude slower. Again, time-to-initiate can dominate time-to-carry-out.

Interoffice memos usually take a day or so; regular mail takes several days or a week. Given that an electronic message is usually received by the recipient (if he or she is an active EM user) within 2 to 12 hours—assume an average of 6 hours—EM is from 4 to 28 times faster.

When it is necessary to conduct a dialog, with repeated to-and-from messages, both parties check for messages more frequently, and thereby exchange many messages in hours, rather than weeks' or months' duration for multiple written exchanges.

We are not saying that EM speed is good in itself, but it is clear that it is almost always faster than other common alternatives. As we pointed out, this is only one of many dimensions to consider, not an end in itself.

PERMANENCE

The permanence (or conversely, the volatility) of messages varies greatly according to the medium by which they're transmitted. This characteristic of electronic messages is quite unlike any other medium.

U.S. mail and inter-office memos are nonvolatile. Messages sent this way usually have a responsible author and are "part of the record." (For example, they usually survive in various paper files and can be subpoenaed—sometimes years or even decades later—if they are an important part of some transaction.) Through this permanence, the author remains accountable for what is stated in print.

Face-to-face conversations, by contrast, are volatile. They leave no trace. Telephone conversations are similar; although they can be recorded, our society has established a set of legal protections against recording a telephone call without the remote party's knowledge and permission. Even if recorded, that recording often cannot be used as legal evidence.

Electronic messages appear on the surface to be quite volatile. You see them as flickering characters on a green phosphor, as evanescent as fireflies. But consider the following possible attributes of an electronic mail system:

- That message might reside indefinitely on a disk file, and can therefore be recalled.
- The disk file may be backed up each evening onto tape, so that a copy of the message is now buried in an archived tape in the recipient's institution, or on an archived diskette on the recipient's home computer.
- The message can be printed and filed, thereby instantly achieving some of the attributes of a printed memo or letter.
- The message can be *altered*, then printed, thereby looking like a permanent, authentic copy of the received message, but having altered characteristics.
- The message can be forwarded to third parties (and then fourth, and so on) at the push of a button, without the original author's knowledge. It therefore achieves a form of permanence through its replication in perhaps hundreds of computer systems throughout the country. But nothing indicates whether those are authentic copies or not, even though they might well have the original author's name attached.
- Printed copies of the message, no longer under the control of the author, can be laser-printed or typeset. These may appear much more official and substantial than was ever intended by the author at the keyboard of his PC late one evening.

A theme pervades consideration of the permanence of an electronic message. It is not clear to whom it belongs: the sender? receiver? the organization owning the computer and paying for the service? As mul-

tiple copies are made and filed, possibly on different machines, the issue becomes even murkier. Again, we have no answer, but raise the issue for consideration.

Given the strange permanence yet volatility of electronic messages, Colonel David Russell (USA)—when Head of the Information Processing Techniques Office of the Defense Advanced Research Projects Agency and a heavy user of electronic mail to communicate nationwide with various project leaders and institutions—had a simple rule: Never say anything in an electronic message that you wouldn't want appearing, and attributed to you, in tomorrow morning's front-page headline in the *New York Times.*

One of the authors once violated this rule, and made some rather derogatory comments in an electronic message about someone far away in another organization. Through some path, that message found its way to the subject, causing considerable embarrassment. What was said in haste and in some anger at a particular moment did not disappear into the ether as would a phone conversation; the potential permanence of the remarks in electronic form was overlooked, providing a valuable lesson at considerable cost.

COST OF DISTRIBUTION

It costs 22 cents to mail a first-class letter, as of this writing. After the letter is produced (perhaps costing several dollars' worth of secretarial time and overhead), the cost of sending 50 copies is about 50 times that of sending one. And it's not a very interactive medium; replies dribble back from within several days to several months.

Inter-office memos can be mass-reproduced and distributed at small cost, because inter-office distribution systems are already in place within an organization. However, interactivity is again poor and cumbersome.

A telephone call distributed to a group (a conference call) is difficult beyond three or four participants. And if the group is geographically distributed, the cost and time to initiate become important factors.

Electronic mail, by comparison, allows communication with a wide, geographically dispersed set of respondents. The communication can be highly interactive, if recipients are expecting mail and frequently check for new messages. If ordinary telephone lines are used, the cost is not burdensome, and can be borne in part by the recipients, not the sender. (For example, the message may be deposited in an information system by the sender, but each recipient dials up and thereby incurs the cost of the call to read the message.) At 1200 baud, a 400-

character message (seven or eight lines) can be transmitted or received in 3-seconds' time over a telephone line.

Often, within modern organizations, the infrastructure for electronic mail is already in place, either using central computers with hundreds of terminals attached, leased phone lines, or satellite links, so that the incremental cost of electronic mail is nearly zero.

Many heavy users of electronic mail within the United States, primarily at research institutions, use the ARPAnet. The cost of this important network is heavily subsidized by the U.S. Defense Department, so that the true cost of using it is hidden from the user. In that sense, artificial patterns of use are springing up. On the other hand, an earlier form of communication network was also subsidized in its formative stages by the Defense Department: the Interstate highway system. (And earlier: railroads, telegraph, etc.) So the ARPAnet is not so artificial; rather, it is exploratory. And as the medium begins to mature—if that is not a contradiction for computer-based technologies—self-supporting systems will arise that pay their own costs, but have the same characteristics of ARPAnet pioneering systems. Notable among these latter systems is the UUCP (Unix-to-Unix Communication Protocol) system that links many computers throughout the nation. It permits a loose, heterogeneous system through which thousands of messages flow daily, with costs shared among all the participants as a natural result of its heterogeneity.

ORGANIZATIONS' ABILITY TO CONTROL THE MEDIUM

Traditionally, organizations have channeled and filtered their message flows along corporate hierarchical lines. For example:

- You do not send a memo to your supervisor's boss without a copy to your supervisor, and usually not without explicit prior permission.
- Secretaries filter incoming mail, telephone calls, and inter-office memos. For senior executives, ALL communications (other than in meetings and conferences) pass through this important filter.

These mechanisms have evolved to support the corporate structure, and to conserve the time and attention of its executives. Comparable mechanisms are not yet in place for electronic mail. Executives working in the evening at personal computers at home can send messages without "copying" their secretaries, resulting in those secretaries being "out of the loop" on matters of which they're normally aware. A junior executive can send a message to a senior executive, bypassing several

levels of control. Electronic mail tends to be more "democratic" (some would say "anarchic"). Already, there is the electronic equivalent of junk mail:

```
Received: from brl-tgr.arpa by rand-unix.ARPA; Sun, 6 Jan 85
Received: from usenet by BRL-TGR.ARPA id a008108; 6 Jan 85 5:43 EST
From: Joan Smith <grant!ggs>
Newsgroups: net.unix-wizards
Subject: ancient history
Message-Id: <1078@grant.UUCP>
Date: 5 Jan 85 15:05:27 GMT
To: unix-wizards@BRL-TGR

For those of us who are TOPS-10 alumni, today is a tenth anniversary.
What were the rest of you doing on January 5, 1975?
--

Joan Smith      AT&T Bell Laboratories, Murray Hill
Phone:          (201) 582-1256
Internet:       ggs@grant.uucp
UUCP:           grant!ggs  ( {allegra|ihnp4}!grant!ggs )
```

Of course, one person's junk mail is another's important message. The above message was sent to a group called "unix-wizards," at least some of whom may have been interested in the message's contents. But for many, it might well be the equivalent of junk mail. Also in this category are notices about cheese buying clubs, upcoming ski trips, and so forth that clog the mailboxes of people who aren't interested in those topics.

Do we need unlisted electronic mailboxes? Will there be authorization lists (electronic files, of course) showing who can send a message to whom within the organization? Should message systems automatically send an information copy to the author's secretary, unless explicitly overridden by the sender? Will "back channels" of information flow, made much easier and in some cases more anonymous by electronic mail, erode the traditional corporate structure? Is this good or bad? For whom?

We don't have answers to all these questions, but as use of electronic mail grows within traditional organizations, their answers will evolve along with the medium itself. The medium is capable of supporting filtering, gateways, permission lists, and other constraints if they are necessary. And yet the explosion of use of, and interest in, electronic mail is certainly tied to some extent to its freedom, its interactive broadcast capabilities, and its democratic nature. All we can say now is that it is a fundamentally new medium with significantly new characteristics, that cannot be treated with the old rules alone.

IV. TOWARD AN ETHICS AND ETIQUETTE FOR ELECTRONIC MAIL

People have had about 50,000 years' experience in the use of speech and gestures, 5,000 years' experience in writing, and about 100 years' use of the telephone. This cultural history should not be taken lightly; the entire fabric of our society has been shaped in significant part by cultural accommodations to our means of communicating.

As individuals of the species, living within a particular culture, we have a particular messaging history: from birth, we learn speaking roles and rules from conversations. By age 4 or 5, some basic telephone habits are learned (such as: "Say something when you pick up the receiver after it rings—don't just stand there silently"). By age 7, we are writing nontrivial messages. The average adult has accumulated hundreds—perhaps thousands—of rules of behavior regarding telephone and written ethics and etiquette, from practical experiences with these tools since those early years.

We have tried to indicate that electronic mail is different. Part of what we mean by that is that the old telephone or letter-writing rules of behavior do not automatically transfer over to this medium and work. You don't write business letters as electronic messages; messages are usually more informal. And yet electronic messages are not printed telephone conversations either. What we find is that the medium is different enough, and the average user's experience has been short enough, that problems arise. Meanings are misunderstood. Tempers flare and cause ill-conceived responses to be written. Many recipients' time is wasted reading content-free or irrelevant messages.

What we need is a new set of rules: how to be a constructive, courteous sender and receiver of electronic messages. We certainly do not have this set of rules, all tied up in a tidy package. We do, however, feel it is important to hasten the cultural evolution toward this goal. What follows, then, is a discussion of some of the important guidelines we've observed from experience. They are discussed in separate sections for Sending, Receiving, Responding, and Leading an Electronic Interest Group.

There is some overlap in these categories, but they provide structure to this complex topic. Within these categories, we highlight the issues related to the emotional impact of electronic messages, since the immediacy of the medium, and yet the remoteness of the participants, leads to some unique problems in this regard.

SENDING MESSAGES

Create single-subject messages whenever possible

You may have three separate things to tell your intended recipient. We argue that three short separate messages are better than one. Some reasons:

- Each of the messages can be filed, retrieved, and forwarded separately by the recipient (and sender), depending on the content.
- Subject lines in each message can be descriptive of the contents of each message, allowing more meaningful scanning of header listings of the messages in one's inbox.
- Replies can be tailored to specific messages, so that the reply's subject line accurately reflects the content that's being replied to. Also, others can be copied on the responses that apply to them, without being burdened by the parts that do not.

Assume that any message you send is permanent

The message will be sitting in someone's private files, or in a tape archive. Through the miracle of computer networking, it can reside on computers elsewhere in the world that you don't know about, forwarded there without your knowledge or consent. It can appear in any form from dot-matrix-printed to typeset at any time in the future. If this has a chilling effect on the content of your informal, chatty messages, that's probably appropriate. At the very least, make a quick assessment of the risks and benefits of what you type, and act accordingly.

Have in mind a model of your intended audience

When your message says, "Would you please review the draft document appended to this message, and give me your comments by noon tomorrow?" does that mean only people listed in the "To:" field, and not the "Cc:" recipients? Have you used more computer jargon in your message (lulled into techno-talk by using an electronic medium) than is appropriate to your audience?

Part of the model of your audience are some pertinent details such as their correct electronic mailing address. It is all too easy to send a message to "bob" because that's the one you know best, and ignore the fact that there are eight other "bob"s in the organization. In one company known to the authors, the login name "bob" belongs to the first

Bob that joined the company; others are "bobe", "bobw", etc. It is impolite to send electronic mail to unintended recipients, if only because they then feel obligated to take action, like notifying the sender or attempting to forward the message to the right party.

Do you know the recipient well enough, and have other channels of communication with him or her, so that attempts at electronic humor or irony will not be misinterpreted? These attempts usually don't work, and appear quite differently in the cold light of a new day, a new computer, or a new context.

Keep the list of recipients and Cc:s to a minimum

In one sense, it is too easy to send electronic mail. Electronic mailboxes fill up with peripheral material that needs to be scanned and continuously culled. If one of your recipients decides that someone else needs to see a message, it can be forwarded at that time.

Consider an extreme but possible case: A message contains a distribution list of 20 people. Let's say the message asks for comments on a position paper. Each of the recipients responds, copying all the original recipients. (Note that in many message systems, copying of all recipients is the normal practice, which must be explicitly overridden to prevent it from happening!) Each of those answers is in turn commented on by each original recipient, copying all original recipients. This process generates 421 messages *in every person's inbox*, with the total system containing 16,421 messages.[1] If each message takes an average of 100 characters, this process has used up 1.6 megabytes of disk storage. This is in addition, of course, to the social cost of all the human time and effort that has gone into this electronic correspondence.

Since answers to messages often copy all original recipients, try to avoid the combinatorial explosion by not proliferating recipients. Shoot with a rifle, not a shotgun.

There is a special case that is worthy of note: Most EM systems allow a number of recipients to be accessed by a single name, which becomes a kind of "distribution list." In this manner, communicating with a group is even easier: typing "project_alpha" gets you 20 names, and with a higher likelihood that they're all spelled right. The bad news is that one can forget that typing, or responding to, or copying this simple name can proliferate messages unconscionably.

---

[1]We assume in this example that copies of messages are made by the computer system, not just pointers to a "master copy" of a message.

A related phenomenon is the "special interest group," a named group of recipients having a common interest, and exchanging messages on that topic, across computers and across the country. Within these groups, a common means of reducing message proliferation is for a message author to ask, in the message itself, that replies be forwarded directly to him or her; the original author will summarize in a later message the replies received for the benefit of the group. This is a good idea that should become a common protocol, invoked by a commonly understood keyword or phrase in a message.

The following guidelines in sending electronic mail relate to issues with special emotional attributes. In other words, they can lead to bad feelings or misunderstanding quicker than normal, and much quicker than one might expect.

Separate opinion from non-opinion, and clearly label each

Your recipient, and especially unintended recipients further down the forwarding path, might not know you as well as your friend in the adjoining office, and may not know about the subject matter of the message well enough to distinguish opinion from fact.

If you must express emotion in a message, clearly label it

As mentioned above, sarcasm, humor, and irony often do not work in a message. Someone who knows your ascerbic wit less well might not "get it."

This doesn't mean every message must be dry and humorless. Especially on the ARPAnet, a whole tradition of "flaming" has developed, in which emotions are vented, but labelled as such. For example:

```
(Message inbox:431)
Received: by rand-unix.ARPA; Fri, 15 Feb 85 15:22:07 pst
From: John Schwartz <schwartz@rand-unix>
Date: 15 Feb 85 15:22:02 PST (Fri)
To: randvax!anderson
Subject: Re: Danger! Psychologists at Work

Just read the article in the Computer Journal about Frederickson's
studies on man-machine interfaces.  What cr*p!!  They're measuring
what can be measured, not what's important.  I'm so tired of
reading this kind of tripe that I'm cancelling my subscription.
(Flame, flame).  Perhaps a rational message about this will follow
after I calm down!
        John Schwartz
```

The tradition of labelling emotions has developed for two good reasons: (1) People feel strongly about many subjects, and want to express the strength of their feelings, and (2) there have been many examples of misinterpreted messages, in which emotions were misinterpreted or confused with the other content of the message. Labelling attempts at humor, anger, or sarcasm as such allows those feelings to be transmitted, but with less misinterpretation. Again, it helps to remember that there could well be readers of your message at a different place and time for whom even your labelled emotions might be inappropriate. Flaming is discussed further, below, in the subsection, "The Phenomenon of Flaming."

Other content labels are useful

In addition to labelling an emotional outburst as "flame," there are three other common labelling conventions of which we are aware[2]:

- A "smiley face" symbol, typed as ":->" or ":-)" (turn the page a quarter-turn clockwise for maximum effect) indicates the author intends something as a joke, or less frequently as an ironic smile.
- The keyword "spoiler" is used in the subject field of messages that reveal the plots of movies or the like.
- There is a convention of using public encryption for messages (including spoilers or obscene jokes) that might be offensive to casual readers. The keyword "rot13" is used in the subject field to indicate the use of a standard encryption algorithm.

All of these labels reduce shock, surprise, or disappointment in the reader that are normally avoided by other social conventions in face-to-face interactive conversations. They thus contribute to an expansion of normal etiquette into this newer medium.

Think about the level of formality you put in a message

Consider the following message:

```
(Message inbox:291)
Received: by rand-unix.ARPA; Fri, 21 Dec 84 11:40:18 pst
From: Bob Anderson <anderson@rand-unix>
Date: 21 Dec 84 11:40:12 PST (Fri)
To: randvax!anderson, randvax!gillogly, randvax!norm
Subject: meeting ..

we need to setup a meeting bet. jim you and i -- can you arange?
i'm free next wed.  thks.
```

[2]Our thanks to Jeff Rothenberg for reminding us of these conventions.

Much about this message conveys its informality: Lack of careful capitalization in the subject field, informal grammar, lack of specific form, content that appears to have been typed hurriedly (although this lack of rigor might well be deliberate).

Here's another example of a message:

```
(Message inbox:292)
Received: by rand-unix.ARPA; Fri, 21 Dec 84 11:48:09 pst
From: Bob Anderson <anderson@rand-unix>
Date: 21 Dec 84 11:48:02 PST (Fri)
To: randvax!fowles, randvax!martin, randvax!wilson, randvax!adamson
Subject: MEETING ON FY86 PLANNING, 2PM 12/28/84, CONFERENCE ROOM 1

There will be a meeting of the FY86 planning task force in
Conference Room 1 on December 28, 1984 at 2pm.  The Agenda
for the meeting is:

-----------------------------------------------------------
        Topic                       Presenter       Time
-----------------------------------------------------------
Strategic Business Plan             John Fowles     30 min.
Budget Forecast for FY86            Sue Martin      15  "
New Product Announcements           Peter Wilson    20  "
Action Items for 1st Qtr FY86       Jane Adamson    25  "
-----------------------------------------------------------
```

The formality of this message can been seen from the care that was put into it. It wasn't just dashed off some midnight before logging off, but rather was probably entered, then edited, using a word processing program.

Why do we care about the level of formality of a message? Simply because the content of the second message should be given more attention and care when received than the first. Words were chosen in the second, and therefore could be expected to be chosen carefully to convey the meaning intended. In the first, informal, message, the words might well have been dashed off, and should be taken quite lightly. You should not try to read deep meaning into a hasty note. (In our other written correspondence, we have other clues: scribbled notes on the back of an envelope are treated more informally than typed letters. However, on your terminal, all electronic messages in one sense look the same, so greater attention must be paid to what clues there are to their level of informality.)

The following three guidelines are especially relevant in sending a message to a bulletin board or interest group, where some or all recipients might not know each other personally.

Identify yourself and your affiliations clearly

This helps your recipients put your message in some context. If you put in a company affiliation for identification, and yet are expressing personal opinions, not company policy, that should be made clear. If you comment on a product, you should make clear any affiliation with that product and its manufacturer or distributor. (Some of these identifications are traditionally handled by the use, or deliberate non-use, of a corporate letterhead in sending a message. Many electronic mail systems have no equivalent yet,[3] so explicitly labelling of affiliation becomes more important.)

Here's an example of poor labelling of affiliation:

```
Received: from brl-vgr.arpa by rand-unix.ARPA; Sun, 14 Oct 84 15:28:36 pdt
Received: from mit-mc.arpa by BRL-VGR.ARPA id a029687; 14 Oct 84 18:17 EDT
Date: 14 October 1984 17:31-EDT
From: Eric Peters <PETERS@mit-mc.ARPA>
Subject: Great Plotting Program!
To: INFO-CPM@mit-mc, INFO-MICRO@mit-mc, INFO-PC@mit-mc
Cc: PETERS@mit-mc, MIT-SPEECH.LARSON@mit-mc

I must share with the net my enthusiasm for an
item of commercial software that I bought
recently.

Lark Software's PLOTTER program produces amazingly
good charts and graphs (line diagrams, scatterplots,
mixed line and scatter, bar graphs, pie charts) on
a large number of dot-matrix printers, including
Anadex, BMC, Centronics 739 C.Itoh Prowriters,
Epsons, GE 3000 series, IBM< with graftrx, IDS,
Mannesman Talley 160/180. NEC 8023, Okidata,
Panasonic KX 1901, Star Gemini10x,15x.

Versions available for CP/M 80 and 86, PC DOS and
MS DOS.  The order blank lists every format I ever heard
of, plus!

The program is extremely user friendly.  Menu driven
questions guide you in designing your chart/graph.
Of course, to keep the menu from being ridiculously long, the
options are somewhat limited.  But the author has included
quite a bit of background data in separate sections that -- if
you study it -- will let you change to suit your own tastes
virtually everything that the menu-driven program sets up.

The cost is reasonable, $99 for all types of graphs.
One can buy the line chart pkg and the BAR & PIE charts separately,
at $69 each, but that is pointless -- you'd surely
want them all for the $20 difference.
```

[3]Electronic storage and use of letterheads *is* becoming available, however. One example known to the authors is MCI Mail (MCI Communications, Inc.)

```
Address: LARK Software, 7 Cedars Rd, Caldwell NJ 07986,
phone (201)226-7552.
An enterprising student with one of those printers might
make good money doing charts for other students, and
even faculty -- the output is plenty good enough for
publication.

I have started to dress up my reports with charts that
I could previously only dream about.  My guess is that
this program is going to be a classic.

Eric Peters
```

Is the writer merely a consumer of the product, or does he have another connection with the company? Does he have affiliations with MIT (mentioned often in the message header)? If so, as a student, worker, faculty member?

Here's an example of what we believe is an appropriate labelling of affiliation:

```
Received: from brl-tgr.arpa by rand-unix.ARPA; Thu, 4 Oct 84 03:43:14 pdt
Received: from brl-vgr.arpa by BRL-TGR.ARPA id ab06286; 4 Oct 84 6:04 EDT
Received: from sri-unix.arpa by BRL-VGR.ARPA id a006563; 4 Oct 84 6:02 EDT
Received: from Usenet.uucp by Sri-Unix.uucp with rs232; 4 Oct 84 2:43-PDT
Date: 2 Oct 84 0:18:18-PDT (Tue)
To: info-unix@BRL-VGR
From: hplabs!hpda!fortune!forosl!rhino!larkin@UCB-VAX.ARPA
Subject: Re: Is System V going down the tube?
Article-I.D.: rhino.213
In-Reply-To: Article <205@ucbopal.CC.Berkeley.ARPA>

An interesting question regarding the statistics Jim Averill quoted

[vis.   Xenix          77%
        Version 7      20%
        System III      3%     (System V must be 0%)]

is, to what do these statistics pertain?  Is this a measure of
the development genesis of the systems, of the licensing path
taken by the various manufacturers, or what?

One would expect that several thousand (yes, THOUSAND) Un*x
installations would show up SOMEWHERE in the above figures, yes?
And yet, Fortune Systems ("For:Pro") is nowhere listed.  UNLESS,
of course, we talk about the licensing agreements, in which case
For:Pro is included in the Xenix figure.

Note that For:Pro is NOT a Xenix re-port.  Neither is For:Pro
Xenix based.  For financial reasons, though, Fortune's LICENSE is
based on the Xenix license.
```

```
As far as the technical port is concerned, For:Pro is V7 based,
with many of the 4.1 commands included.  Fortune has made many
kernel modifications, including several to the scheduler, new I/O
drivers, and a mechanism for automatically determining the device
controllers attached to the system and accessing the appropriate
device drivers dynamically.

(Note that these statements are NOT official Fortune positions,
merely observations based on my experiences.)
--
Peter Larkin                Fortune Systems, Redwood City, California
 ...!{ihnp4, ucbvax!amd, hpda, sri-unix, harpo}!fortune!rhino!larkin
```

Be selective in broadcasts for information

The real power of this exciting new medium can be glimpsed in its broadcast capability. Do you need the answer to a question: How many megabytes does the new IBM cartridge tape cassette hold? Does the Sperry PC run Lotus 1-2-3 without modification? No need to rummage around libraries looking in books. The answer is at your fingertips: Broadcast a message to "networkland" (or within it, to some special interest group in that topic of interest) and replies will come flowing in at the speed of light—or at least the speed of electricity in copper. It's fun, it's fast, and anyone can play.

The only problem is that the medium will sink under the weight of all these messages. If through your membership in network special interest groups you start getting 100, 200, or more messages a day, you will either drop some or all of the groups, or else scan and quickly discard many of the messages—often from their subject lines alone. With the current state of video display technology, you simply cannot scan 100 electronic messages as quickly as you can 100 pieces of printed mail, because there aren't as many clues (bulk rate postage, obvious form letter, colored headlines leaping out at you telling the essence of the message in 20 words or less). So you stop paying a lot of attention, even when you might have been the person that could have supplied the best answer to someone's question. And then no one's paying much attention when you ask, either.

The solution is clear: use the power, and revel in it, but use it with discretion. In particular, before you broadcast all the things you want to know about a subject to the interest group on the subject area you've just joined, take the time to scan the message archives of the group to see if the questions have been asked and answered dozens of times before. This may be obvious advice, but we see counterexamples literally weekly.

Do not insult or criticize third parties without giving them a chance to respond

If you think the hard disk or expansion board made by XYZ Corporation is faulty, you perform a service by telling a relevant interest group about it. But you might also be wrong. You might be using it incorrectly, or not have the latest version, or it might have been dropped off the loading dock on its way to you, and not be representative.

If you are privileged to have access to an electronic mail medium, or electronic bulletin board, remember that the rest of the world did not necessarily join when you did. If you've got something negative to say about someone or something, say it if you feel it's appropriate, but copy the person or company at the same time, either electronically or by sending a hardcopy via U.S. mail. If, perchance, you get a response that shows you were wrong in some fact, or that you flamed inappropriately, you owe it to your recipients and the possibly aggrieved party to keep your respondents informed.

We've seen a lot of critiques and criticism on the nets, much of it deserved. But it's also much easier to be a critic than a builder. The labors of dozens of people trying to build a company or product out of only ideas and hard work can be destroyed by casual critiques written in a moment of anger (like when you lost three days' work when the disk crashed), when the criticism might have been inappropriate or answered effectively. It is especially sad when the company doesn't even know what the rumor mill is saying about them, so that they can't respond.

RECEIVING AND RESPONDING TO MESSAGES

Receiving messages is easier than sending them. If you want, you can just be a passing observer of the scene. Responding to messages is usually easy, as most systems provide a "reply" function that automatically creates the appropriate header for the response. In addition to the guidelines mentioned here, note that all "sending" guidelines apply while responding to a message.

One rule that we don't provide is: When is it rude *not* to respond to a message? For example, if you receive the message, "The meeting has been postponed 'til 2pm," should you make the sender aware that you've received it on time? It probably depends too much on local context, such as whether the message system provides an automatic "receipt" message to the sender when you access a message.

If you receive a message intended for another person, don't just ignore it

It's not good citizenship to ignore a message, or hit the "delete" key. The sender will assume the intended recipient got it, and wonder why he or she didn't get a reply. The intended recipient(s) won't know something they were intended to know. And so on.

If you know from the content of the message (of course you read it, even though you knew after two sentences it was missent) who the correct recipient is, you could forward it with a cover note explaining the error. If you're not sure, use your system's "reply" capability to notify the sender, preferably attaching the errant message to your response.

Avoid responding while emotional

See the following guidelines, which explain why it might be inappropriate to respond in an emotional state of mind. See the section "Responding to Messages," below, regarding how to respond when you decide to.

If a message generates emotions, look again

One of the most surprising things about electronic mail is the ease with which misinterpretations arise. People are used to reading "body language," voice intonation, and numerous other cues when interpreting messages delivered in conversation, or even on the telephone. Those cues are missing in electronic mail, and what was meant as a casual comment, or an attempt at humor or irony, is misinterpreted. Even small misinterpretations have a tendency to mushroom. Messages between two correspondents may become more stilted and formal, until what started as a casual exchange of messages becomes a set of diplomatic communiques.

So it is easy to become angered at something in a message ("Boy, that was a dumb thing to say." "How could anyone be so silly.").

We've found that the reader should pause and reread the message. What at first glance was offensive can often be interpreted, on rereading, as merely a poor choice of words in a hasty message—words that might have been casually used, then forgotten, in a face-to-face conversation, but that linger on the printed page (or phosphor screen). It might help to consider the message as a written verbal communication, rather than real writing.

It also helps to consider the source. The sender might be a graduate student (or high school student) hacking away on some remote system, using a colloquial way of expressing him- or herself that is customary in that person's peer group, but that is inappropriate in the recipient's circle of communicants.

As we've mentioned, the most likely explanation is that an attempt at humor or irony went awry. Try to interpret the message that way before firing off your own cynical reply, thereby escalating the process to higher levels of misinterpretation. There is danger that your response can cause a chain reaction of emotional responses, or "flaming," that is very counterproductive.

Assume the honesty and competence of the sender

Giving someone the benefit of the doubt isn't a bad rule of thumb, especially when they're 3000 miles and three time zones away. (This rule may seem too obvious to mention, but we have observed numerous examples of replies to messages that appear to assume the original sender is an idiot, whereas the recipient might well have misunderstood the context or intent of the message.)

Try to separate opinion from non-opinion while reading a message, so you can respond appropriately

The sender, of course, should have labelled opinion as such. In case he hasn't, it is worthwhile trying to unravel opinion from fact, since your reply will benefit from making the distinction.

Consider whom you should respond to

If the message was sent to a distribution list, do you really want your answer to go out to that same list? Wouldn't it keep the electronic clutter down to respond only to the sender, even if that means editing out the name of the distribution list in the "Cc:" field your text editor so helpfully supplied?

There's a nice compromise: Send an answer only to the sender, with the P.S.: "If you think this response merits wider distribution, feel free to do so." That way, the original sender can batch together responses received, and provide a coherent update to the issue (giving you credit, of course, for your insightful contribution to the debate).

Consider alternative media

Can you walk down the hall, or pick up the phone, and respond better? Was there something in the original message that needs clarification, so that a real conversation might well cut through to the heart of the issue, rather than starting a string of messages and responses?

Recall our earlier caution that a string of messages and responses tends to become brittle and may lead to misunderstandings in a way that personal conversations do not—a fertile field for behavioral analysis. The lack of additional cues, in our experience, almost invariably leads to misinterpretation, especially between parties who do not know each other very well. So consider reaching out and really touching someone.

Avoid irrelevancies

Respond to opinion with contradictory evidence, or facts that are relevant. The medium seems to have a "chatty" nature, since it is harder to write succinctly than to ramble on. But given the limited phosphor window we have onto this electronic universe, succinctness and relevance become prized attributes. The message that makes its point and fits on one screen does its job best, and you will be well regarded.

ACTING AS COORDINATOR/LEADER OF AN INTEREST GROUP

We've mentioned the growing role of special interest groups in electronic mail networks. They perform several very useful functions: (1) Focus on one subject matter, so that there is continuity and coherence to the dialog; (2) bring together diverse individuals or institutions interested in a common subject matter; (3) provide a repository of expertise in an area that can occasionally be tapped by others.

The activity and diversity of these groups are illustrated by a list of special interest groups within the USENET community (as of November 1984). (The first 20 groups are listed here; a complete list is given in the Appendix.)

net.abortion	All sorts of discussions on abortion.
net.ai	Artificial intelligence discussions.
net.analog	Analog design developments, ideas, and components.

net.announce	Moderated, general announcements of interest to all.
net.announce.newusers	Moderated, explanatory postings for new users.
net.arch	Computer architecture.
net.astro	Astronomy discussions and information.
net.astro.expert	Discussion by experts in astronomy.
net.audio	High fidelity audio.
net.auto	Automobiles, automotive products and laws.
net.aviation	Aviation rules, means, and methods.
net.bicycle	Bicycles, related products and laws.
net.bio	Biology and related sciences.
net.books	Books of all genres, shapes, and sizes.
net.bugs	General bug reports and fixes.
net.bugs.2bsd	Reports of UNIX version 2BSD related bugs.
net.bugs.4bsd	Reports of UNIX version 4BSD related bugs.
net.bugs.usg	Reports of USG (System III, V, etc.) bugs.
net.bugs.uucp	Reports of UUCP related bugs.
net.bugs.v7	Reports of UNIX V7 related bugs.

The success of these groups is often highly correlated with there being a coordinator or leader who takes responsibility for group communications. It's not a simple or easy job, but it is a valuable service. (For example, the ARPAnet IBM-PC interest group now has three different editors, on a rotating basis, to handle the volume of messages.)

We've listed below some key guidelines for the performance of this coordinator/leader job. It's a role that will be even more commonplace and important as the volume of electronic communication increases.

Perform relevant groupings

It is helpful to readers when messages received on a common topic from diverse sources are grouped together in a "packet" message. Readers may well detect common threads or issues that would otherwise have remained obscure. Also, the packet can be filed by subject matter as one unit, not many.

Use uniform packaging

If some part of the message header of messages routed within an interest group have some key word or phrase in common, these messages can be filtered out and organized by recipients using "scan" and "file" functions common in many message systems. Perhaps this can be as simple as the "To" line containing the name of the interest group.

Exercise reasonable editorship

Perhaps a world without censorship would be nice, but we're not there yet. Messages that are not relevant should be excluded, as should ones that are sufficiently tasteless to be offensive. But it is important that opinions (preferably labelled as such) be given a hearing.

There also tends to be much redundancy of messages and questions in these interest groups. New people are joining all the time, and asking questions that have been answered before. The group coordinator provides a very useful function by excluding these messages from continued widespread distribution, and pointing the sender (individually) to the group archives for the answer. If it is a topic that appears to be of extreme continuing interest, periodic broadcast messages can alert new participants to the relevant archives.

Timeliness is important

This medium permits rapid communication, and that rapidity should be retained. The coordinator should not sit on collections of messages too long ("I'll just wait until I've got six messages to send as a group on this topic . . ."). Electronic dialogs that retain their momentum depend on this immediacy. In most cases, a 48- to 72-hour holding function for editing and grouping purposes should not be exceeded.

THE PHENOMENON OF FLAMING

Perhaps the attribute of electronic mail systems that most distinguishes them from other forms of communication is their propensity to evoke emotion in the recipient—very likely because of misinterpretation of some portion of the form or content of the message—and the likelihood that the recipient will then fire off a response that exacerbates the situation.

We have touched upon various possible causes for this phenomenon. They are:

- It is difficult to tell the level of formality of a message from its appearance; to a considerable degree, they all look the same. The cues are more subtle than telling the difference between a scrawled note and a formal memorandum.
- Partly because of the lack of cues to the level of formality, because of the nature of writing, and because most participants are not professional writers, attempts at humor, irony, sarcasm, and wit are often misinterpreted.
- Immediate feedback from body language, interruptions, or other cues we have developed as a society to aid the intercommunication process is lacking in this medium.
- Normally in written communications, time intervenes to blunt the edge of a response, or to allow reconsideration. A written letter that is received may lie on the desk several days or weeks before it is responded to. In contrast, the ease of creating an immediate "reply" to an electronic message (often easiest to do immediately upon viewing the message) biases the EM user to respond immediately, "off the top of his head."
- Telephone calls and personal conversations that have involved hasty or ill-chosen words fade with time. Electronic messages containing similar infelicities have a permanence to them: They sit around in electronic inboxes, or are printed out and remain tangible, and can even be printed in a manner (inkjet, laser, or typesetting) that gives them an aura of formality and importance that was never intended.

All these factors taken together create a novel situation that must be taken into account repeatedly in using electronic mail systems.

One additional factor often mentioned is anonymity. It would appear that persons sending electronic mail to others over a network who are not known in person might be freer in communicating feelings than to friends or associates. If no one knows who "fritz at cmu-ca" is, fritz can say almost anything. In fact, we have not observed significant difference in "flaming" between remote correspondents who don't know each other personally, compared with communication among people who know each other. The anonymity factor does not appear to be an important one.

What can be done to minimize the problems of escalating emotions that arise? A number of the guidelines and suggestions we have listed earlier are relevant to this issue. To summarize:

- A phenomenon called "flaming" has appeared on electronic mail networks, in which messages are sent having a deliberate emotional content, but usually carefully labelled as such. Sometimes just the annotation "Flame! Flame!" alerts the reader to the fact that the writer knows he or she is being emotional. The intent is that the reader should take that into account and not assume this is a carefully reasoned statement (although it might be; the two are not mutually exclusive).
- Resist the temptation to fire off a response. Go ahead and write the response, but file it away instead, and wait 24 hours. Reconsider the response later, in the light of a new day (and perhaps a rereading and reinterpretation of the original message).
- Use alternative media to break the cycle of message-and-response. A telephone call or personal conversation can do wonders, when body language, eye contact, and all the other cues we've developed can take effect. This is especially important if electronic communications seem to be becoming more formal and stilted than seems natural.

Much of the problem seems to stem from the paucity of cues that electronic mail affords its readers. Perhaps the technology that spawned electronic mail will go further to help with the misunderstandings it creates. One can imagine message systems in which the boldness of the characters displayed is a function of the force with which the keys are hit; in which the speed at which it is typed is reflected in the character spacing (or color, or size, etc.). Or providing a set of standard forms to be selected, ranging from "Note from the desk of . . ." to "Corporate Memorandum" to give additional cues to the level of formality intended. Perhaps the most informal messages will be displayed in the handwriting of the sender (even though keyboarded for convenience) as an additional cue to its informality. More certainly (because the systems are in prototype form already) there will be systems in which the cold green (or amber, or whatever) characters will be accompanied by voice annotations, so that the humanity and state of the sender will be retained and "read" by the recipient.

In the meantime, caution, awareness, and an evolving ethics and etiquette of electronic communication will certainly help.

V. IN CONCLUSION

Electronic mail and messaging systems, and electronic bulletin boards, are an incredibly powerful and effective means of communication. Because of this, they will grow and become one of the primary means of communication for most of us.

These media are quite different from any other means of communication. Many of the old rules do not apply.

This discussion does not supply a new set of rules for this new medium. Electronic mail is in its infancy, as is our understanding of it. We have collected some guidelines that seem to point in proper directions, and have personally used them in our own use of the medium. Many of them appear to be common sense in a new guise, but they are included because we've seen them violated in practice too often to ignore. These guidelines are suggestions, intended to generate reflection and stimulate discussion.

With the new power of electronic mail comes the need for responsibility in using that power. We can all enjoy the power and benefit from it if we find new forms of behavior—even etiquette—that are appropriate. The alternative is a rising tide of irrelevant messages and electronic junk mail that will turn off most thoughtful users. By evolving a set of guidelines such as those presented here, we can all use the incredible power of the medium and benefit from it.

Appendix

NETWORK INTEREST GROUPS

This list of interest groups was contained in a message broadcast on November 15, 1984 by Gene Spafford, School of Information and Computer Science, Georgia Tech. There are three basic subcategories of netwide newsgroups; they are prefaced by the codes *net*, *fa*, and *mod*. *Net* consists of USENET bulletin board newsgroups that are circulated around the entire net. *Fa* is a set of groups that are gatewayed to USENET from the ARPAnet. The *fa* groups consist mainly of digests, though there are some bulletin boards. *Mod* groups are moderated. They can only be posted by mailing to the group moderator. UNIX is a trademark of AT&T Bell Laboratories. DEC is a trademark of the Digital Equipment Corporation. VAX is a trademark of the Digital Equipment Corporation. Ada is a trademark of the Ada Joint Program Office of the U.S. Department of Defense.

Newsgroup	Description
net.abortion	All sorts of discussions on abortion.
net.ai	Artificial intelligence discussions.
net.analog	Analog design developments, ideas, and components.
net.announce	Moderated, general announcements of interest to all.
net.announce.newusers	Moderated, explanatory postings for new users.
net.arch	Computer architecture.
net.astro	Astronomy discussions and information.
net.astro.expert	Discussion by experts in astronomy.
net.audio	High fidelity audio.
net.auto	Automobiles, automotive products and laws.
net.aviation	Aviation rules, means, and methods.
net.bicycle	Bicycles, related products and laws.
net.bio	Biology and related sciences.
net.books	Books of all genres, shapes, and sizes.

net.bugs	General bug reports and fixes.
net.bugs.2bsd	Reports of UNIX version 2BSD related bugs.
net.bugs.4bsd	Reports of UNIX version 4BSD related bugs.
net.bugs.usg	Reports of USG (System III, V, etc.) bugs.
net.bugs.uucp	Reports of UUCP related bugs.
net.bugs.v7	Reports of UNIX V7 related bugs.
net.chess	Chess & computer chess.
net.cog-eng	Cognitive engineering.
net.college	College, college activities, campus life, etc.
net.columbia	The space shuttle and the STS program.
net.comics	The funnies, old and new.
net.consumers	Consumer interests, product reviews, etc.
net.cooks	Food, cooking, cookbooks, and recipes.
net.crypt	Different methods of data en/decryption.
net.cse	Computer science education.
net.cycle	Motorcycles and related products and laws.
net.dcom	Data communications hardware and software.
net.decus	DEC Users' Society newsgroup.
net.emacs	EMACS editors of different flavors.
net.eunice	The SRI Eunice system.
net.flame	For flaming on any topic.
net.followup	Followups to articles in net.general.
net.games	Games and computer games.
net.games.emp	Discussion and hints about Empire.
net.games.frp	Discussion about Fantasy Role Playing games.
net.games.go	Discussion about Go.
net.games.pbm	Discussion about Play by Mail games.
net.games.rogue	Discussion and hints about Rogue.
net.games.trivia	Discussion about trivia.
net.games.video	Discussion about video games.
net.garden	Gardening, methods and results.
net.general	*Important* and timely announcements of interest to all. (Note the description of net.misc.)
net.graphics	Computer graphics, art, and animation.
net.ham-radio	Amateur Radio practices, contests, events, rules
net.info-terms	All sorts of terminals.
net.invest	Investments and the handling of money.
net.jobs	Job announcements, requests, etc.
net.jokes	Jokes and the like. May be somewhat offensive.
net.jokes.d	Discussions on the content of net.jokes articles
net.kids	Children, their behavior and activities.
net.lan	Local area network hardware and software.
net.lang	Different computer languages.

net.lang.ada	Discussion about Ada.
net.lang.apl	Discussion about APL.
net.lang.c	Discussion about C.
net.lang.f77	Discussion about FORTRAN.
net.lang.forth	Discussion about Forth.
net.lang.lisp	Discussion about LISP.
net.lang.mod2	Discussion about Modula-2.
net.lang.pascal	Discussion about Pascal.
net.lang.prolog	Discussion about PROLOG.
net.lang.st80	Discussion about Smalltalk 80.
net.legal	Legalities and the ethics of law.
net.lsi	Large scale integrated circuits.
net.mag	Magazine summaries, tables of contents, etc.
net.mail	Proposed new mail/network standards.
net.mail.headers	Gatewayed from the ARPA header-people list.
net.mail.msggroup	Gatewayed from the ARPA MsgGroup list.
net.math	Mathematical discussions and puzzles.
net.math.stat	Statistics discussion.
net.math.symbolic	Symbolic algebra discussion.
net.med	Medicine and its related products and regulations.
net.micro	Micro computers of all kinds.
net.micro.16k	National Semiconductor 32000 series chips
net.micro.432	Discussion about Intel 432's.
net.micro.6809	Discussion about 6809's.
net.micro.68k	Discussion about 68k's.
net.micro.apple	Discussion about Apple's.
net.micro.atari	Discussion about Atari's.
net.micro.cbm	Discussion about Commodore's.
net.micro.cpm	Discussion about the CP/M operating system.
net.micro.hp	Discussion about Hewlett/Packard's.
net.micro.mac	Material about the Apple MacIntosh & Lisa
net.micro.pc	Discussion about IBM personal computers.
net.micro.ti	Discussion about Texas Instruments.
net.micro.trs-80	Discussion about TRS-80's.
net.micro.zx	Discussion about zx's.
net.misc	Various discussions too short lived for other groups. Also items of a general nature not important enough for net.general or net.announce.
net.motss	Issues pertaining to homosexuality.
net.movies	Reviews and discussions of movies.
net.movies.sw	Discussions about the Star Wars saga(s).
net.music	Music lovers' group.

net.music.classical	Discussion about classical music.
net.net-people	Announcements, requests, etc. about people on the net.
net.news	Discussions of USENET itself.
net.news.adm	Comments directed to news administrators.
net.news.b	Discussion about B news software.
net.news.config	Postings of system down times and interruptions.
net.news.group	Discussions and lists of newsgroups
net.news.map	Postings of maps.
net.news.newsite	Postings of new site announcements.
net.news.sa	Comments directed to system administrators.
net.nlang	Natural languages, cultures, heritages, etc.
net.nlang.celts	Group about Celtics.
net.nlang.greek	Group about Greeks.
net.notes	Notesfile software from the University of Illinois.
net.origins	Evolution versus creationism (sometimes hot!).
net.periphs	Peripheral devices.
net.pets	Pets, pet care, and household animals in general.
net.philosophy	Philosophical discussions.
net.physics	Physical laws, properties, etc.
net.poems	For the posting of poems.
net.politics	Political discussions. Could get hot.
net.puzzle	Puzzles, problems, and quizzes.
net.railroad	Real and model train fans' newsgroup.
net.rec	Recreational/participant sports.
net.rec.birds	Hobbyists interested in bird watching.
net.rec.boat	Hobbyists interested in boating.
net.rec.bridge	Hobbyists interested in bridge.
net.rec.coins	Hobbyists interested in coin collecting.
net.rec.disc	Hobbyists interested in disc activities.
net.rec.nude	Hobbyists interested in naturalist/nudist activities.
net.rec.photo	Hobbyists interested in photography.
net.rec.scuba	Hobbyists interested in SCUBA diving.
net.rec.ski	Hobbyists interested in skiing.
net.rec.skydive	Hobbyists interested in skydiving.
net.rec.wood	Hobbyists interested in woodworking.
net.religion	Religious, ethical, and moral implications of actions.
net.religion.jewish	Group about Judaism.
net.research	Research and computer research.
net.roots	Genealogical matters.
net.rumor	For the posting of rumors.

net.sci	General purpose scientific discussions.
net.sf-lovers	Science fiction lovers' newsgroup.
net.singles	Newsgroup for single people, their activities, etc.
net.social	Like net.singles, but for everyone.
net.sources	For the posting of software packages and documentation. (cf. net.wanted.sources)
net.sources.bugs	For bug fixes and features discussion pertaining to items in net.sources
net.space	Space, space programs, space related research, etc.
net.sport	Spectator sports.
net.sport.baseball	Discussion about baseball.
net.sport.football	Discussion about football.
net.sport.hockey	Discussion about hockey.
net.sport.hoops	Discussion about basketball.
net.startrek	Star Trek, the TV show and the movies.
net.std	All sorts of standards (e.g., ANSI, IEEE).
net.suicide	Suicide, laws, ethics, and its causes and effects.
net.taxes	Tax laws and advice.
net.test	For testing of network software. Very boring.
net.text	Text processing.
net.travel	Traveling all over the world.
net.tv	The boob tube, its history, and past and current shows.
net.tv.drwho	Discussion about Dr. Who.
net.tv.soaps	Postings about soap operas.
net.unix	UNIX neophytes group.
net.unix-wizards	Discussions, bug reports, and fixes on and for UNIX. Not for the weak of heart.
net.usenix	USENIX Association events and announcements.
net.usoft	Universal (public domain) software packages.
net.veg	Vegetarians.
net.video	Video and video components.
net.wanted	Requests for things that are needed.
net.wanted.sources	Requests for software, termcap entries, etc.
net.wines	Wines and spirits.
net.wobegon	"The Prairie Home Companion" radio show.
net.women	Women's rights, discrimination, etc.
net.women.only	Postings by women only (read by all).
net.works	Assorted workstations.
net.works.apollo	Discussion about Apollo workstations.
fa.arms-d	Arms discussion digest.
fa.arpa-bboard	ARPANET bulletin board.

fa.bitgraph	The BBN bitgraph terminal.
fa.digest-p	Digest-people digest.
fa.editor-p	Editor-people digest.
fa.energy	Energy programs, conservation, etc.
fa.human-nets	Computer aided communications digest.
fa.info-mac	Apple MacIntosh micros.
fa.info-terms	All sorts of terminals.
fa.info-vax	DEC's VAX line of computers.
fa.info-vlsi	Very large scale integrated circuits.
fa.laser-lovers	Laser printers, hardware and software.
fa.poli-sci	Politics and/versus science.
fa.railroad	Real and model train fans' newsgroup.
fa.tcp-ip	TCP and IP network protocols.
fa.telecom	Telecommunications digest.
fa.teletext	Teletext digest.
mod.map	Announcements and software concerning maps and routing
mod.map.news	Maps of the Usenet network of news sites
mod.map.uucp	Maps from the UUCP mapping project
mod.movies	Moderated reviews and discussion of movies
mod.motss	Moderated newsgroup on gay issues and topics
mod.music	Moderated reviews and discussion of things musical
mod.newslists	Postings of news-related statistics and lists
mod.singles	Moderated version of net.singles
mod.sources	Moderated postings of public domain sources
mod.test	Testing of moderated newsgroups—no moderator
mod.unix	Moderated discussion of Unix features and bugs
mod.std	Moderated discussion about various standards
mod.std.c	Discussion about C language standards
mod.std.mumps	Discussion about standards for MUMPS

GLOSSARY

ARPANET. An electronic network linking computer facilities throughout the United States, and selected installations in other countries. Used primarily by research institutions performing work for the Defense Advanced Research Projects Agency (DARPA) and related military institutions.

Broadcast. Sending a message to a group of recipients at once; often this is facilitated by using a named distribution list.

Electronic Bulletin Board. A central repository of messages (within a computer system) on which messages can be posted, scanned, replied to, and removed.

EM. Electronic Mail (or Electronic Message) system. It is distinguished from an Electronic Bulletin Board in that messages can be addressed to one or more individual recipients.

Flaming. Expressing emotion in an electronic message. The emotion is often explicitly labelled as such.

Special Interest Group. A group of respondents within an electronic mail system that limit communications within the group to a particular subject matter. It is usually preferable to have a leader or coordinator of the group to perform editing, filtering, collection, and administrative functions (such as maintaining a message archive) for the group.

UNIX.[1] A popular operating system developed at Bell Laboratories in the early 1970s, available on many minicomputers and microcomputers.

USENET. A loose but effective informal association of computer users forming a network for distributing electronic messages. Messages are broadcast as general news items, not point-to-point. It relies heavily on dial-up telephone lines and the UUCP protocol.

UUCP. UNIX-to-UNIX Communication Protocol. A standardized means of sending and receiving information between computers running the UNIX operating system, often using standard telephone lines and modems.

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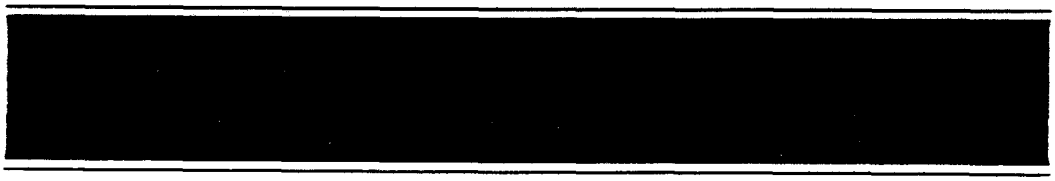
[1]UNIX is a trademark of Bell Laboratories.

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