Paper published in (1998) *Applied Linguistics 19, 97-121*

CONSIDER THIS:
THE ROLE OF IMPERATIVES IN SCHOLARLY WRITING

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ABSTRACT

There have been numerous investigations in recent years into the linguistic and rhetorical features of research articles, but none, to our knowledge, has examined the "fringe phenomenon" of imperatives. This study investigates the use of imperatives in research articles from ten disciplines. Five articles in each field, all five from one journal, were scanned for imperative uses in both main text and notes, and instances were collated and analyzed. In fields where imperatives were present in the main text (five out of ten), we recorded interviews with the authors of one of the articles. Results show that main-text imperatives tend to congregate in sections where the principal argumentation occurs, but are very unevenly distributed across fields. The interview data also reveals that, despite the potentially face-threatening nature of imperatives, authors use them for various strategic purposes such as engaging the reader, achieving text economy or manifesting personal style. Finally, there appear to be a number of field-specific expectations and conventions. Given these subtleties, a case can be made for rather more sophisticated materials for NNS researchers and students than currently available.

INTRODUCTION

Earlier studies within applied linguistics have provided a wide range of functional accounts of linguistic features that frequently occur in academic articles, such as nominalization (Dubois, 1982; West, 1980), voice (Tarone et al.,

1981), tense (Lackstrom et al., 1973; Selinker et al., 1976, 1978; Oster, 1981; Swales, 1981; Malcolm, 1987) and modality (Adams Smith, 1984). Many of these studies are especially noteworthy for their ground-breaking attempts to relate grammatical components to specific rhetorical functions; they have also shown something of the distribution of those features across disciplines and across part-genres of the research articles. Recent studies on academic writing have taken cues from these earlier attempts and have expanded the focus of their research beyond the grammatical and syntactic boundaries to the pragmatic level.

Further, research from the social construction of knowledge has clearly shown that academic discourse is a social construct, and its success is at least partly accomplished through strategic manipulation of rhetorical and interactive elements. Scholarly writers sometimes have to play two roles simultaneously: one as "the humble servants of the discipline" (Myers, 1989:4) and two, as "the irreverent pioneers breaking new grounds and arguing for originality of claims and rightness of his findings" (Jacoby, 1987:34). Indeed, one of the central issues within the pragmatic dimension of academic writing is this precarious reader-writer relationship.

Myers (1989) was the first to incorporate Brown and Levinson's (1987) politeness model drawn from conversational data into the study of academic writing. In his study, Myers listed several different written linguistic devices that can be categorized as either positive or negative politeness strategies. He describes, for example, the use of personal pronouns as a positive politeness strategy, and frames the use of passive verbs as a negative one. This innovative study has, in recent years, sparked interest among researchers to explore previously studied linguistic features from this new perspective.

One of the most studied features in research articles is the use of hedging devices. Hedging falls within the category of negative politeness (Myers, 1989). Its use indicates the writer’s deference to the wider academic community. Hedges allow writers to take stances and to project their research claims with an appropriate degree of certainty and confidence while acting as a protective device for the authors against potentially critical responses from readers. In fact, studies conducted by Salager-Meyer (1994), Hyland (1994, 1996), Myers (1989), Skelton (1988), Crismore and Vande Kopple (1988) and many others in this area have all shown that hedging is an important device for establishing a good rapport with readers. Closely related to this topic are the studies on the pragmatic values of various reporting verbs as a persuasive device as well as an attitudinal marker, to communicate ideology and evaluation (Thompson and Ye, 1991; Hunston, 1993; Thomas and Hawes, 1994).

All of these studies point in one direction: in academic writing, writers are not only concerned about how clearly to demonstrate their ideas but also how to present appropriately their claims within the particular social context of the targeted community. However, there is at least one linguistic feature found in research articles that seemingly contradicts this general tendency: the use of imperatives. Although imperatives may commonly be found in instruction manuals, textbooks, and other unequal encounters in written texts, they also appear, albeit with varying frequency, in equal peer-peer texts, despite the fact that (most) imperatives can be viewed as bald-on-record face-threatening acts (Brown and Levinson, 1987).[1] If writers are to constantly maintain a harmonious reader-writer relationship and to exhibit their deference to the community, what then would be the motivation for the use of this potentially risky device?

There is no clear answer to this question in the literature; in fact, to the best of our knowledge, there is a notable absence of specific studies carried out on the use of imperatives in scholarly papers. This vacuum may be due to the notion that their usage is uncommon in formal academic prose. Myers has pointed out that in scientific articles writers can use "cookbook-like imperatives" (1987:21) in the method sections without imposing any kind of threat, on the assumption that readers are interested in learning the announced techniques of experiment. According to our observations, however, imperatives are used by many academic writers not only in the method section but in other sections as well.

This preliminary study was conducted to explore the role of imperatives in research articles, and their syntactic as well as rhetorical functions across ten academic disciplines. We argue that despite their assumed bald-on-record quality, imperatives are better seen as complex textual signals by which academic writers manipulate various rhetorical strategies. While we find the usage of imperatives to be an effective, although tricky, persuasive device with pedagogical implications for EAP practitioners and students alike, it is regrettable that this topic has largely been neglected by many scientific research writing and style manuals. Bem (1987) only says: "And you may also refer to the reader indirectly in imperative, 'you-understood' sentences: 'Consider, first, the results for women.' 'Note particularly the difference between the means in Table 1" (1987:197). Swales and Feak (1994) merely offer a short, somewhat speculative section and acknowledge the fact that this area is still under-researched. Other manuals such as Weissberg and Buker (1990), Day (1983) and Huth (1983) make no mention of the topic at all. Similarly,

neither the APA Publication Manual (1994) nor the MLA style manuals seem to acknowledge the use of imperatives as a possible grammatical structure for the scholarly writer.

PROCEDURES

The corpus for this study was constructed with a number of aims in mind. Given the preliminary nature of the topic, we wanted to cover a fairly wide range of fields (or disciplines) in order to gauge the extent of the phenomenon. We also felt it prudent to include among the fields those which we guessed would have some use of imperatives, such as statistics ("*let x equal*..."), art history ("*Observe* how Rembrandt..."), and geology ("*Note that* the fault line..."). We eventually settled on the following: art history, chemical engineering, communication studies, experimental geology, history, linguistics, literary criticism, philosophy, political science, and statistics. We then decided to scan five articles in each of those fields for imperatives, which in fact produced a total of about 365,000 words of text. In each case, we chose a single recent issue of an internationally-recognized academic journal published in the United States. (Details are given in Appendices 1 and 2.)

The choice of a single journal from each field is a delicate one: on the positive side, it allows us to see how much inter-author variation and/or consistency in imperative use occurs in this single constrained context; on the downside, it does not permit inter-journal comparisons. While we believe that our findings are likely to be broadly indicative of disciplinary predilections, confirmation (or otherwise) can only come from further research. We had one further requirement for the journal selection. We selected issues in which one of the articles was written by a faculty member at our institution. These we identified as the *core* articles in the *suite* of five contiguous scholarly papers. Depending on the location of the core article, the others either preceded, followed or flanked it with two on either side.

This procedure allowed us to interview the authors of the core articles in order to gain further insight into their own imperative-using or imperative-avoiding practice, as well as to obtain some broader information about grammatical and stylistic expectations in particular fields. As it happened, we finished up with taped text-based interviews (of 30 to 50 minutes in length) for five fields: experimental geology, linguistics, literary criticism, philosophy, and statistics. In two of the remaining fields, no imperatives were found at all, and in three others imperative use appeared to be very rare, and when it did occur, very standard. We therefore decided

that interviews in these five disciplines would likely be unproductive. In one field, linguistics, we conducted a second interview because one of "the flankers" was also a local author and had casually revealed to one of us in conversation that she thought the use of imperatives in linguistics was School-specific. This was a chance not to be missed.

In searching for an operational definition of imperatives, our major concern was to achieve a consistent and efficient survey of all the occurrences of imperatives in research articles from a wide range of disciplines which were highly heterogeneous in nature. In other words, we needed an operational definition of imperatives which (1) would be explicit enough so as to allow a consistent judgment among the members of the research team who were in charge of different fields, and (2) could lead us to an efficient survey of imperative occurrences in as many disciplines as possible at the early stage of our research. Given these considerations, a definition based mainly on the surface syntactic form (Bolinger, 1967; Huddleston, 1971; and Quirk et al, 1985) was selected.[2] The final version of our operational definition of imperatives is the following:

> An imperative sentence is defined as a sentence which:
>
> (1) has no surface subject (apart from occasional uses of *you*, as in "*You try this*");
>
> (2) has either a main verb or emphatic *do* ("*Do be careful*") in the base form and without any modals.

All instances of *let* were taken to be imperatives in both first-person contexts ("*Let us examine...*") and in third-person ones ("*Let x represent...*"). We would have accepted other third-person imperatives, such as "Someone open the door," but we did not attest any imperatives of this kind in the corpus. Finally, we made two exceptions to our rules. First, we accepted *c.f.* as an imperative, even though its surface representation did not strictly accord with our operational definition. On the other hand, we rejected *say* as an imperative when it was non-sentence initial, bounded by commas, and appeared to be functioning as an exemplificatory sentence-connector, as in "Some American cities, *say* Chicago, have..." The actual methods of analysis, along with the results, will be discussed in the next section.

RESULTS

We first present the quantitative results of imperative use in the main texts of the 50-article corpus. We next examine, both linguistically and rhetorically, the six most common lexico-syntactic patterns. The third section then offers an account of the form and role of imperatives in notes and appendices (i.e. outside the main text). This is followed by some *themes* that emerge once the textual and interview material are aligned. In the final section, we provide interview-based commentaries on the role of imperatives in papers from three fields: linguistics (theoretical), geology (experimental) and philosophy (ethics). These last permit a closer look at individual textual practice and author reflection both upon it, and upon disciplinary-specific expectations.

A. *The use of imperatives in different fields -- a quantitative overview*

Tables 1 and 2 show the occurrence of imperatives in the main text of the corpus by field. Table 1 gives the "raw figures," while Table 2 gives the ratio between imperative verbs and total words in the corpus. Small differences in the ranking are due to different lengths of articles in the different fields. For example, the fact that experimental geology articles had an average length of 13 pages, while those in linguistics averaged 30 pages, explains the reversal of their rank order in Table 2.

< Tables 1 and 2 about here>

Obviously, these figures show great variation from one field to another. At one extreme, there was an average of 28 imperatives per article in statistics, but none (in the main text) in political science and communication studies. We were initially surprised by the low figures in art history and literary criticism, and by the high figures in linguistics. There is no strong or obvious correlation with the traditional divisions into sciences, social sciences and the humanities (wherein the categorization of Linguistics is itself controversial). However, it would seem that the three "top" fields (as shown in Table 2) are all those which tend to produce texts that not only consist of solid paragraph blocks, but also contain mathematical, experimental or illustrative elements, and which, in consequence, may require rather more specific forms of reader-text management.

B. *Lexico-syntactic patterns and rhetorical functions*

In addition to the frequencies of imperatives by fields, we also examined the occurrences of imperatives by lexico-syntactic patterns. As listed in Table 3,
"*see* ~," "*consider* ~," "*note* ~," "*suppose* ~," "*let A+Verb+B* ~," and "*let us* ~" are the six most frequent imperative patterns found in the main texts. (Other imperative patterns and lexical choices occurring more than once are also given in the table.)

<insert Table 3 about here>

In the remainder of this sub-section, we will examine these six most frequent imperatives, in terms of their syntactic patterns and rhetorical functions. The following analysis is based primarily on the main texts of the core articles. Imperatives in footnotes are excluded from the analysis in this section, except for some mention in the discussion of "*see* ~."

1. *See* ~

As shown in Table 3, "*see* ~" imperatives occur the most frequently in our corpus. The two major syntactic patterns in this category are the following:

A. *See* + NP_1
B. *See* + NP_1 + *for* + NP_2 or *For* + NP_2 + *see* + NP_1

The NP_1 in the above formulae can refer to citations, tables, figures, or other sections in the paper. In linguistics and experimental geology, these two patterns function as metadiscourse, directing the readers to tables, figures, or to other sections in the paper; for example, "*see* Appendix 1 and Table 2," and "*see* §3.2 below for examples and discussion." An even more prominent function of these "*see* ~" formulae, when used in statistics, linguistics, and experimental geology, is to cite relevant literature: for example, "*see* Maret [49] and West and Harrison [64] *for* the theory underlying the dynamic linear model," and "*see* [21]."

Of the 87 instances of *see* in the corpus, as many as 56 (64%) occur in statistics, where their function is primarily citational. In fact, a further browsing of a number of statistics research articles strengthened our belief that the use of "*see* ~" imperatives as citational devices has become a well-established discourse convention in this field. It is therefore not surprising to find that these imperatives appear as full non-bracketed sentences in statistics articles. For example, "*See* Wold [66] and Doob [14, Ch. X, XI] for presentations of such an approach,

and Box and Jenkins [7] for applications."[3] In contrast, these imperatives, although still present in the main text, are put in parentheses when used in linguistics and experimental geology; for example, "...(*see* 24)."

When these two different citation conventions are examined in fields such as philosophy, history, and art history, an intriguing phenomenon emerges. In philosophy, history, and art history, "*see* ~" as a citational device appears only in the footnote. In terms of Brown and Levinson's general position (1987:95) that "direct imperatives stand out as clear examples of bald-on-record usage", we are presented with three slightly different degrees of apparent 'imposition' in the use of "*see* ~" as a citational device: a high degree in statistics, a lower degree in linguistics and experimental geology, and a still lower one in philosophy, history, and art history.

As readers may have observed, this order of the degree of imposition interestingly parallels that of the ratio of imperative occurrences in the main text of these fields (as shown in table 1). Statistics has the highest ratio of imperative usage and also the highest degree of supposed imposition; linguistics and experimental geology the lower ratio of imperatives and lower degree of imposition; and philosophy, history, and art history the lowest ratio of imperatives as well as degree of imposition. Given this correspondence, we might suspect that the use of "*see* ~" as a citational device could be considered as an indicator of attitudes towards the use of main-text imperatives in general in different scholarly disciplines. That is, there seems to be a tendency, in disciplines where the least degree of imposition of the citational device is maintained, for main-text imperatives to be generally avoided. In contrast, in disciplines such as statistics where the imperative citation device has largely become conventionalized, the use of main-text imperatives tends to be a more common discourse practice.

2. *Consider ~*

The second most frequently used imperative in the main-text corpus is "*consider ~*." The three syntactic patterns that occurred here are as follows:

A. *Consider + NP*

B. *For example, consider + NP*
Consider, for example + NP

C. *Now*
Next

First
Second + *consider* + *NP*

Pattern A is used in the core articles from linguistics and art history, whereas pattern B is found in those from statistics and experimental geology. These two patterns share similar functions: the author uses them to illustrate an argument (e.g., "The metrical approach also explains some data which may otherwise seem quite surprising. *Consider* 24."), or to further the discussion of some point (e.g., "*For example*, *consider* an event *E* that we believe may have triggered off a bull market..."). In addition, "*consider* ~" imperatives also serve as topic initiators in linguistics and statistics. However, with rather few exceptions, in both fields it is usually Pattern C that is selected to start a new (sub)topic (e.g., " *Next consider* word-length sensitivity."). In other words, when *consider* is employed as a topic initiator, it usually occurs with a sequential or temporal adverb, such as *first* and *now*.[4] These adverbs, however, rarely appear when "*consider* ~" is used to give examples.

We see here, then, a relationship between the use of "*consider* ~" imperatives and rhetorical purpose. When "*consider* ~" is used to provide an example to illustrate a proposition, the information flow is temporarily blocked within a certain domain of argumentation; in this respect, "*consider* ~" seems not compatible with any sequential or temporal expressions. Take the following sentences as an example:

> The metrical approach also explains some data which may otherwise seem quite surprising. *Consider 24* (example 24 -- the metrical structures of two compound words in Shanghi). Each compound is made of two words and each forms two domains. But the domain boundaries do not fall on word boundaries... In the metrical analysis, the explanation is simple..." (SD, p. 232)

Here the author uses the first sentence to set up a domain of argumentation which claims that the metrical approach can explain some unusual data not so easily explained by other approaches. He then uses example 24 to illustrate the proposition; the discussion of this example focuses only on testifying this specific proposition, and is therefore limited within the temporary domain of argumentation created by the first sentence. In contrast, when introducing a new (sub)topic, the information flow proceeds into another stage of discourse; hence a discoursal move occurs at this point. Interview data indicates that this sense of movement leads the author to add a sequential or temporal adverb into his use of "*consider* ~" imperatives. We therefore suggest that the selection of different "*consider* ~" patterns not only reflects the rhetorical function of a certain expression, but may also signal to the reader something of the nature of the argumentation at this point in the author's text.

3. *Note (that) + clause*

The pattern "*note* ~" is found in the core articles in four fields: linguistics, chemical engineering, statistics, and experimental geology. It seems to be primarily employed as an attention-getting device by setting an emphatic tone. In these four fields, the authors use this pattern to draw the reader's attention to a crucial or unexpected argument; for example, "...*note that* the subject is itself a complement of the verb under the definitions given above." In linguistics and experimental geology, the readers' attention may also be directed to an important contrast; for example, "*Note that* T_{ae} is well defined but T_d and T_q are not..." In addition, in chemical engineering, this pattern can be used to remind the readers of the limitation of an experiment, as in "*Note also that* this section considered only the effects of temperature and pressure on the DRE of the POHC." Finally, besides these functions, in statistics, the author may also employ this pattern to direct the reader's attention to important results or procedures in methodology design; for example, "*Note that* our choice of 500 Bernoulli and 500 MP simulations was made to represent the situation where..." In general, the degree of imposition that "*note* ~" has on the readers seems less forceful than that of "*notice that* ~." As can be seen in table 4, "*note that* ~" (38 occurrences) is used far more often than "*notice that* ~" (2 occurrences) in our corpus.

4. *Let A + Verb + B*

The four sub-patterns under this category are the following:

Let A = B
Let A be B
Let A denote B
Let A have B

These highly technical imperatives are found only in statistics and experimental geology. They are used to:

(a) formulate a hypothesis (e.g., "*Let* H_1 *be... Let* H_2 *be...*"),

(b) begin the establishment of a model, (e.g., "All of our results can be presented in terms of the following general model. *Let* $Z = (X, Y) \sim$ **MP**$(a_1, a_2;; n+m)$..."),

(c) start the definition of a process (e.g., "We now define a process of indicators called the Bayes-Laplace process... *Let U [0,1] denote...*"), and

(d) begin the statement of a theorem (e.g., "THEOREM 3.1. *Let p have* the Beta distribution with parameters (R, W),...*let the sequence* Z_1,..., Z_n *be* ...").

On some occasions, they also appear during the derivation of a formula.

5. *Suppose (that) + clause*

The hypothetical imperatives led by *suppose* are used most frequently in statistics and philosophy, and occasionally occur in linguistics. These imperatives are in fact equivalent to dependent if-clauses which serve, in linguistics and philosophy, to introduce a hypothetical situation in order to further the discussion (e.g., "*Suppose* a high Pythagorean priestess claimed it was wrong to ..."). In statistics, "*suppose* ~" imperatives are also employed to introduce a hypothetical situation, in order to:

a) test the hypothesis (e.g., "*Suppose that* we are observing a sequence of indicators Y_i...We take as the status quo model, H_1, the hypothesis that the Y_i constitute a Bernoulli sequence with... ")

b) formulate a statistical function (e.g., "*Suppose that* when the current proportion of red balls is *x*, the probability that the next draw is red is now given by an arbitrary function *f(x)*...Such a function is called ..."), and

c) begin the statement of a theorem (e.g., "THEOREM 6.1. *Suppose that* the true a priori distribution for *p* is ...").

6. *Let us + VP*

The first person plural imperative "*let us + VP*" can be considered as the less imposing counterpart of the prototypical second person imperative "*VP* ~". Although all imperatives in this category share the illocutionary force of "invitation", their specific rhetorical function depends on the choice of verb. For example:

- statistics:
  a) Let us *consider* ~ ---> initiate a new (sub)topic
  b) Let us *examine* ~ ---> initiate a new (sub)topic
- linguistics:
  a) Let us *consider* ~ ---> initiate a new (sub)topic
  b) Let us now *see* why ~ ---> begin the explanation of a point
  c) Let us *look at* ~ ---> elaborate the argument by giving examples

• philosophy: Let us *say* ~ ---> introduce a hypothetical situation in order to further the discussion

• literary criticism: a) Let us now *sketch* ~ ---> initiate an argument
b) Let us *recall* ~ ---> recapitulate previous examples in order to provide further evidence to an argument

The above discussion shows that, except for "*see* ~" as a citational device, all of the other imperative patterns examined fall within the family of imperatives that "a writer addresses to his readers to lead them through the argument" (Huddleston, 1971: 59). It is not surprising then to find that, in our corpus, imperatives usually occur in the main body of the texts where argumentation takes place, and never occur in the closing section. In addition, imperatives seldom occur in the opening section. In the few cases (e.g., in the linguistics, statistics, and experimental geology core articles) where imperatives do appear in the opening section, the imperatives used are almost always "*see* ~" as citational devices which refer the readers to relevant literature. The only exception comes from our experimental geology core article, where the author uses "*note that* ~" twice in the end of the introduction to clarify some important terms which are to be used throughout the paper.

According to Huddleston's study of written scientific English (1971), it is inappropriate to use either "command" or "request" to label the illocutionary force of imperatives which belong to the family mentioned above. For him, it seems better to categorize the illocutionary force of these imperatives as "invitation." Similar to Huddleston, Webber (1994: 264) also claims that the "imperative sentence ... serves to include the reader in the discussion with the author ... and treats the reader on a par with the author." The present research, however, argues against this account of imperative usage in scholarly journals. In fact, it seems that only the illocutionary force of the "*let us* ~" pattern can be truly labeled as "invitation." For most of the other patterns, there is instead degrees of "command" or "request" imposed or invoked by the imperatives. Our reasons for taking this position will emerge from the interview data in the last two Results sections.

C. *Imperatives in footnotes or endnotes*

Half of the journals in the corpus did not permit the use of footnotes or endnotes. Of those that did, the figures for imperative use are given in Table 4:

< insert Table 4 about here>

As might be expected, this use of footnotes and endnotes has a strong humanities flavor, with historical scholarship once again demonstrating its well-known predilection for annotating its statements, sources and claims. Of the 324 imperatives found in this context, 295 (91%) were realized by *see*, 11 by *note (that)*, and 10 by *compare*, there being just eight "others." Given these findings, an obvious place to focus attention on was history, and, more specifically, on the role of *see*. According to Grafton (1994), in his splendid article "Proof and persuasion in history", modern historical scholarship requires a *double narrative* in which the main text describes the final results, while the accompanying note-form commentary describes "the journey" necessary for reaching those results. As he colorfully puts it, "Like the toilet, the footnote enables one to deal with ugly tasks in private... tucked genteelly away... [but] like a sewer, the footnote is essential to civilized historical life" (54-55).

In effect, Grafton is arguing that footnotes exist as much to persuade the reader that the historian has done an acceptable amount of work, as to prove that every statement in the text rests on "an unassailable mountain of attested facts" (56). Thus, we can read the very frequent tokens of *see* in the footnotes as tokens of scholarly diligence. This ubiquitous "see" is not without its ironical aspects since there can be little expectation that the typical reader will actually go and physically "see" the particular work or works referred to, but rather concede that the author has indeed done her homework. In fact, in the *core* text from the history suite it is easy to detect the author projecting her interpretative evaluations more strongly and directly in the notes than in the main text, as in "For a useful study, *see*..." or "For a distinct approach, *see*...". In this sense, the use of these particular imperatives indicates a persuasive stance on the part of the researcher, for while she refers the reader to a relevant source, she also evaluates it. Therefore, although manuals suggest that footnote practices are transparent and universal, many historians would admit that the supposedly "transparent devices" called footnotes persuade as well as prove (Grafton, 1994:56). Inherent in this persuasiveness is a certain latitude for personal voice to come through, which at times is apparent in an ironical tone. As Grafton points out, the prevalence of *irony* over empathy in the footnote may be explained by the fact that the use of footnotes became established, through the efforts of major German scholars such as Ranke, in the Age of Reason. In the footnote, the author is perhaps more at liberty to give an ongoing commentary of the development of the argument, often under the guise of an opening and objectifying "see."

D. *Emerging Themes*

Implied Power. Several authors were concerned that some imperatives, in some contexts, could strike readers as overly demanding, presumptuous or imposing. Concern about this potentially face-threatening effect likely influenced how many imperatives they used, how they constructed the imperative voice, how they embedded it in context, and which imperatives they chose. "Sometimes I will actually go through and try to take out some of the imperatives," said KH, a linguist, "My personal feeling is ... when I use the imperative, I am taking charge of the reader's attention. I'm implying that I'm completely in control of the subject matter." This issue of potential imposition also affected writers in their syntactic construction of imperative statements. Several said that they sometimes choose to soften the verbs with a preceding *"Let us..."* (e.g. *"Let us consider ..."* and *"Let us agree"*). BH, a statistics professor, referred to the following sentence in his article as illustration:

> Let us consider economic time series, such as the price of a particular stock or of several such stocks, or a series of interest rates, or of currency exchange rates, etc., that we wish to forecast. (BH, p. 486)

"If I had said '*Consider* economic times series' it would be almost as though I am compelling people, and saying, '*You consider*!' In other words, I am demanding that they consider. If I say, "*Let us consider*" it is a softer way to do it." KH from linguistics concurred when reflecting on the same comparison. The use of *consider* , she said, suggests: "OK, I'm in charge and I'm telling you what to have in your brain now. Have this in your head! (Laughs)." In philosophy, AG felt that although *agree* [as opposed to *let us agree*] would be over-demanding," *consider* , unsoftened, seemed acceptable to him in his scholarly writing as an appropriate import from mathematics.

This conscious concern about power displays also guided scholar-writers in their purely lexical decisions. According to the statistics informant, "Some imperatives are much more imperative than other imperatives." Among those, he classified *define* and *notice* as sentence openers. But in some cases, BH will in fact use these stronger versions intentionally:

> "Here I feel strongly that I want them to define that ... Sometimes I don't want that softer version. With *Define* or *Notice*, I really want them to observe that or do that. I am not asking them here to be reflective. With *consider* , I am asking them to be reflective ... it is all very subtle."

Other subtleties will emerge when we look at some contextual cases in the following section.

Tools for Economy. Several authors said imperatives function as instruments of writing efficiency and style. For example, the philosophy informant observed, "I think of *suppose*, sometimes, just as a way of introducing an 'if' clause that's going to be too long to process as an 'if' clause." Clearly, some imperatives commonly used in the citations and reference notes of academic writing (e.g. *see* or *c.f.*) save paragraphs of main text by setting aside tangential discussions and mentions of related literature. Using the imperative *see* is often just "the clearest and simplest way of explaining," the geologist argued, "Instead of giving another discussion, they can just go to what I'm referring to."

Imperatives are also said to offer opportunities for clausal and sentential economies. While musing over some non-imperative alternatives for one of his sentences, statistician BH noted that one substitute for *"see"* required eight words. "That adds up," he said. "I had to cut this article roughly in half, and I had a hard time doing it as it was." SD, a linguist, agreed:

> "This is a very fast society. Everybody is so busy. ... Even experts don't want to spend much time on reading articles...it is very important to try to forget about the decorations of language, but just try to put the idea across, so you don't waste any more time."

In deciding when and how to employ imperatives in one of his own recently published articles, he said:

> "I wasn't paying attention to style at all; I was trying to go through the argument clearly and make the article short. In fact, I'll tell you what I did. I was asked to cut 10 pages off, so I looked at the paragraphs; if one paragraph has a word on the last line I tried to save a word somewhere so that it would be one line shorter."

The well-known urgings by journal editors for parsimony in prose may thus be a spur to the use of imperatives in academic writing. As the statistician indicated, avoiding imperatives sometimes forces a phraseology that sounds "overly elaborate without accomplishing much.... I think that is why it gets passed down as a tradition. Journals tend to want very concise things, and so even without thinking about it we like to write economically."

Engaging the reader. For some authors, the imperative also works well as a pausal or braking device in the momentum of their text. Referring to his use of *let me explain,* the philosophy informant commented, "Sometimes you need signals that you have to go slowly and carefully." This comment is quite similar to that of BH, the statistician, who used the following example from his own writing to illustrate his efforts to engage his readers.

> Now consider the prediction problem. All of our results can be presented in terms of the following general model. (BH, p. 506)

"The first sentence makes the person (reader) step back and think a minute about the prediction problem. And that might be desirable," BH explained. Somewhat differently, in discussing her own use of the not-so-invitational *note*, KH, a linguist, said it is "definitely intended as emphatic. It just means that this is important." Comparably, the geologist, commenting on his own use of *recall* observed, "I'm acting like the teacher, reminding them of what I've already said."

Influences from the Queen of the Sciences. Several scholars, especially those from philosophy, geology and statistics, noted the broad influence of mathematical language in their disciplinary tone. BH in statistics, commenting on *Define x as y*, observed,

> "This is purely a mathematics tradition... I think this is standard in the maths and sciences. Particularly in math, we often *define* things, because math tries to be relatively precise. You have to be kind of careful about saying exactly what you mean."

When discussing the use of *insert, calculate, find,* and *let* in his paper, the geologist also noted that:

> "These are mathematical equations, and I've adopted mathematical language to abbreviate my discussion of them [the proofs]. I would assume that readers would know what I am doing, since mathematical equations are common to this field."

In philosophy there is a comparable process of rigorous contextual definition usually known as *stipulation*. The philosophy informant does not in fact use imperatives for this, opting for modalized instructions, as in:

> You should read all talk of "morality" in this paper as talk of morality *insofar as it concerns moral right and wrong*. (AG, p. 200, original emphasis).

However, they can be attested elsewhere in the philosophy sub-corpus, as in:

"Call a foundational theory *teleological* if..."

Thus, we can see that there are some effects from mathematics, not only on obvious areas such as statistics and experimental science, but also in the more technical areas of philosophy and linguistics. Here is AG again:

> "Mathematical and scientific styles of discourse influence philosophy as well,

> so mathematicians' and scientists' *consider* gets imported into philosophy;
> a background in mathematics has enough presence in the field to be influential."

However, it turns out that this influence from "the queen of the sciences" may not, in fact, be always immediately recognizable. The second linguistics informant, commenting on the generativists' use of imperatives, observed in interview:

> "I thought they were trying to signal that 'we're serious scholars, and this is the tone which serious scholars write in.' It didn't even occur to me that it might come from mathematics."

Imperatives as ideolectal style. "When you are starting out, as an academic writer, you do it by imitating other papers," said BH, the statistician, "but as you get older, you have your own style." For some authors, this "style" includes either more or fewer imperatives than their peers -- among other traits. The geology informant also surmised that range and type of imperatives would be as much a matter of individual style as of anything else. Perhaps this stylistic freedom is most characteristic, in the imperative-using fields, of philosophy, where our distinguished philosopher observed that his field "is tolerant of certain kinds of looseness in writing as long as you try for tightness in argument." But he didn't think that more informal styles, and hence greater play with imperatives, was only something that came with maturity and position: "I would have thought graduate students would be as free to use imperatives in the same way as established figures."

E. *Three Contextual Cases*

Two schools in Linguistics

One might innocently suspect that linguistics would not be an imperative-laden discipline. Indeed, that seems to be the case if we look at all the five articles in the linguistic article suite. In fact, the overall total number of imperatives is skewed by the significantly higher usage in the core article. The core linguistic article uses 63 imperatives, compared to the totals of four and seven in the two pre-core articles respectively, and the totals of 15 and 22 imperatives in the two post-core articles respectively. We were fortunate that our core article writer and also another contributing author (whose total usage of imperatives verbs in the linguistic suite ranked second) were available on campus to be interviewed.

As it turns out, our two informants now belong to two different and somewhat competing schools in theoretical linguistics, and they subscribe to different attitudes toward writing styles, certainly with regard to the use of imperatives. Our core author, trained in the generative phonology tradition, was not particularly aware of his heavy use of imperatives, such as the 54 instances of *consider* in his article. It became clear that he uses imperative verbs mainly to introduce to the reader the linguistic examples as evidence to his arguments, sometimes employing the *let us consider* variation plus a sequential or temporal marker, such as *first*, *now*, and *next* when he wants to initiate a new topic. His main concerns when writing his piece were brevity and clarity. He was forced to shorten the length of his original article significantly for publication, and thus was driven to make his sentences brief. In fact, according to him, it should be every writer's aim to state things as clearly as possible, to "try to forget about the decorations of language," and to "forget all about styles." Perhaps like other generative phonologists, he seems primarily concerned with producing detailed and powerful descriptions of phonological phenomena.

In contrast, our second author is not at all concerned with being economical in her forms of expression in her writing. In our interview, she attributed this fact to the entire philosophical framework of Cognitive Grammar:

> " You see, you are dealing with someone who works with materials and who draws pictures. So we believe in leading the reader gently into this complex conception .... And part of it is that there is a feeling you got to take however long it takes to completely get the nuance across."

She continued, further emphasizing the new way of thinking that Cognitivists intend to introduce to their readers:

> "Cognitive Grammar (CG) is not a list of ideas; it cannot be understood that way. CG is a mode of thinking that you only get through hearing it described umpteen different ways and then applying it in different ways. And that belief would mean that I would not place a high value on the most economical forms of expressions."

Being a former Generativist herself, she thinks that there are different tones of voice adopted by the two different groups in their writing, and of the strong tendency among Generative scholars toward heavier usage of imperatives. This awareness of such language uses may in fact have been sharpened by her switching schools.[5] She speculates that this habit might be inculcated during one's graduate training, so much so that it could even be identified as "a part of the MIT style." Overall, she identifies the Generativist's writing style as more assertive.

Our second author, again unlike the first, is very much aware of the use of imperatives in her own writing. As a writer, she acknowledges the fact that by using imperatives, she is taking charge of her reader's attention and adding

an authoritative tone to her writing. However, she also feels a need to set herself apart stylistically from the Generativists. In the interview, she shared some of her ambivalence about the usage of imperatives in her own writing. She said that she consciously uses imperatives especially when she is writing for a major linguistic journal, to conform to what the general readers might expect in "a highly technical Generative theoretical paper," but feels that, whenever she does this, she is not projecting an image of a Cognitive syntactition. Thus, she is pulled between the two writing styles that she learned during her graduate training. She commented half-jokingly: "If I want to be taken seriously, I have to put enough imperatives to sound authoritative." On the other hand, she said she would totally change her writing stance when composing for her fellow Cognitivist scholars. Thus, to our surprise (and pleasure), we have been able to uncover in this study at least one case where the choice of imperatives or otherwise can be seen as indexical of argumentation styles of particular sub fields or schools.

Experimental Geology: Imperatives as power?

In the geology sub-corpus there were 51 main-text imperatives overall, most of them with that distinctive mathematical flavor we remarked upon in the previous sub-section. However, in speaking with actual writers in the field, geology emerged less as a clear-cut case of standard "mathematical" imperative usage, but more a field where individual styles and personal preferences held sway. Our main informant, who used 27 imperatives in the core article, the most frequent being *note* (6), *let* (5) and *see* (3), used imperatives in a way which reflected his individual style, as illustrated by his explanation of *note*:

> "Of course, I could have phrased this differently, and not used an imperative. I've never really thought about why I use them. I guess it's a question of style; other authors would have used the passive [presumably accompanied by modals such as 'should' or 'can']; I use the imperative; it's just the way I write."

We see further evidence for individual style when he explains his use of *see*. Here, one might expect that the writer is simply referring the reader to a discussion in another area of the text. However, his motives in doing so are quite interesting and raise questions about the assumed transparency of an imperative such as *see*:

> "[See] was the clearest and simplest way of explaining my point. Instead of giving another long discussion, they can just go to what I'm referring to. It's much easier."

The sense that imperatives in Experimental Geology function more as an element of individual stylistic choice than as an attempt to gain power over the readership is also reflected in this writer's use of "mathematical"

imperatives. Although they may seem "mathematical" in nature, and may therefore have the tendency of being directive, the use of *advance*, *calculate* in the main text seems to once again reflect stylistic choice:

> "Here, I use the imperative because it's something that everyone can do; otherwise I would have written "I advance, I calculate...to show that I'm the only one doing these calculations."

According to other informants we spoke to, the use of imperatives in geology can indeed be seen as a kind of "power play," one argument being that geologists shouldn't use imperatives "gratuitously." Even though on one occasion already referred to, the geologist did concede that "Here, I'm acting like a teacher reminding them of what I have said," our main informant clearly did not generally see his usages in these terms, but rather thought of them as reflecting his own stylistic preferences.

Unusual Imperative choices in Philosophy

Philosophy, taken as a whole, is clearly one of the imperative-using scholarly fields (see Tables 1 and 2). As the main informant (AG) observed in interview "you don't feel as if you are being bossed around" if a philosophical colleague uses imperatives in a field-standard way. When we examine AG's 21 imperative uses in the core article a little more closely, some patterns begin to emerge. The 20-page "Moral Concepts" article has eight sections, the first untitled. Imperatives do not occur in either the untitled opening or in the closing "Looser Accounts" sections, but are concentrated in the inner six where the serious detailed philosophical argumentation takes place, particularly in Section III ("The Alternative") where he uses 10 of the 21.

Of AG's lexical choices for imperatives, nine (43%) involve the verb *suppose*, preceded in one case by "and" and in another by “but.” *Suppose* is by far the commonest imperative in the philosophical corpus as a whole, and, as we have seen, AG's accounting for his use of it is probably very much in line with what other philosophers (or indeed people in other fields) might say -- a way of avoiding (yet) another conditional clause. Three of the remaining 12 are straightforward enough (*recall, let us say, let us agree*), but the further nine seem more "marked" or somehow less expected. They are listed below and categorized for position in the paragraph:

Paragraph-initial:

> Concede (at least for now) that not just any sort of action.
> Waive for now all objections to clusters.
> Let me try this -- recognizing that someone may find a sturdier version.
> Let me concede that they could not.

Paragraph-medial:

> Start with the idea of a *valid practical consideration*..
> Start with a fairly empty framework principle...
> Start with the idea of a *possible consideration*..
> Accept the concession or not, then;

Paragraph-final:

> Let me explain.

When AG was asked in interview how he might in general terms gloss a complete sentence hortative like "Let me explain," he said, "I guess I would expect to use that where the reader has to be slowed down slightly...." When he was referred to its occurrence on page 214 of his text, he studied the context and corroborated:

> "So I have made some sweeping unexplained claims. So I suppose
> one should be blank-faced at this point and I need to say something
> to the faces that I have deliberately made blank and prepare them
> for what I want to say at greater length."

Although the proposal has been advanced that philosophy is one of those fields where there may be "diminished consideration for the reader" (Swales 1990: 63) because of a higher priority to present intellectual thought of considerable complexity, both AG's textual practice and his commentary on it belie this suggestion. Indeed, in contrast, there seems to be distinct kind of audience sensitivity here, as witnessed by the "let me explain" mini-sentence promptly inserted to show that the writer recognizes the current discussion indeed needs further expansion.

The four remaining imperative choices are not quite the lexical items that we have come to expect; certainly they seem *prima facie* more intrusive, probably both from their semantics and their rarity, than the more established imperative verbs such as *suppose*, *consider*, or even *recall*. All four, *concede, waive, accept* and *start with,* look, after all, rather "bossy." However, in at least the first three cases, the context mitigates any face-threatening elements in their use. Notice in the first case the parenthesis:

> Concede (at least for now) that not just any sort of action could be
> called wrong for no further reason -- not with linguistic propriety, that is.
> (AG, p.203)

Here then is an instance of that distinctive philosophical trope of "bear with me while I see where it takes us." The second instance is both more striking (especially as it is the one imperative that actually opens a section), but it becomes even more explicable in its context. Again the sentence is short and again has a temporizing element: "Waive for now all objections to clusters." (p. 205). AG commented:

> "I think *I* have been objecting to clusters...what I am really doing is waiving them myself and asking the readers to join me in that so we can explore what happens if we do."

So it turns out that the author is telling the readership (for now) to ignore the *author's* objections rather than any they might have of their own! Obviously, there is little face-threatening in telling the reader to disregard the writer's *own* arguments. In a roughly comparable manner, the "*accept*" imperative is mitigated by context:

> This conclusion was derived from a concession I thought I might not need to make: that nothing would count as the conviction that bean-counting alone warrants guilt or resentment. Accept the concession or not, then; in either case no substantive constraints need to be *added* to a sentiment-routed account. Either they are not needed at all, or they are built in already for free. (AG, p. 212)

Here again, the bald imperative loses its intrusive force, but this time by its alternate negation. Indeed, it is pretty unclear whether a statement of the form "do X or don't do X" is pragmatically an imperative at all, rather than a laying out of possible options for its recipient.

The remaining issue is the three occurrences of *start with*, which cluster over two paragraphs in the third section. Here is the textual environment of the second usage:

> We can now formulate a claim about the meaning of 'morally wrong' -- a claim that builds the meaning out of action-guidingness plus linguistic constraints on substance. Start with a fairly empty framework principle: that an act is *morally wrong* means that it is ruled out on valid moral grounds. We then have to explain the phrase 'valid moral grounds.' (AG, p.207)

Throughout these conceptually core paragraphs, AG shifts back and forth between first-person roles (either hortative or declarative) and second-person imperatives. In interview, he commented on his wish for sentence variety -- and affectionately invoked a particular high school teacher who had trained him to do this. Here we can see this variation, enhanced perhaps by the mild "shock value" of the *start with* exhortations.

In the end, all these various influences, freedoms and licenses can be seen as manifestations in philosophy of an underlying set of features that privilege stylistic variety, attention-getting, and complex textual-signaling as ways of "talking across" to readers rather than "talking down" to them as imperative-use might *prima facie* imply. Doubtless, such engagements are not only facilitative of understanding, but also mitigative of disagreement. AG, for one, is aware of how his rhetorical choices may assist him in these ends: "...I suppose I try somewhat desperately to keep the reader involved, so that goes along with the language, although for some purposes more than others."

DISCUSSION

This study has offered a preliminary look at the forms and functions of imperatives in scholarly articles across a range of fields. On the basis of the data examined, some of the findings were fairly predictable, but others much less so. In terms of the former, we could instance that imperatives are generally quite rare in main texts, but common in footnotes in the humanities. Another unsurprising finding is that main-text imperatives vary widely in their occurrence according to field, congregating most prominently in those disciplines where mathematical reasoning is either common, or is -- as in philosophy -- a recognized external influence. In terms of the latter, we can point to the destruction of a simple starting hypothesis that the presence of imperatives would be seen by peer scholarly readers as a kind of "manipulative" or face-threatening practice. "Bald-on-record" is by no means an inevitable reading, for acceptance of imperatives can come from a variety of sources, such as tradition, the recognized need for word economy, stylistic variation, and an "extradiegetic" concern to capture the reader's attention at certain key junctures and selectively focus her gaze.

Although we have here concentrated on the imperative as a discrete grammatical structure, we in no way want to imply that the choice of imperatives versus some more staid or more formal circumlocutions is either a unique or an isolated choice. The use of imperatives (however sparse and variable) is presumably connected with other contemporary trends in scholarly writing (c.f. Halliday and Martin 1993:20-21), whereby authors may wish to decouple themselves from positivist or empiricist traditions of objectivity by opting for stylistic features less closely tied to the kinds of objectivity-reifying formal prose most obviously ratified by the APA Publications Manual. Thus, we would suggest that imperatives may be one element in a bundle of grammatical features that may variously promote ironizing, or closer colleagiality, or the use of some *ludic* quality (Becker 1995; Bloor 1996). We hypothesize that other features in this bundle may include modal contractions, the use of conjunctions like *and* and *but* in sentence-initial position, the use of sentence fragments for dramatic effect, and perhaps the use of so-called "unsupported" or "unattended" *this* (Geisler et al. 1985). As the century nears its close, we may be looking at trends towards increasing informality in scholarly writing, certainly abetted by post-modern and feminist movements, in which the scholarly voice is deliberately disassociated from detachment and distance (van Maanen 1995). If there really are such processes at work, then we can see imperative-use as both a singular but yet integral part of these trends.

We also recognize that this has been a synchronic study, and that we have failed to take account of possibly important issues of disciplinary stylistic traditions. In view of this limitation, we offer just one speculation here with regard to imperative traditions in the hard sciences. The use of language devices to catch the attention of the reader has long been well-attested in literature -- *Don Quixote* and *Tristram Shandy* come quickly to mind. This leads us to suggest (diffidently enough) that under conditions wherein scientific writing needed to eliminate "personal agency" from the "scientist-author," imperatives had remained one of few devices which permitted a text to refer to itself without at the same time making it "poetic." We thus feel that historical study of imperatives could potentially illuminate changes and influences in academic fields, and not entirely at the level of scriptural practice.

A final issue concerns the applications of this study for those very large numbers of non-native English speakers who embark on scholarly writing and publication in that language. We mentioned at the outset that imperative-usage was ignored in all textbooks for NNS and manuals for NS, except for a brief *Language Focus* section in Swales & Feak (1994). In their accompanying *Commentary* volume, Swales & Feak make their best guesses about usage in what they concede as an "under-researched" area. Of their ten potential lexical choices, *notice, imagine, refer, observe, take the case of* and *disregard* either did not occur in our corpus or occurred no more than twice in the main text. *Let* they rightly place in a special category. They observe that verbs like *suppose* may occur in mathematical arguments, but here we find it commonest in non-mathematical philosophy. They make no mention of *see* outside of parenthetical contexts, and speculate that *consider* is "probably rare outside (philosophical) arguments," whereas the current data suggests its common use in at least the major school of theoretical linguistics. There is also no discussion in Swales & Feak (89) of “maverick” uses such as*waive*, or more importantly, of the *Let us consider* versus *Consider* distinction, or of the role of temporal adjuncts in signaling topic-switch. However, we would like to conclude this paper not so much by demonstrating that even careful and conscientious textbook writers can get it wrong, but would rather assert that the applied linguistics traditions of text-based research, especially when combined with text-based interviews with specialist informants, can once again move our understanding of ESP-relevant academic discourse forward.

ACKNOWLEDGMENTS

We would like to thank our informants San Duanmu, Allen Gibbard, Bruce Hill, Karen van Hoek, and Youxue Zhang for their time and interest; Judy Dyer and Sharon Quiroz for their assistance with the preliminary analysis; and three anonymous reviewers for their insightful comments.

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APPENDIX 1

Journals Analyzed

AIChE Journal. 1992. 38:321-384.

Art Bulletin. 1995. LXXVII/3:375-401. [1]

Earth and Planetary Science Letters. 1994. 122:343-416.

Econometric Theory. 1994. 10:461-595.

Journal of Applied Communication Research. 1995. 23:108-55.

Language. 1995. 71:63-340.

Philosophical Perspectives. 1992. 6: 155-259

Poetics Today. 1995. 16:1-27, 53-170. [2]

Public Opinion Quarterly. 1992. 56:29-109.

Speculum 1994. 69: 40-100, 963-1017. [3]

1. This journal is in double-column large-page format.
2. Pages 28-52 were not scholarly articles.
3. This gap was caused by missing issues.

APPENDIX 2

Journals examined in the ten disciplines

	Discipline	Journal
1	Statistics	Econometric Theory
2	Linguistics	Language
3	Experimental Geology	Earth and Planetary Science
4	Philosophy	Philosophical Perspectives
5	History	Speculum
6	Chemical Engineering	AIChE Journal
7	Art History	Art Bulletin
8	Literary Criticism	Poetics Today
9	Political Science	Public Opinion Quarterly
10	Communication Studies	Journal of Applied Communication Research

Table 1: Ranking of imperatives by frequency of use in main text in each discipline

	Discipline	Main text
1	Statistics	141
2	Linguistics	103
3	Experimental Geology	51
4	Philosophy	40
5	History	12
6	Chemical Engineering	10
7	Art History	5
8	Literary Criticism	3
9	Political Science	0
10	Communication Studies	0

Table 2**:** Ratio of imperatives verbs to total number of words

Rank	Discipline	Ratio
1	Statistics	1:298
2	Experimental Geology	1:457
3	Linguistics	1:844
4	Philosophy	1:1567
5	History	1:3120
6	Art History	1:3676
7	Chemical Engineering	1:3800
8	Literary Criticism	1:4700

Table 3: Most frequently used imperatives in the core articles

Imperatives	Frequency
See	87
Consider	71
Note (that)	38
Suppose	25
Let A+Verb+B	23
Let us (+Verb)	
cf., compare	9
Recall	6
Define, Let me (+Verb)	4
Classify, Insert, Assume	3
Contrast, Calculate, Notice, Imagine, Denote, Use,Integrate, Set	2

Table 4: Imperative Occurrence by field in foot/endnotes

Discipline	Frequency
History	226
Art History	46
Philosophy	35
Literary Criticism	9
Linguistics	8

[1] Of course when imperatives function as offers as in "I can't find my pen", "Here, *borrow* mine", they are clearly not face-threatening. We are grateful to two of the reviewers for pointing this out.
[2] As discussed in 1 above, defining imperatives formally rather than functionally means that there is no presumption that imperatives will necessarily be face-threatening or imposing.
[3] We only counted overt imperatives and ignored "elliptical" ones, as in the final phrase of this example.
[4] One reviewer observed that the use of an enumerated series of examples could itself be considered sequential. Here, however, the distinction that we wish to make is that between the occurrence and non-occurrence of overt temporal adverbs such as *now*.
[5] We would like to thank one of the reviewers for this observation.