

## 5. Conclusions

Analysis of the individual code categories suggests that two major factors influence differences observed between face-to-face interactions and s-interactions. First, participants in s-interactions tend to omit unnecessary linguistic material, which makes what they do say more efficient and more likely to accomplish more than one function. Thus we find a preference for forms that accomplish both orienting and turn management functions. Second, while participants seem to rely on lower level adjacency relations in much the same way in both types of interactions, the higher level functions that organize and orient the structure and sequence of decisions are accomplished using different encoding strategies. In this case, participants in s-interactions seem to be willing to use more linguistic material in order to accomplish the functions.

There is still much to be learned about the strategies participants employ to satisfy their cognitive, interactional, and affective goals in the two types of interaction. We have not discussed, for example, the predictions that could be made concerning such effects as mean utterance length, structuring of turns in the discourse, and markedness. Clearly, this paradigm provides a rich source of information that goes well beyond the boundaries of electronic discourse.

Despite the differences we found between electronic and oral interactions, both types of discourse fit a generic decision-making schema that determines, at an abstract level, the flow of conversation. The stability of the decision sequence across problem order, problem type, and medium of communication provides strong motivation to continue exploration of s-interactions. We are excited by the promise of new tools and increased methodological precision inherent in the prospect of using electronically-mediated discourse to investigate discourse processes.

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## Two Variants of an Electronic Message Schema

Susan C. Herring

*University of Texas at Arlington*

### 1. Introduction\*

An emergent stereotype about computer-mediated communication (henceforth, CMC) is that male users are concerned primarily with the exchange of information, while female users send e-mail primarily to promote and maintain interpersonal relationships. This stereotype is consistent with Tannen's (1990) claim that men prefer to use language in the "report" function and women in the "rapport" function in face-to-face communication, a claim she explicitly extends to CMC (Tannen 1994). The stereotype takes on new significance, however, in the context of the current "Information Age", where it is typically evoked to represent women's use of computer networks as marked or deviant relative to the "normal" (male) use of computer networks as a tool for information exchange. Thus Yates (1993:22-23), in a study of female participation in computer-mediated distance education courses, hypothesizes that "women [...] are more likely to exploit the opportunity to engage in interactive interpersonal communication than men", and a high school computer lab director was quoted in *Newsweek* as stating that girls "see [sending e-mail] as high-tech note-passing" (Kantowitz 1994:52). However, no empirical basis for the stereotype of the informative male and the interactive female computer user has yet been established.

The kind of evidence that would support or refute such a stereotype depends on how the stereotype itself is interpreted. According to one interpretation, men and women use CMC in different functional domains, with men posting more (information-oriented) electronic messages to public discussion groups, and women sending more (personally-oriented) private e-mail. Unfortunately, no one has yet collected a representative corpus of private e-mail messages that would make it possible to confirm or disprove this hypothesis. The second interpretation is that women and men participate in the same domains, but their communication is oriented differently, such that men's

messages to, e.g., public discussion groups are more information oriented, while women's messages to the same groups are more socially oriented. In this chapter, I bring empirical evidence to bear on this latter hypothesis.

I do so by analyzing the schematic structure of electronic messages posted publicly by women and men to two listserv discussion groups. The results of my investigation reveal that both men and women structure their messages in interactive ways, and that for both, the pure exchange of information takes second place to the exchange of views. Significant gender differences are found in how electronic messages are oriented, but the differences are not those predicted by the stereotype. Although messages posted by women contain somewhat more interactional features, they are also more informative, in contrast with male messages which most often express (critical) views. The evidence further suggests that members of the minority gender on each list shift their style in the direction of majority gender norms. These results provide no support whatsoever for the stereotype that women are less interested in the electronic exchange of information than men, or that men do not use computer networks for social interaction; rather, they show that women and men negotiate information exchange and social interaction in gendered ways.

The chapter is organized as follows. Section 2 describes the data and methodology employed in the investigation. Section 3 presents evidence for a basic electronic message schema, and section 4 describes gender variation within the basic schema. Finally, section 5 reinterprets the stereotype of the informative male and the interactive female in light of these findings.

## 2. Data and methodology

### 2.1. Data

Two Internet mailing lists were analyzed for the purposes of this study: the LINGUIST list and the WMST (Women's Studies) list. Both are large lists (several thousand subscribers) which generate an average of 30-80 public postings per week and have a strict academic focus. Participants on both lists are mostly academic professionals, graduate students, and other professionals associated with the list's field of study.

The two lists contrast in one important respect: their gender makeup. WMST, which focuses on women's studies teaching and the establishment and administration of women's studies programs, is 88% female, and women participate in discussion at a rate about equal to their numerical presence (Korenman & Wyatt, This volume). LINGUIST, which describes itself as a forum for discussion of issues of interest to academic linguists, has only 64% male subscribers, but men regularly contribute 85% or more in LINGUIST discussions (Herring 1992, 1993a, 1993c).

For the purposes of this investigation, I analyzed all of the messages posted in two extended discussions, one from each list. The primary criterion for selecting the discussions was that they attracted large numbers of participants relative to other discussions on the same list, and thus presumably represent the interests and interactional norms of list subscribers. The LINGUIST discussion took place after the list had been in existence for several months, and concerned the use of the label "cognitive linguistics" to describe different (and competing) schools of linguistic thought. The WMST discussion took place after the list had been in existence for about a year, and concerned a television documentary that was airing at the time entitled "Brain Sex", as well as the broader question of whether there are differences between the brains of women and men. Summary data about the two discussions are given in Table 1.

Table 1. Discussions selected for analysis

List	Topic	Dates	# Participants		# Messages		# Words	
			(M)	(F)	(M)	(F)	(M)	(F)
LINGUIST	"cognitive linguistics"	2/2-4/20, 1991	30	5	53	18	21,469	3,789
WMST	"brain sex"	9/14-9/21, 1992 <sup>1</sup>	3	26	3	62	472	13,037
total			33	31	56	80	21,941	16,826

In all, 136 individual messages totalling 38,767 words were analyzed. These represent the total contributions of 33 male and 31 female participants.

### 2.2. Methodology

A basic assumption underlying this investigation is that individual electronic messages are internally-organized texts. As such, insights about their structure can be gleaned using methods of linguistic text analysis. Text linguists such as Longacre (1992) and Swales (1990) have observed that informational texts tend to be organized as expository essays or reports (usually written), while interactive texts tend to be organized as conversational turns (in speaking) or personal notes (in writing). Moreover, each of these text types has a distinctive schematic organization, or conventional sequence of functional "moves" into which the text can be chunked. By comparing the schematic organization of messages posted by women and men in similar electronic groups, we can evaluate the claim that these messages function in different ways, e.g., as exposition or interaction.

Our basic unit of analysis is the *macrosegment*, a functional constituent of the text at a macro- or global level of organization (Longacre 1992). Macrosegments are identified according to their notional coherence and their surface cohesion. Surface cohesion refers to consistent linguistic choices a writer

makes with regard to e.g., person reference, tense usage, or sentence structure; a macrosegment can also be set off from other macrosegments by a skipped line before or after, paragraph indentation, or use of formulae which explicitly introduce macro-level ideas, such as "My point is this:". However, while linguistic signals often provide useful cues, they are not sufficient to identify macrosegments: a macrosegment may be said to exist solely on the grounds of its notional coherence, without any explicit signals of its boundaries, and shifts in person reference, tense, etc. do not always correspond to the boundaries of macrosegments.

Notional coherence refers to the ability of a macrosegment to fulfill a higher-order function in the schematic organization of a text. A scientific essay or other information-oriented exposition, for example, will typically be constructed of macrosegments of the following four functional types, each constituting a higher-order move in the *informational expository* schema:<sup>2</sup>

1. Identification of problem
2. Proposal of solution
3. Evidence in support of solution
4. Evaluation of solution

Figure 1. *The informational expository schema (adapted from Longacre 1992)*

Another common exposition type aims not so much to inform as to effect a change in the addressees' beliefs or opinions; this type Longacre terms *persuasive*. The persuasive schema is similar to the informational one except that in place of "evaluation of the solution", the persuasive schema has as its fourth move an "appeal to give credence, or to adopt certain values" (Longacre 1992:111).

The insight that text types are associated with conventional sequences of moves can be extended to include more interactionally-oriented texts such as personal notes and conversational turns. These interactional text types have in common a basic three-part structure made up of a contentful message that is framed before and after by moves which link the message to the larger interactive context. Personal notes (a sub-type of letters) also have an additional external frame of opening and closing epistolary conventions. The generalized interactive schema is represented in Figure 2.

- (Opening epistolary conventions)
1. Link to previous discourse
  2. Contentful message
  3. Link to following discourse
- (Closing epistolary conventions)

Figure 2. *The interactive schema*

Letters typically realize this schema with the aid of fixed and semi-fixed linguistic formulae. *Opening epistolary conventions* include date and salutation, the latter often made up of a vocative form of address plus a title or name ("Dear Madam"; "Hi Sally!", etc.). *Links to the previous discourse* introduce the purpose of the letter ("I am writing in response to...") or seek to establish common ground between the letter writer and the addressee ("I hope this letter finds you well"). *Links to the following discourse* allude to future correspondence, and include offers ("Do not hesitate to contact me if I can provide any further assistance") and appeals ("Write soon"). *Closing epistolary conventions* are highly formulaic, and include complimentary closes ("sincerely yours", "love", etc.) followed by the signature of the letter writer, and an optional postscript conventionally preceded by the abbreviation "p.s.". At the center of this chiasmic or mirror-image structure, the *contentful message* contains new information that is the ostensible reason for which the letter was written. Reasons for writing letters vary widely, and thus the contentful message is the most structurally and functionally heterogeneous move in the schema.<sup>3</sup>

Conversational turns lack epistolary conventions but otherwise have analogous structure. A prototypical, maximally-specified conversational turn acknowledges the previous speaker's contribution, e.g., by means of discourse markers such as "oh", "yeah", and "well" (Schiffrin 1987), before contributing new information to the conversation, and concludes by allocating the turn to a next speaker, e.g., by means of gaze or directed questioning ("What do you think?") (McLaughlin 1984). Thus in turns as in letters, a contentful message is bracketed by moves that situate the contribution in the ongoing interpersonal interaction. In contrast, the informational and persuasive expository schemata contain no overtly interactional moves; rather their moves present and develop a solution to a problem.

Drawing on these observations, in order to evaluate the gender stereotype, I hypothesized that the messages posted by men on LINGUIST and the WMST list would be organized like (i.e., illustrate the schematic moves of) expository texts, while the messages posted by women on both lists would be organized more like personal notes or conversational turns. That is, I hypothesized that there would be a Gender Effect which groups together men on both lists and women on both lists. I further hypothesized that messages posted to the male-predominant list would be more expository than those posted to the female-predominant list, and that messages posted to the female-predominant list would be more interactional, regardless of the gender of the sender. That is, I also expected to find evidence of a List Effect, whereby the communicative practices of the majority of active participants become normative for the group as a whole.

In order to test these hypotheses, I chunked each of the 136 messages in the corpus into macrosegments according to the criteria described above. In what follows, the resulting sequences of moves are presented and discussed.

### 3. The basic electronic message schema

#### 3.1. Recurrent macrosegments

The most immediate result of chunking the messages into macrosegments was the discovery of a limited set of recurrent textual-pragmatic functions. These are listed in Table 2, along with their frequencies in the two discussions. The order of presentation of functions in Table 2 corresponds roughly to the linear order in which they appear in the messages in the corpus, although no single message contains all of the functions listed.

Table 2. Functions and frequencies (% of total messages) of macrosegments

Function	Brain Sex (N=65)		Cog Lincs (N=71)		Combined (N=136)	
	%	N	%	N	%	N
<i>Epistolary Convention</i>						
salutation	6%	4	19%	14	13%	17
<i>Introduction</i>						
preamble	2%	1	3%	2	2%	3
metacomment	9%	6	10%	7	10%	13
prospective introduction	8%	5	7%	5	7%	10
link to previous message	68%	44	66%	47	67%	91
<i>Total</i>	87%	56	86%	61	86%	117
<i>Body</i>						
express views	52%	34	80%	57	67%	91
request information	9%	6	1%	1	5%	7
provide information	31%	20	24%	17	27%	37
express feelings	17%	11	3%	2	10%	13
suggest solution	17%	11	6%	4	11%	15
offer	9%	6	0%	0	4%	6
<i>Total</i>	135%	88	114%	81	124%	169
<i>Close</i>						
apology	28%	*18	15%	**11	21%	29
appeal to others	28%	18	20%	14	24%	32
chastisement	2%	1	1%	1	1%	2
<i>Total</i>	58%	37	36%	26	46%	63
<i>Epistolary Conventions</i>						
complimentary close	2%	1	3%	2	2%	3
signature	91%	59	70%	50	80%	109
postscript	0%	0	1%	1	1%	1
<i>Total</i>	93%	60	74%	53	83%	113

\* 3 in Introduction, 8 in Body

\*\* 4 in Introduction, 5 in Body

Note that the total percentages for each category in Table 2 do not add up to 100%. This is because not all messages contain epistolary, introduction, and close macrosegments, and some messages contain more than one body macrosegment. Four categories of macrosegment are discussed below.

#### 3.1.1. Epistolary conventions

The first and last rows of Table 2 show the frequency of epistolary conventions in the electronic messages in the two discussions. Surprisingly few messages are preceded by a salutation (only 13% on average), and fewer yet are followed by a complimentary close or a postscript. Of those salutations that occur, most are in the Cognitive Linguistics discussion, and most are of the form "To: [Name]". The relative lack of epistolary conventions can be explained in part by the fact that a header is added automatically to each message by the electronic mailer, including a separate line for who the message is "from", who it is addressed "to" (in these data, the entire mailing list), and the date and time of posting.

The existence of "from" lines in headers leads us to predict that signatures will be redundant as well, and hence infrequent. However, as Table 2 shows, signatures are the *most* frequent feature of the electronic messages in the corpus (80% of all messages). A possible explanation for this is that some people's electronic mail systems omit sender information in the header; thus WMST users are regularly reminded through the "user's guide" (Korenman & Wyatt, This volume) to sign their messages, a fact which may account for the higher incidence of signed messages in the Brain Sex discussion. However this cannot be the reason users sign their messages on LINGUIST, as header information including date, subject line, and sender is preserved with all LINGUIST postings, because of the format in which they are packaged and distributed by the moderators. The general tendency of users to sign their names at the end of messages suggests that they view them as more similar to print correspondence than to expository treatises (or, for that matter, conversational turns).<sup>4</sup>

#### 3.1.2. Introductions

After signatures, two macrosegments vie for highest frequency in that both are found in 67% of all messages. The first *links* the current message to a previous message or messages. The high frequency of textual links reflects participants' need to establish and maintain coherence across messages. This is especially important in CMC, in that any given discussion is apt to be interwoven with discussions on different topics, and subject headers alone often do not provide sufficient information to identify which discussion the message is responding to. Several examples of linking macrosegments, each of them the opening line of a message, are given in (1). (All names cited in messages are pseudonyms assigned by the author.)

- (1) a. I would like to respond on the question of [sic] Kathy Trager.
- b. Sharon Thompson's letter raises two important questions:
- c. In view of the several lengthy and unanswered dissertations that have been posted to this list about the merits or demerits of the appropriation of the name Cognitive Linguistics, I would like to put in my little grain of sand, for whatever it's worth.
- d. Three bits' worth on autonomy/cognitive linguistics:

Such links characteristically constitute the opening move, or *introduction*, of an electronic message. Other types of introduction include a *prospective introduction* which introduces the message to follow, e.g., by providing a summary abstract ("This is not the reply to Larry I promised—just a couple of quick comments to Koch and Wisniewski"). A third type of introduction is a *metacomment* on the discussion as a whole ("I am glad to have generated such a storm of protest"; "Everyone is probably tired of this argument by now..."). Finally, a few messages start off with a *preamble*, which neither links nor summarizes but rather provides background information against which to evaluate the content that follows. (For example, one message begins: "I have a pet beagle named Fred who thinks he's a linguist and who sometimes reads my e-mail. After sniffing around for a while yesterday, he left me the following note.") However, none of these latter types is very frequent (7%, 11%, and 2% of messages, respectively), and textual links clearly predominate as the most prototypical form of electronic message introduction in the corpus. The roughly equal presence of such links on the two mailing lists suggests that participants of both genders view their messages as contributions to an ongoing discussion, rather than as isolated pronouncements. Further, to the extent that introduction involves mentioning another participant by name (68% of all introductions in the LINGUIST discussion, and 58% of introductions in the WMST discussion), it is also interpersonal. Interpersonal introductions in electronic messages recall the openings of conversational turns and the lead-ins of letters.

### 3.1.3. Body

The second high-frequency function expressed by a single macrosegment is *expressing views*, a term I use to refer to statements of ideational content evaluated implicitly or explicitly with respect to the speaker's commitment to their truthfulness. This category includes expressions of opinion, belief, understanding or judgment associated with some aspect of the topic under discussion. Expressing views differs from *providing information* (such as bibliographic references, conference announcements, or announcements of software availability) in that the author's commitment to the truthfulness of the content is part of the communication in the former, whereas in providing information the content is merely reported. Despite the popular belief that

electronic mailing lists are used mainly for information exchange, expressions of views are more than twice as frequent as purely information-oriented messages (both requesting and providing information) in both discussions combined, with the difference being greatest in the Cognitive Linguistics discussion. Note that this finding runs counter to the hypothesis that the primarily male discussion would be more information-focused than the discussion in which most of the participants are women. Indeed the opposite is true: the Brain Sex discussion has more messages in which information is requested and provided (31%) than the Cognitive Linguistics discussion (24%), and fewer messages in which participants express or argue their views (52%, as compared with 80% in the Cognitive Linguistics discussion). This is consistent with previous findings that male computer network users are more assertive and argumentative than female users (Herring 1993a). Nevertheless, expression of views appears to be the most important function of e-mail messages in both extended discussions.

Expression of views ranges from forcefully-worded assertions (including assertions of alleged "fact") to opinions presented as such, e.g., through the use of hedged evidential phrases such as "I think" and "It seems to me". The following examples are portions of views statements from the corpus.

- (2) a. Perhaps this is the only forum where such a discussion could take place across the cognitivist-generativist divide. It is impossible at the LSA, which has a conservative, generatively-oriented program committee and which has refused to permit paper sessions devoted to results in cognitive linguistics.  
  
[statement of "fact" about the LSA ('It is impossible...'); embedded statements of "fact" ('[the LSA] has a conservative...program committee' [and] has refused...cognitive linguistics')]
- b. It seems to me that what is so dangerous and insidious about the "biological" approach to understanding gender is the usually IMPLICIT, UNSPOKEN message that if there are genetic or brain-based differences, that these determine male and female life trajectories, ...  
  
[statement expressing writer's understanding, ('it seems to me') with embedded judgment ('dangerous and insidious') and embedded statements of "fact" about the biological approach to gender]

Expression of views typically constitutes, in whole or in part, the *body* of the electronic message; it transmits the message's primary ideational content. The message body may also include one or more of a variety of functions, including *suggestions* ("Let's all subscribe to "Cognitive Linguistics" and read it"), *expression of feelings* ("I, too, am concerned with the current wave of determinism ... It angers me, a great deal") and/or *offers* ("If you have any questions or criticisms that you would like him to see, I would be happy to pass them on"). In the present corpus, messages in which the body is something

other than an expression of views or information are found primarily in the (mostly-female) Brain Sex discussion. Conversely, there is a possible correlation between expressions of views and information and the expository schema (hypothesized to be associated with male users), in that "information" is often provided as a solution to a problem raised in a previous message (see example 3). Statements of views also sometimes contain embedded exposition (see example 4) and persuasion.

### 3.1.4. Close

A third type of macrosegment, the *close*, follows the message body, although it does not occur as predictably as the first two types. Electronic messages may close with an *appeal* for discussion or action, with an *apology* (e.g., for a misstatement posted earlier, or for a longer than usual message), an offer, a chastisement ("So let's not be too quick to make generalizations about what various 'Xists' do or do not believe, ok guys?"), or some other interactional speech act. Of these, the appeal function is most common (24% of messages), and is the only one which regularly occupies the position at the end of a message. Apologies are almost as frequent (21%), but they are distributed across introductions and message bodies as well. For this reason, I consider *appeals to other participants* to be the most prototypical electronic message closing in the discussions analyzed in this study.

Appeals are of two types: appeals for action (e.g., "Subscribe to our journal at the bargain rate of \$18"), and appeals for participation—or the cessation of participation—in the discussion itself ("Can we have some discussion and suggestions on this issue?"; "Let's stop bickering and get back to work"). Appeals are interpersonal, in that they invoke the other subscribers to the list in their role as addressees; in some cases they invite others to take over the conversational floor, and thus facilitate turn-taking. Explicit message closings are significantly more common in the mostly-female Brain Sex discussion (59% of all messages) than in the mostly-male Cognitive Linguistics discussion (35% of messages), lending support to the hypothesis that women are more oriented toward the interpersonal aspects of e-mail communication than are men.

### 3.2. The basic electronic message schema

Despite the richness of functional possibilities listed in Table 2, most messages in the corpus contain only two or three of the 17 types of macrosegments listed, and few messages contain more than four. This distribution suggests that participants are aiming at an ideal message schema comprised of three functional moves: an introduction, a contentful message body, and a close. (The horizontal gray lines dividing Table 2 into three categories are intended to classify functions, roughly speaking, into one or the other of these types.) Of the three basic moves, the message body is the core or dominant move of the schema.

This accords with the common intuition that a well-formed electronic message should minimally contribute some new information or perspective—one can do without an appeal to the audience, and under some circumstances, get by without an explicit link to the previous discussion, but a message with no ideational content is likely to be dismissed as pointless and a "waste of bandwidth".<sup>5</sup>

We may thus posit a three-part schema for electronic messages, based on the preferred realization of the three moves, as in Figure 3.

1. link to an earlier message
2. expression of views
3. appeal to other participants

Figure 3. The basic electronic message schema

I will henceforth refer to this sequence as the basic electronic message schema. Note that it constitutes a balanced communicative unit, comprising all three of Halliday's (1978) primary language functions: a textual link, an ideational body, and an interpersonal close.

The actual percentages of all macrosegments manifesting the moves of the basic schema are shown in Figure 4. Percentages were calculated out of the total number of macrosegments which realize each of the three basic moves: the percentage of linkers out of all openings, expressions of views out of all message bodies, and appeals out of all closes. (The numbers correspond to those in Table 2, except that apologies found in introductions and bodies have been subtracted from the total number of macrosegments in the "closes" category.)

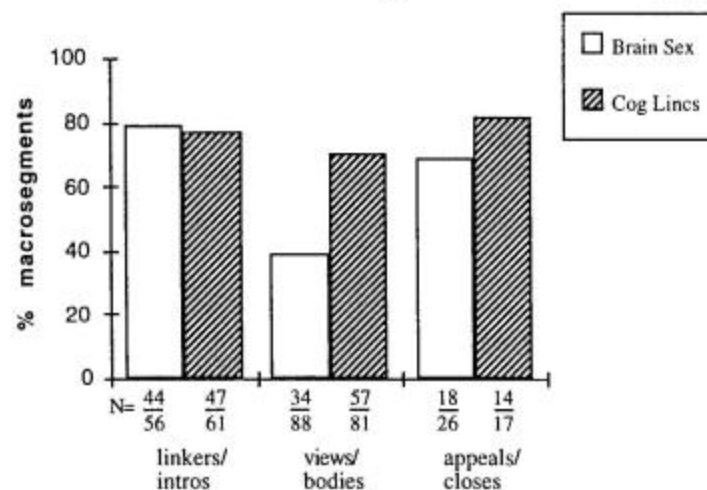


Figure 4. Macrosegments realized as per the basic schema

Figure 4 shows that the basic schema is a good characterization of the macro-organization of the majority of electronic messages in the corpus, especially those in the Cognitive Linguistics discussion. In other words, most participants, regardless of whether male or female, incorporate interactive features into their electronic messages (via the linker and appeal), as well as contributing their views. The pure exchange of information, narrowly defined, is of secondary importance in both discussions. The basic electronic message schema thus more closely resembles that of interactional text types such as personal letters and conversational turns than that of expository text, although moves of the expository schema are sometimes found in the message body. These results are perhaps not surprising, given the widespread perception among users that electronic exchanges are "discussions" or "conversations" rather than monologues in sequence. At the same time, the results provide *prima facie* counterevidence to the stereotype that there is a fundamental difference in what motivates male and female messages, at least insofar as such difference is reflected in their basic organizational structure.

#### 4. Gendered variants of the basic schema

Thus far I have identified a schematic organization that is characteristic of messages posted in both discussions. However, the basic electronic message schema as described above is considerably idealized; actual instantiations of it vary along gender lines. Two variants within the basic schema can be identified, according to the stance taken by the message sender vis à vis the addressee.

##### 4.1. The aligned variant

The first variant, which I term the *aligned variant*, represents the writer's stance as aligned with and supportive of that of the addressee. This variant is characteristic of messages in the Brain Sex discussion. According to this variant, the first schematic move is prototypically realized as a link to a previous message accompanied by an expression of agreement or appreciation. The second move is a non-critical expression of the writer's views (often presented as opinion rather than fact) or, more commonly, something other than a views statement: a question, an answer to someone else's question, a reference, a suggestion, an offer, or an expression of feelings about the topic at hand. The closing move is an appeal to other participants to engage further in the discussion.

The following message illustrates the aligned variant of the electronic message schema. The writer of the message, whom I will call Miriam Hillyard, had earlier put out a call for someone to write a feminist textbook on genetics. In this message, Miriam responds to a message from a younger woman, Penelope, expressing tentative interest in authoring such a textbook, and asking Miriam to clarify what it should contain.

(3) This is wonderful...exactly what I had hoped would happen! Thanks to Penelope. I would like to keep the discussion going on this in the network so that she and I might hear from others about what they think is needed. I will also write to Penelope, and if anyone wants to be involved, please let me know. I hope this is all right with Penelope.

1. I mean a feminist perspective of genetics in general...this would mean a discussion of the history of the study of genetics and its societal context in regard to its use in derogating different populations according to "race" and women.

2. I think it would require a clear statement about what "genes" are, what they do, and what is known and not known about how they function.

3. It would require a review of the literature in both animal and human research in which the relationship between genes and morphology, physiology, and behavior would be critically reviewed and stated. (Twin; "race"; "sex difference"...in both humans and nonhuman animals.)

4. It would have to deal with developmental processes and the relevance of individual and group differences, etc.

This is just for starters. Anybody else? As ever, Miriam Hillyard

The first macrosegment of this message is an *appreciative response* to Penelope's offer of possible authorship. This is followed by an attempt to mitigate the potential burden on Penelope if Miriam accepts Penelope's offer.<sup>6</sup> Linguistically, this section contains the only politeness markers in the text ("thanks", "please"), and is characterized by a first-person orientation. It is set off graphically from the following text by a blank line.

The second macrosegment is the list of desiderata for a feminist textbook on genetics. In this section, Miriam answers Penelope's question, and thus *provides information*.<sup>7</sup> (In an expository schema, this would be the solution to the problem, but note that the message itself contains no statement of the problem or evidence in support of the solution). The linguistic devices that characterize this segment include repetition of the conditional "would", as well as a third-person orientation (i.e., on the proposed textbook). Vocabulary and grammar are somewhat formal and academic; there are learned terms such as "derogation" and "morphology", numerous agentless nominalizations ("discussion", "statement", "review") and several passives (e.g., "would be critically reviewed and stated"). A further distinguishing characteristic of this segment is that its propositions are sequentially numbered.

The third macrosegment is made up of the last line of the message, minus the complimentary close and the writer's signature. This line functions as an *appeal to others to participate* in the joint planning of the textbook by responding with other ideas of what it should contain. (The same appeal, only worded less directly, can be found in the first macrosegment of the message.) Linguistically, the cohesive features of this segment include informal vocabulary ("just for

starters") and informal grammar (ellipsis in "Anybody else?"), and an implicit second person orientation in the appeal question to the other members of the list.

The basic moves of the aligned variant are summarized in Figure 5.

1. linker agrees with or appreciates a previous message
2. body questions, answers, makes a suggestion, offer, etc. (body is other than an expression of views)
3. appeal to continue the discussion

Figure 5. The aligned variant of the electronic message schema

Figure 6 shows the percentage of macrosegments in each move that are realized according to the aligned variant. The first pair of bars in the graph shows the percentages of all linkers that are agreeing linkers, the middle bars show percentages of all message body macrosegments that are other than expressions of views,<sup>8</sup> and the third bars show percentages of all appeals that are appeals to continue the discussion.

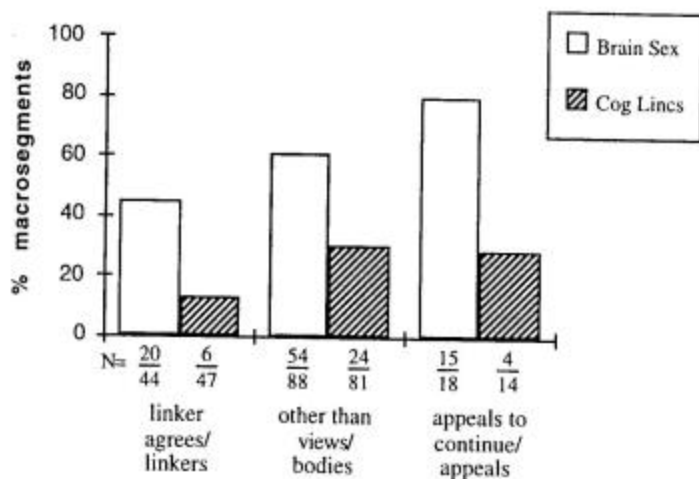


Figure 6. The aligned variant by discussion

Note that the moves of the aligned variant are more than twice as frequent in the Brain Sex discussion as in the Cognitive Linguistics discussion. Since 95% of the messages in the Brain Sex discussion were posted by women, this suggests that the aligned variant represents a female style of message presentation.

#### 4.2. The opposed variant

The functional complement of the aligned variant is the *opposed variant*, in which the writer takes a stance directly opposed to and in conflict with the views of the addressee. This realization of the basic schema, which characterizes many messages in the Cognitive Linguistics discussion, also follows the three-move sequence in Figure 3. However, instead of linking to a previous message and agreeing with it, the writer disagrees;<sup>9</sup> instead of building supportively on the ongoing discussion, the writer expresses a critical view; and instead of appealing for continued discussion, the writer proposes that the discussion come to an end. An example of a message illustrating the three schematic moves according to this variant is given below.

- (4) This list has seen two recent postings expressing outrage at the \*name\* ("Cognitive Linguistics") of a theoretical framework (or set of related frameworks). The first time I took to be an idiosyncrasy, but the recurrence alternately bothers and amuses me. I thought this list was a forum for more substantive discussions than grousing about what someone else's name is.

The \*mode\* of objection is curious. Its logic seems to be:

1. The name A of some approach implies they study B;
2. Other (perhaps contrary) approaches also study B;
3. Therefore use of name A is a usurpation and derogation of others who study B.

On its face, this seems plausible, but in light of the past 80 years or so of the history of linguistics, it is a strange turnabout in standards of naming. Examples of "violations" of the same sort would have to include "Structuralism", "Functionalism", "Transformational Grammar", "Relational Grammar", "Lexical-Functional Grammar", "Government-Binding Theory", and many many more. Note that it would be circular to claim exemption by assigning the pseudo-descriptive label the particular technical interpretation that practitioners of the approach so named wish it to have -- the same defense would suffice, as previous posters have indeed indicated, for "Cognitive Linguistics".

At best, such pseudo-descriptive brand names indicate that the approaches so named give (or at least see themselves as giving?) greater centrality to something their names indicate than do other/most contemporaries. By that criterion, "Cognitive Linguistics" (in the broad construal indicated in the charter of the ICLA, for example) is in the tradition, since the approaches using that name give greater prominence to (general) cognition in linguistics.

I hasten to add that the long history of libertarian naming of theoretical approaches includes acceptance of more evaluative labels such as "Natural...", "Standard Theory" (and its etymological heirs), etc.



Not to mention, by the obsessively picayune sensibilities recently shown, such out and out misnomers as "Generative Phonology" (since most practitioners regard phonology as \*interpretive\*). About the \*only\* names that might not be objected to on the grounds recently unearthed would be those of geographic or personal origins (e.g. "Prague School" or "Bloomfieldian"), although even these are usually based on stereotypes; or those derived from a technical term that has no homonyms in other approaches (e.g. "Tagmemics").

So why not let's get back to doing some \*linguistics\* instead of prescriptive metalinguistics?

The first segment of this message situates the writer with respect to the previous discussion, which involved disagreement as to which of two rival schools of linguistic thought can be said to do "cognitive linguistics". This writer's position is that participants on both sides are wrong to be concerned with the issue. He thus sets himself off as unique in the discussion, *not aligned with either side* but rather opposed to both. Linguistically, this segment has an overall first person orientation, and is relatively formal in its vocabulary and grammar. It states, indirectly, the thesis of the message as a whole: "grousing" about someone else's name is not a legitimate activity.

The body of the message is a lengthy expression of *critical views*, in which the writer elaborates his opinion that it is "curious" and "obsessively picayune" of others to be concerned with the name of a theoretical approach in linguistics. The body itself is arguably expository in structure: the "mode of objection" of others may be said to contain the problem (how to resolve the naming conflict), and the following two paragraphs the writer's solution (inferred: it's not worth worrying about), followed in the third paragraph by a supporting argument (even more problematic labels have been accepted in the past).<sup>10</sup> Like the body of the previous message, this segment contains numbered propositions, formal vocabulary and grammar, and third person reference (to naming and names of theories).

The closing appeal is again encoded as a single line at the end of the text: let's stop discussing the use of the term "cognitive linguistics". This *appeal discourages response*, or at least appears to. Note, however, the use of inclusive "let's", and the fact that the appeal is framed as a question, both features that invoke the audience as discursive participants.

Figure 7 summarizes the moves of the opposed variant.

1. linker disagrees with a previous message
2. views challenge or criticize others
3. appeal to end the discussion

Figure 7. The opposed variant of the electronic message schema

The percentage of macrosegments from each discussion which realize the

opposed variant of each of the three moves is shown graphically in Figure 8. The first pair of bars in the graph shows the percentages of all linkers that are disagreeing linkers, the middle bars show percentages of all expression of views that challenge or criticize others, and the third bars show percentages of all appeals that are appeals to end the discussion.

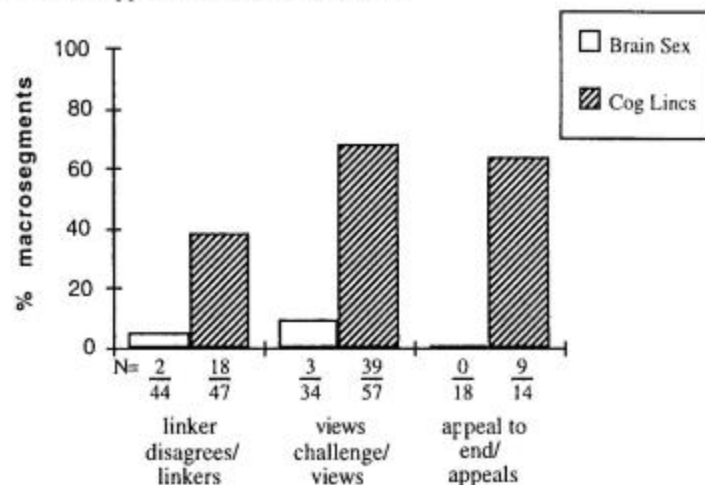


Figure 8. The opposed variant by discussion

The opposed variant is overwhelmingly more frequent in the Cognitive Linguistics discussion than in the Brain Sex discussion. Since 75% of the messages in the Cognitive Linguistics discussion were posted by men, the opposed variant would appear to represent a male style of message presentation.

#### 4.3. Gender vs. list norms

Thus far, I have identified two different realizations of the basic electronic message schema, the first of which characterizes the WMST discussion and the second of which characterizes the LINGUIST discussion. Further, I have suggested that these variants represent preferred female and male styles of schematic organization. However, there is an alternative explanation to this distribution, namely that the two styles simply reflect the different norms of each mailing list. That is, it is possible that messages posted to WMST tend to take an aligned form, regardless of the gender of the one who posts them; similarly, messages posted to LINGUIST may tend to follow the opposed model, regardless of whether they are posted by men or women.

To address this possibility, I broke the data down by gender of message poster, male or female. Since most messages in the discussion were signed, it

was not difficult to determine the writer's gender in the majority of cases. (For unsigned messages, if I did not recognize the sender's address from personal knowledge or from their previous participation, I consulted the list of subscribers to each mailing list.) Figure 9 (for women) and Figure 10 (for men) display the results of the analysis for use of the aligned variant. The percentages were calculated as for Figure 6, with the exception that Figure 9 considers only messages posted by women, and Figure 10 only messages posted by men.

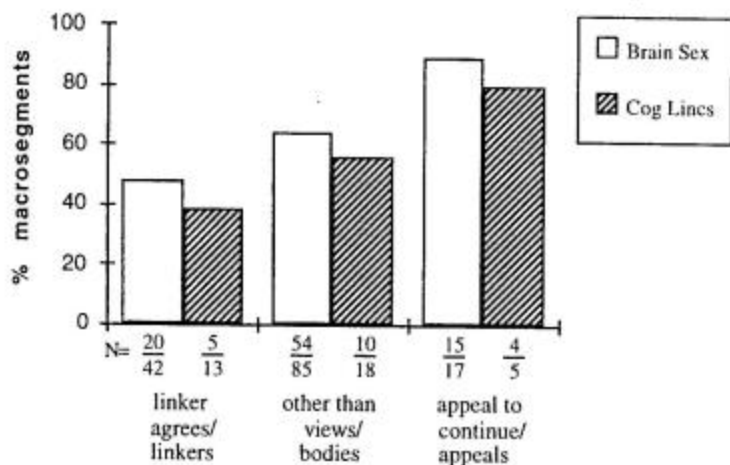


Figure 9. The aligned variant: Messages posted by women

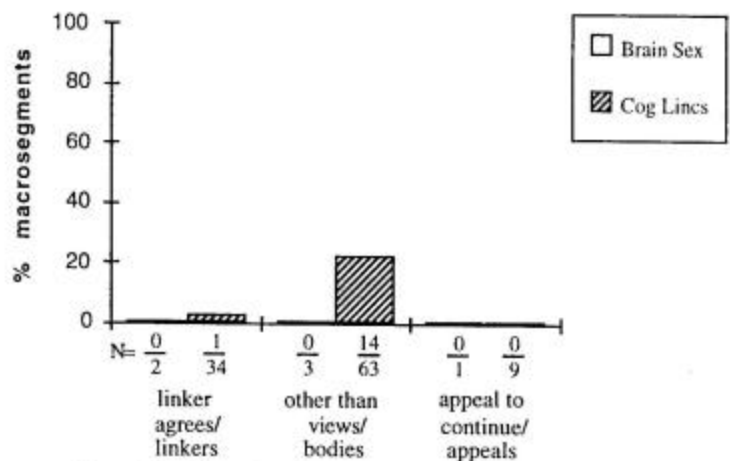


Figure 10. The aligned variant: Messages posted by men

Figures 9 and 10 show that use of the aligned variant is strongly gender-linked: women on both lists employ it often, while men do not employ it at all. The only apparent exception is the use by LINGUIST men of "other than views" segments in the message body; most of these provide information (such as references) and co-occur with expression of views.

Figures 11 and 12 display the results of analyzing male and female messages separately for use of the opposed variant. These percentages were calculated as described for Figure 8, except that Figure 11 considers only messages posted by men, and Figure 12 only messages posted by women.

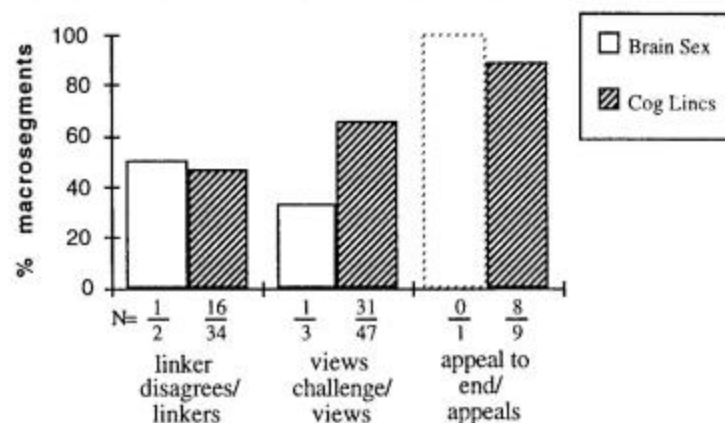


Figure 11. The opposed variant: Messages posted by men

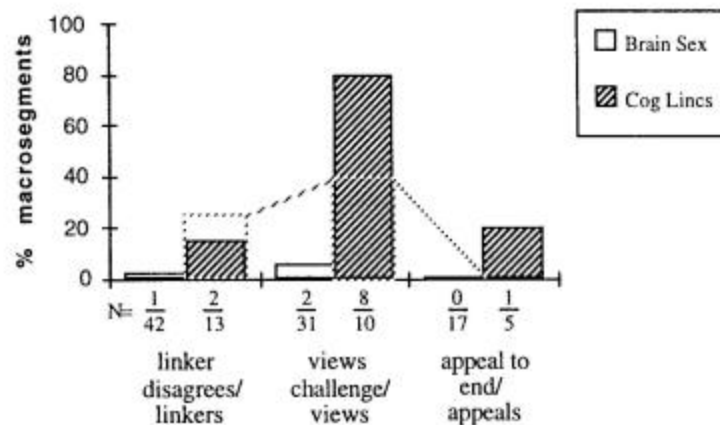


Figure 12. The opposed variant: Messages posted by women

The overall predicted pattern is again evident: men on both lists favor the opposed variant, while women, especially in the Brain Sex discussion, make less use of it. There are two exceptions to this pattern, however. In Figure 11, no men from the Brain Sex discussion make an appeal to end the discussion, in contrast with men in the Cognitive Linguistics discussion. This is however not a significant exception, in that only one message contributed by a man in the Brain Sex discussion contains an appeal of any kind. Although this appeal was critical in its content (it was a "nag" to a previous poster to include her name at the end of her message; see example (6) below), it did not call for the end of the discussion, and thus was not counted in this category. (Had it been counted, it would have put the value in the appeal category for the Brain Sex discussion at 100%. This is indicated by the dotted line in Figure 11.)

A more troublesome exception is the high percentage of women in the Cognitive Linguistics discussion whose messages express critical or challenging views. In part, this is an artefact of the posting behavior of one high-status woman, who contributed 13 of the 18 messages posted in the discussion by women, and who has an adversarial style (see Herring 1992 for further discussion of this individual's posting behavior). If her contributions are excluded, the percentage of disagreeing linkers rises slightly to 25%, challenging views decrease by half to 40%, and appeals to end the discussion are reduced to 0%, as indicated by the dotted lines in Figure 12. Nevertheless, these percentages are still considerably higher than for women in the WMST discussion. This finding constitutes evidence for a List Effect. That is, women on the male-predominant list, where the norms of interaction are oppositional, are more oppositional than are women on the female-predominant list, where the norms of interaction are aligned. Correspondingly, women on the male-predominant list express less alignment than women on the female-predominant list, as Figure 9 illustrates.

Interestingly, there is less evidence in these data of a List Effect for men—men on LINGUIST exhibit slightly more alignment features in their message organization than do men on WMST, which is the reverse of what we would predict. Does this mean that men in the Brain Sex discussion did not adapt their discursive style to reflect the female norms of interaction on the list? In fact they did, although not with respect to discourse-level schematic organization.<sup>11</sup> Rather they modified local features of their style, e.g., by hedging and posing their assertions as questions. In other words, they adopted the *attenuated* features of women's on-line style, rather than its *personal/interpersonal* orientation (Herring 1992, 1993a).

As a consequence of their attempts to adapt to dominant list norms, minority gender participants incorporate features of usage of both genders in their messages, resulting in style mixing. This is illustrated by the two messages below, the first from a female contributor to the Cognitive Linguistics discussion, and the second from a male contributor to the Brain Sex discussion.

- (5) Thank you for your information. I do think you should be aware that there are many linguists who consider themselves cognitive scientists who do not share your particular views as to the relations between language and other cognitive structures. It is interesting to note that more and more neurologists and neuropsychologists are of the opinion that the brain and mind is indeed modular in structure and function and that language is not derivative of non-linguistic cognition but that it is one among many cognitive structures. That is, I take issue with you and your usurping the title of 'cognitive linguistics' since I, and others with whom I work in the cognitive psychology, neuropsychology, neurolinguistics, neurology, brain anatomy, philosophy fields, support the view that the formal structures of language are "autonomous" (and not) "reflective of general conceptual organization, categorization principles, and processing mechanisms" as your statements below claim. I would be happy to provide evidence, citations, references, quotes, results of mri scans + linguistic/non-linguistic cognitive texts etc.

As to this issue, it is clearly an empirical question, and we do need to exchange views among ourselves and in an interdisciplinary atmosphere.

Sally Psycholinguist

This example is made up of three functional macrosegments, the first and the last of which express an aligned orientation, while the second expresses an opposed orientation. The first sentence, an aligned linker, constitutes the opening macrosegment. The last sentence of the message, an appeal for further participation in the discussion, is the closing macrosegment. The message body, however, is an expression of disagreeing views ("I take issue with you and your usurping the title of 'cognitive linguistics'"), as befits the opposed variant. The body also contains self-promotion (by informing us that the author is well-connected with researchers in other fields), a feature found elsewhere to be more characteristic of male than female messages (Herring 1992, 1993c). Style-mixing is characteristic of female participation on LINGUIST more generally. In a larger corpus of LINGUIST data (described in Herring 1993c), 46% of all messages posted by women mix features of male and female styles, as compared with only 14% of messages posted by men.

Men on WMST also mix gendered features, as illustrated in the following message posted to the Brain Sex discussion.

- (6) Someone ... who? wrote ...

"I am somewhat puzzled by the seemingly unanimous view that it is dangerous/reprehensible to even consider the possibility that some sex differences are biologically based. This seems to take for granted that if there are, this would be a compelling argument for an anti-feminism, anti-woman, anti-gay agenda."

The "positions" didn't seem that uniform to me, but it did sound like a lot of people with answers rather than questions. I was \*very\* surprised at the reaction to [David Carpenter's] original post which seemed (to me) to raise alternatives rather than provide answers/conclusions ... perhaps it's an example of (pretty good) science training focused on manager-type problems, where we (trainers) \*hammer\* on "look for alternatives" ... don't reject options too soon, etc.

Now, please! (I'll "nag" for [the listowner]) signature lines \*in the message\* ... who wrote the posting?

Jack Shearin, School of Business, Northern Michigan University  
xxxxxxx, MI 49xxx (xxx) xxx-xxxx shearin@xx.nmich.edu

This message also has a three-part organization, realized predominantly as per the opposed variant. A previous contributor is cited (a common type of linking introduction), only to be disagreed with in the message body ("The positions didn't seem that uniform to me"). The last orthographic paragraph ("Now, please!...") appeals to the previous contributor to state her identity, but in a way that is critical of her. At the same time, the message body reveals a concession to stereotypical female style in its liberal use of hedges ("seem", "seemed (to me)", "perhaps", "(pretty good)") and overall indirectness, such that the writer's point (that "alternatives" should be valued) is partially obscured. Presumably, this is because the "alternative" he mentions reflects a male perspective that women on the list might be unwilling to accept.

Ironically, this male writer is concerned not to offend the women on the list by his differing views, which he hedges, yet he seems unaware that the oppositional structure of his message itself might be viewed as offensive or inappropriate. This observation suggests that discourse-level macro-organization is relatively less accessible to conscious reflection than other kinds of linguistic behavior. A consequence of this is that if one wishes to "pass" or fit in on a list dominated by the opposite gender, one must make adjustments not just at the level of conscious expression, but at the deeper level of schematic organization, reflecting the socialization of one's communicative aims.<sup>12</sup>

These results affirm both of the predictions advanced in section 2.2. That is, the data show a strong Gender Effect which determines the schematic orientation of electronic messages, as well as a secondary List Effect which leads members of the minority gender to modify their schematic orientation (in the case of women) and surface style (in the case of both women and men) to resemble that of the dominant gender on the list.

#### 4.4. Gender vs. discussion topic

A final consideration concerns the effect of the topic of discussion on the linguistic and organizational strategies used by participants. The Cognitive Linguistics discussion involved a clash of views on a controversial topic, while

the Brain Sex discussion was largely uncontroversial. To what extent does the choice of the opposed or the aligned schema fall out from the topic of the discussion itself? To address this question, I briefly examined two additional discussions from each list, one on a controversial topic related to societal sexism, and the other on a "just-for-fun" topic on the origin and meaning of certain taboo words. Despite a higher incidence of oppositional messages in the controversial discussions on both lists, LINGUIST participants more often than WMST participants represented themselves as opposed, even on the uncontroversial topic, and WMST subscribers more often than LINGUIST subscribers represented themselves as aligned with other participants, even when their views differed. Thus the schematic orientations described above appear to hold more generally for each list.

Additional support for this conclusion comes from a consideration of all messages posted to each list during a randomly-selected 2-week period. Out of 139 messages posted to LINGUIST (114 by men, and 25 by women), 29% were critical or challenging of another participant, as compared with only 1% of the 79 messages posted to WMST (74 by women, and 5 by men). Also revealing is the breakdown of message function during the two-week period:

Table 4. Functions of messages posted during a random two-week period

	express views	query	provide info
LINGUIST (N=139)	42%	19%	19%
WMST (N=79)	10%	23%	55%

In this sample, the most frequent functions conveyed through the message body were expressions of views, queries, and providing information. Two observations regarding their distribution are relevant here. First, expression of views, the vehicle through which disagreement and conflict are most likely to arise, occurs four times as often on LINGUIST as on WMST. Second, the women's list posted roughly three times as much information as the men's list. To the extent that the two-week periods are indicative of the day-to-day activity of the lists, these additional observations not only support the findings for the two extended discussions, they go further and partially reverse the stereotype about gender and information: female users are more interested in the exchange of pure information, while male users are more interested in debating their views, regardless of the topic being discussed.

## 5. Summary and conclusion

In this chapter, I have brought empirical evidence to bear on the stereotypes of the informative male and the interactive female computer network user. By analyzing the schematic organization of publicly-posted messages to two Internet

mailing lists, I have shown that these stereotypes miss the mark in important respects. My results suggest that *both* women and men participate in discussions on electronic mailing lists to exchange opinions, beliefs, understandings, and judgments in social interaction with other human beings, with the pure exchange of information taking second place. Indeed, the era since the advent of computer networks might better be termed the "Interaction Age" rather than the "Information Age", since it is in the potential for interaction with others that the primary appeal of computer networks appears to lie.

At the same time, my investigation uncovered significant gender differences. Women's messages on both lists tend to be aligned and supportive in orientation, while men's messages tend to oppose and criticize others. Further, the lists themselves exhibit an overall aligned or opposed orientation, depending on whether the majority of participants are women or men. However, this is not the same as claiming that men are not interactive, nor women interested in the exchange of information. Rather men and women present different styles of interaction and information exchange.

At this point, the question naturally arises as to what relationship, if any, these differences bear to the stereotypes of the interactive female and the informative male. Let us first consider the female stereotype. By aligning themselves with and expressing support for others, women create solidarity and promote harmonious on-line interaction. This characterization is compatible with the claim that women value interpersonal relations and seek to develop them on-line. At the same time, the stereotype is misleading to the extent that interactivity is taken to exclude informativity. In fact, the female-predominant list is *more* informative than the male-predominant list as regards the pure, unevaluated exchange of information. This suggests that far from being "uninterested", women are important purveyors of information on the Internet.

The stereotype of the informative male is harder to explain. By challenging and criticizing others, men attract attention to themselves and engage in "contests" as a result of which they gain or lose in status (Tannen 1990). However, this characterization bears no evident relation to the claim that men are information oriented. One might argue that information of a different sort is involved in oppositional exchanges; certainly new understandings can be forged through heated debate. However this explanation overlooks the important role played by linguistic expression. Men are more likely than women to express their views as assertions of "fact", e.g., through the use of strengtheners such as "obviously" and "of course", and the avoidance of hedges such as "perhaps" and "it seems to me" (Coates 1993; Herring 1992, 1993c; Lakoff 1975; Popkin 1992). As a consequence, male users may appear to be exchanging information even when in reality they are exchanging opinions and evaluations.

A second explanation is that men discursively construct a reality in which their primary on-line activity is the exchange of "information". In response to an electronic survey on network etiquette (Herring 1994, 1996), men complained

far more than women about messages with "a low signal to noise ratio" (i.e., which do not contain much information), or which do not document their assertions with references. Proscriptions against messages with low information content are also found in many male-authored netiquette guides. In practice, however, accusations of insufficient informativity are often levelled against participants with whom the message poster disagrees, independent of the actual degree of informativity of their messages. In such discussions, what passes for "information" is often the expression of highly subjective views. In short, the concept of "informativity" figures prominently in the way men talk about—if not how they actually write—electronic messages.

Finally, the stereotype that men are more interested than women in information exchange must be interpreted against a socio-cultural backdrop according to which men are expected to be knowledgeable, rational, and dispassionate, and in which information is highly valued. These expectations are, if anything, exaggerated in the "Information Age", in which computer technology and computer use are disproportionately male domains (Wajcman 1991). Cultural ideals of femaleness, in contrast, include expectations that women will be caring, sociable, and hence interactive. Stereotypes of gender differences in e-mail use directly mirror these cultural expectations, and are partially explained by them: we interpret male communication as informative and female communication as interactive in part because we expect men and women to behave in those ways. As a consequence, male informativity is inflated and promoted above that of women, an illusion further abetted by the linguistic and metadiscursive practices of men.

These findings have practical consequences, in that stereotypes about computer use influence the attitudes and behavior of users. Given that the stereotypes glorify men's role in and exclude women by definition from the "Information Age", it is not surprising that women are more reluctant to go on-line, less confident of their abilities when they do so, less participatory in on-line group discussions, and less represented among computer network policy makers and designers than men (Herring 1993a; Spender 1992). These trends are cause for concern no matter what their source, but they are all the more egregious if underlying them are stereotypes about gender and computer use that are demonstrably false.

#### ACKNOWLEDGMENTS

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## NOTES

1. The discrepancy in the duration of the two discussions can be explained in part by the fact that LINGUIST messages are sent out by the moderators at intervals, resulting in a slower rate of message exchange than on WMST, which is not moderated.
2. This use of the term 'schema' differs from that of psychologists and computational linguists, for whom a schema is a theoretical construct representing an idealized knowledge structure in the minds of language users (e.g., Rumelhart 1980; Shank and Abelson 1977). While the view presented here and in Longacre's work does not rule out the possibility that schemata exist as mental structures, they are arrived at empirically, as idealizations of recurrent textual patterns (cf. van Dijk's (1980) *superstructures*).
3. For further discussion of the letter schema, see Mann, Matthiessen and Thompson (1992).
4. This finding shows that the anonymity potential of CMC is underutilized by computer users. A similar finding is reported by Selfe and Meyer (1991).
5. 98% of the messages in the combined corpus have a contentful message body, 80% have an introductory macrosegment, and 24% have a closing macrosegment.
6. In a more fine-grained analysis, this could be considered a separate functional move, but as it is integrated with and dependent on the larger function of appreciative back-reference, I treat both as parts of a single macrosegment.
7. Miriam's list is arguably also an expression of her views, but it was classified as providing information in that it includes conventional criteria for textbook writing, and was clearly intended as a response to Penelope's information-seeking question.
8. This proved to be a more revealing measure for the middle move than the percentage of all expressions of views that are not critical. An absence of criticism does not indicate alignment as explicitly as do suggestions, offers, questions, etc.
9. This category includes "I agree with X, but" linkers, which account for slightly less than half of the disagreeing linkers in the Cognitive Linguistics discussion.
10. Note however that the writer's position on the naming problem is not explicitly stated; rather the engagement of others in the discussion is simply mocked. This practice deviates from the expository ideal of providing a clear solution to a problem. An alternative characterization of messages of this type, which are frequent on LINGUIST, might be as functional insults. Insults, including flames, merit study as a separate text type for evidence of organizational regularities.
11. Recall however that the number of men who posted messages in the Brain Sex discussion is very small (N=3). It would be unwarranted to generalize from this that male subscribers to female-dominated lists never modify their schematic orientation.
12. In light of these observations, it is not surprising to learn that recent male-to-female transsexuals attempt to pass as women on-line by adopting stereotypical surface features of "women's language" (Lakoff 1975), especially hedges and gendered vocabulary ('adorable', 'charming', etc.). In contrast, those who have been women for a longer time manifest more subtle female discourse patterns (Erich Trapp, personal communication).

## II: SOCIAL AND ETHICAL PERSPECTIVES