Grammars of Spoken English: New Outcomes of Corpus-Oriented Research

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Recently work on the grammar of spoken English has advanced through the use of large, general, and varied corpora of the language, including corpora of spoken discourse. Here I review the research that has been emerging from the availability of such corpora, much of it emphasizing the need for new ways of conceptualizing spoken grammar, to replace the traditional reliance on grammatical models oriented to written language. Although such research tends to stress the need for a new descriptive apparatus for the language of speech, I present arguments for the view that spoken and written language utilize the same basic grammatical repertoire, however different their implementations of it may be.

This article presents a survey of current research on spoken English grammar from a corpus-oriented point of view. It outlines what electronic corpora of spoken English exist, pointing out

limitations as well as strengths of this technological development. It shows how new thinking on spoken grammar has been sparked off by corpus studies, focusing on such characteristics as: (a) loose, relatively unintegrated structure with a very wide-ranging use of independent non-clausal ("fragmentary") units; (b) the inappropriateness of the *sentence* to the analysis of spoken grammar; (c) simplicity of phrase structure (particularly of noun phrases); (d) repetitive use of a restricted lexicogrammatical repertoire; (e) grammatical features reflecting interactiveness and on-line processing constraints. At the same time, this article cautions against the danger of assuming that the grammars of spoken English and of written English are radically different (see, e.g., Biber, Johansson, Leech, Conrad, & Finegan, 1999, pp. 1042–1052). It can be argued that all such traits as are listed in (a) through (e) above are consistent with a view that there is one grammar underlying speech and writing, but that speech shows tendency to simplified, loosely integrated, and disjunctive construction (cf. Chafe, 1982), giving grammatical structure a lesser role in the overall communication process than is characteristic of writing. The sections of this article, in order of presentation, are as follows:

1. Convergences: Why spoken English grammar has come into the limelight

2. The corpus revolution: A survey of corpora of spoken English

3. Corpus-oriented grammar: Its scope and limitations

4. The differentness and sameness of spoken versus written grammar

5. Frequency in spoken performance: Pointers to grammatical function

6. The relative simplicity of conversational grammar

7. The non-sentencehood of conversational grammar

8. Pre-clause and post-clause satellites

Convergences: Why Spoken English Grammar Has Come Into the Limelight

In the past two decades, there has been strong convergence of various interests in the topic of spoken language, leading to an increasing awareness of the characteristics of spoken language, and more particularly of the grammar of spoken language. (The present paper focuses on spoken English.) There is scarcely need to comment here on the growing power and influence of spoken media generally and on the increasing emphasis on oracy in language education. There is, however, need to draw attention to an immense growth of the use and availability of electronic text corpora—the so-called "corpus revolution." This revolution has provided the means to conduct detailed quantitative and qualitative investigations of the formerly elusive nature of spoken language. For the first time, it has offered an opportunity to study broadly and in depth the grammatical characteristics of spoken discourse. Hence new insights, new illustrations, new information about spoken language and its grammar—these are becoming available at a time when there appears to be a particular demand for them. The present survey attempts to be both (a) informative, in filling in the background to this significant area of intellectual development, and (b) provocative, in highlighting controversial areas of debate.

Why do I place the emphasis on grammar, rather than other linguistic levels? Once again, there are convergent reasons. In the scholarly tradition, grammar has traditionally been strongly associated with the written medium,[1] and this association has been reinforced by a pedagogical tradition that has placed particular emphasis on grammatical awareness in the development of writing skills. The availability of spoken corpora, some of them with built-in grammatical analysis in the form of tagging and parsing,

encourages us to reassess and challenge this written grammar tradition. However, it is as well to look at the limitations of electronic corpora, as well as the opportunities they offer. First, the development of spoken corpus materials has been retarded: the first computer corpora of English, such as the Brown Corpus,[2] compiled in 1961–1964, were inevitably corpora of written texts and text samples. Later on (starting in the mid-1970s), when spoken language corpora came into existence in increasing quantity and variety,[3] these were still based largely on orthographic transcriptions. In fact, the massively increased size of spoken language corpora today has tended to cement the connection: very large spoken corpora such as those of COBUILD and the British National Corpus (see further below), primarily built to improve English language dictionaries, had to be transcribed quickly and at low unit cost, which means a simple orthographic transcription.

A consequence of this has been that grammar, in addition to lexis, is one of the few areas of language that can be more or less satisfactorily investigated by using such orthographically transcribed corpora. Prosodic analysis and many aspects of discourse analysis, for example, cannot be investigated with such "basic" transcriptions, in the absence of accurate and detailed phonological, contextual, and turn-taking information. Thus, even at a time when the availability of machine-readable corpora has brought a vast increase of knowledge about the spoken language within our grasp, the influence and limitations of the written language continue to impinge on the spoken medium.

In the investigation of spoken language, however, there has also been something of a cultural divide between the fast-developing traditions of discourse analysis (DA) (allied to sociolinguistics and conversation analysis) and of corpus linguistics (CL), both of which rely heavily on the transcription of speech. These traditions have differed in a number of ways:

1. While DA lays a great store by the integrity of the individual recorded and transcribed text, CL tends to assemble

representative "samples" of the language,[4] or of different genres, without requiring that these be complete texts.

2. The collector, transcriber, and user-analyst of the data are often the same person for DA, but different people (perhaps widely separated in space and time) in the case of CL.

3. While for DA, the wide availability of data is exceptional, CL makes its data as widely available as possible to users, through electronic media. (There is a tendency in DA to regard data as the "property" of an individual transcriber,[5] not from a selfish motive, but from an assumption that only the collector-transcriber has the degree of in-depth knowledge necessary for a full understanding of the data.)

4. Unlike DA, which computationally has tended to rely on qualitative analysis tools like Nudist and ATLAS.ti, CL has tended to encourage the abstraction of data from broader contexts; hence, it typically uses search tools such as Word-Cruncher and WordSmith,[6] which can seek, display, and count all occurrences of words, phrases, or any other phenomena which can be formally recognized in texts.

5. DA tends to focus on nongrammatical aspects of the spoken record—and to regard other, typically interactional aspects of discourse (turn-taking, repairs, discourse markers, etc.) as important for the orthographic representation of speech. CL, however, uses tools such as concordances and grammatical taggers to provide many instances of the same general phenomena (usually core linguistic features[7] such as those of lexis and grammar), which may then be differentiated by detailed qualitative analysis, as well as by quantitative analysis, often involving comparison of different varieties of the language.

This cultural division between DA and CL, however, is now diminishing; there is an overlapping territory, especially that occupied by discourse-functional grammarians such as Chafe, Du Bois, Fox, Givón, Hopper, and Thompson (for details, see Cumming

& Ono, 1997). Moreover, the CHILDES initiative (the Child Language Data Exchange System; MacWhinney, 1995) is especially indicative. Although it grew out of the DA tradition of personal transcriptions and analyses by individual researchers, this has developed into an international archive or corpus collection similar in many ways to a CL resource. Thus, it promotes the interchange and reuse of data, common standards for mark-up, documentation, and transcription (including phonetic, contextual, and turn-taking information), and associated modes of computational data retrieval and annotation. On June 7, 1999, a widely circulated e-mail message from MacWhinney announced that CHILDES was combining with the LDC (Linguistic Data Consortium) to create a new, wide-ranging resource, TalkBank: "a distributed, web-based data archiving system for transcribed video and audio data on communicative interactions." Up to this point, the LDC had been strongly associated with the industrial–academic development of resources, including corpora, for language engineering (e.g., for automatic speech recognition, dialogue systems, etc.) and had developed and distributed spoken language corpora largely tailored to that purpose (see Note 4). Here, then, is another notable instance of convergence toward the computer corpus–oriented study of spoken language, a topic which it is now timely to review.

The Corpus Revolution: A Survey of Corpora of Spoken English

The optimistic assumption is always that a computer corpus is a *resource* usable by the whole world. A CD-ROM of a corpus is just as easy to publish and distribute, in principle, as a book or a CD of recorded music. However, the "in principle" availability is circumscribed, in practice, by legal constraints of copyright and confidentiality. In Table 1, some of the corpora are checked (✓) as generally available,[8] while others are not. Table 1 gives a list of some useful corpora of spoken language that have been created, including the spoken parts of mixed (spoken + written) corpora.

Table 1

Some electronic corpora of natural spoken English discourse

Corpus Name (C = corpus)	Abbrev-iation	Approx. size (spoken data)	Some major advantages	Some major limitations
London-Lund C. ✓	LLC	500,000 words	detailed prosodic transcription	sound record-ings unavailable; "academic talk" overrepresented
Lancaster-IBM Spoken English C. ✓	SEC	53,000 words	prosodic + other levels of annotation	very small; prepared speech only
Bank of English C. (spoken section)		c. 20 million words	very large indeed	simple ortho-graphic tran-scription; no access to sound
British National C. (spoken section) ✓	BNC	10 million words	very large; detailed genre and demographic subsectioning	simple ortho-graphic tran-scription; no access to sound
Cambridge & Nottingham C. of Discourse in English	CANCODE	c. 5 million words so far	large; detailed subsectioning according to genre, activity type	simple ortho-graphic tran-scription; no access to sound
International Corpus of English (Great Britain) ✓	ICE-GB	600,000 words	parsed; good search software; linked to audio	
Other national varieties of ICE ✓	ICE-NZ etc.	600,000 words each	(Australian, East African, New Zealand, and Singaporean corpora completed so far)	
C. of Spoken American English (✓)	CSAE	c. 220,000 words	high quality transcription	still in preparation (part available)
Michigan C. Of Academic Spoken English ✓	MICASE	c. 222,000 words available	specialized to TESOL needs; on-line service	limited to university settings
Longman C. of Spoken American English		5 million words (1997)	large; demograph-ic subsectioning	orthographic transcription

Table 1 (continued)

Some electronic corpora of natural spoken english discourse

Corpus Name (C = corpus)	Abbrev- iation	Approx. size (spoken data)	Some major advantages	Some major limitations
Wellington C. of Spoken New Zealand English ✓	WCSNZE	1 million words		largely informal dialogue

Note. A ✓ indicates that the corpus is generally obtainable for research use.

The first spoken corpus to become available, the London–Lund Corpus (LLC), had its origin in the pre-computer corpus days, in the Survey of English Usage set up for the description of modern English grammar by Randolph Quirk (see Quirk, 1960; Svartvik, 1990). Just as the corpus-building itself (at London University) was a pioneering effort in spoken data collection, involving many thousands of hours of detailed prosodic transcription, so the computerization and analysis of the corpus (mainly undertaken in Sweden and Norway) was a pioneering enterprise in the description of spoken English grammar, revealing much about the interface between grammar and supersegmental phonology, as well as between grammar and discourse analysis. The work of the Lund School (as the group of Scandinavians working on the LLC and other spoken corpora may be called)[9] continues to this day and is marked by its sound linguistic scholarship and solid descriptive purpose.

Like the LLC, another spoken corpus of the 1980s, the Lancaster/IBM Spoken English Corpus (SEC; see Knowles, Taylor, & Williams, 1992), benefited from careful, detailed prosodic transcription. However, both these corpora also had drawbacks. For the LLC, the original sound recordings were not generally available, and both corpora suffer from restrictions on the spoken data they contain. The recordings for the LLC were undertaken in the days of heavy reel-to-reel tape recorders, and in practice a considerable proportion of the spontaneous dialogue data was collected in

academic settings from staff and students of London University.[10] Academic topics of conversation prevail, for example, over domestic ones. The SEC was even more limited in coverage, being virtually confined to scripted, public speech such as radio broadcasts. Both corpora were, moreover, restricted to British speakers.

The 1980s and 1990s saw the appearance of spoken corpora of a much broader coverage—those collected by British publishers as part of "megacorpora" built first and foremost as a means to producing better dictionaries, grammars, and reference and teaching materials. The COBUILD corpus (HarperCollins) was the first of these, and, under the title of The Bank of English, remains the largest (with a main corpus of 329 million words). A comparatively small proportion of this vast data bank consists of spoken language; nevertheless, at over 20 million words, this is an exceedingly large sample of transcribed speech by any previously imaginable standards. The British National Corpus (BNC; 100 million words) is another megacorpus, collected in the early 1990s,[11] about 10 million words (or about 10%) of the corpus consisting of spoken language; a second release is now becoming available for research and development around the world. The CANCODE corpus, collected under the sponsorship of Cambridge University Press, is a further large spoken corpus, currently of 5 million words, and is part of a larger Cambridge International Corpus (CIC) of speech and writing.

Although these publisher-sponsored corpora suffer the disadvantage of rudimentary orthographic transcription—lacking, in particular, prosodic information—such is the wealth and wide range of the data they contain that in addition to their primary lexicographic purpose, they are suitable for many aspects of grammatical as well as lexicogrammatical investigation.

In describing corpora, it seems natural to mention their size first of all, as if this were their most significant trait. But it is sometimes noted (e.g., by Carter & McCarthy, 1995, p. 143) that even a small corpus can be sufficient for the investigation of many common grammatical features. Probably more important than size, for assessing the research value of a corpus, is its composition

in terms of genres, or in terms of other design features (such as stratified demographic sampling in the BNC) providing for wide and representative coverage of the spoken language. The composition of the LLC, the BNC, and CANCODE is in each case determined by criteria ensuring ample and balanced sampling of different kinds of spoken material. Consequently, one can feel reasonably confident in extrapolating from the findings obtained from them to spoken English more generally. However, this step of extrapolation can in practice be taken only with certain reservations; apart from anything else, these three corpora are largely limited to speech in the United Kingdom.

There exists as yet no ideal corpus of spoken English. However, the British origin of much spoken corpus data collected up to now is at last being counterbalanced by various projects in English-speaking countries throughout the world. Particular mention should be made of the International Corpus of English project, which, since the 1980s, has extended to more than 20 countries or regions (the United States, Australia, Hong Kong, Singapore, etc.), in each of which a 1 million–word corpus is being compiled according to a standard design, each corpus being divided roughly equally between written and spoken material. The first of these corpora to be generally available is (again) the British variant (ICE-GB), which has been annotated throughout with parse trees, enabling data to be retrieved from the corpus on flexible syntactic search criteria. Other ICE corpora (the Australian, East African, and New Zealand variants, for example) have also recently become available in their completed form.

It may seem strange that the United States, where the age of English electronic corpora began with the Brown Corpus (in 1961), has held back from the development of wide-coverage spoken corpora. Perhaps the main reason for this up to now has been the intellectual climate: The famous Chomskyan rejection[12] of corpus data in the 1950s, at a time when the revelatory power of large computer corpora was unimaginable, still appears to inhibit the development of spoken corpora of American English.[13] Nevertheless, things are changing. A corpus of spoken

American academic English (MICASE) is already showing results at the University of Michigan. A Corpus of Spoken American English (CSAE) is in an advanced stage of preparation at Santa Barbara, and part of it has recently become available through the LDC. The publishers Longman have built up their own corpus of approximately 5 million words of spoken American English, collected on demographic sampling lines to match the British demographic corpus that Longman contributed to the BNC. Other initiatives are mentioned in Note 13.

Corpus-Oriented Grammar: Its Scope and Limitations

After considering corpora in themselves, we turn now to the subject of what kinds of grammatical investigation—particularly of spoken language—can be carried out with their help. Corpus-based investigations tend to have an observational orientation, which can be a strength or a weakness according to one's point of view.[14] Thus, grammatical or syntactic investigations using corpora inevitably deal with what Chomsky (1987, pp. 38–48) called E-language (externalized language) rather than I-language (internalized language). For linguists taking a rationalist I-language position, this can lead to the view that corpora are of doubtful relevance to linguistic investigation.

Corpus-oriented studies of grammar are patently (to use an older Chomskyan terminology) *performance* grammars rather than *competence* grammars. The main claim they have to make is accounting for how a language is used, rather than characterizing its grammar as a mental phenomenon. This does not necessarily mean that they have no theoretical interest: for example, Leech (1992, p. 116) suggests that cognitive grammars (e.g., Langacker, 1987, 1991) might be well adapted to the explication of corpus data. Corpus linguists assume that relevant theories or hypotheses must be capable of confirmation or disconfirmation through empirical observation of language in use. This accords more with some theoretical positions than with others. Some theories of grammar (e.g., discourse grammars, construction grammars,

various types of functional grammar) are compatible with the view that a grammar as a mental system is mirrored closely in the way language is used, and some (e.g., probabilistic grammars) can scarcely be tested or formulated without resort to a corpus.

It can, moreover, be argued that *performance grammars* are just what is needed for applications to language learning.[15] In learning a second or foreign language, the goal of most learners is to use the language productively or receptively in communication: We learn languages in order to use them. It is difficult to suppose that we could learn to use the grammar of a language effectively without being attuned to the conditions and constraints determining its use. A corpus such as the spoken BNC provides the means to study such conditions analytically, using data of unparalleled range and richness, collected in authentic settings.

To show what such a performance grammar entails (but lacking space for full elaboration), I quote here the principles of a grammatical model for "description of language use" as enunciated by the corpus grammarian Jan Aarts (1999, pp. 6–8). (Other grammarians have adopted a similar performance-based framework; see, e.g., Kemmer & Barlow, 2000.) To pinpoint the salient aspects of such a grammar, I have added my own label to each principle:

1. *Data-Oriented Grammar:* The model should allow the combination of a quantitative and a qualitative description of the data.

2. *Functional Grammar:* The model must establish a relation between phenomena that are external to the language system and system-internal phenomena.

3. *Variety Grammar:* The model should allow the description of the full range of varieties, from spontaneous, nonedited language use (usually spoken) to nonspontaneous edited language use (usually written or printed).

4. *Integrative Grammar:* The model should allow an integrated description of syntactic, lexical, and discourse features.[16]

Such a grammar is inclusive, rather than exclusive, in its archi-
tecture. It takes account not only of the self-contained grammar
system of a language, but of how external considerations deter-
mine choices from the system, and how the system relates to other
aspects of linguistic communication. I add here a brief elaboration
of each of the labels in 1 through 4 above. (1) The label *data-
oriented grammar* is understood to mean a grammar accountable
to observed data—and not just the data the grammarian wants to
notice. However, building a performance grammar is not just a
matter of *ex*tracting information from a corpus, but of *ab*stracting
or modeling grammar by the interaction of data and theory.
(2) There are many variations on the concept of *functional gram-
mar* (see especially Cumming & Ono, 1997; Dik, 1981; Givón, 1995;
Halliday, 1994); what makes them all "functional" is their expla-
nation of grammar in terms of the wider context of human psy-
chology and behavior. (3) *Variety grammars* are less easy to find,
but can be illustrated by Biber et al. (1999), with coverage of four
major varieties of English: conversation, fiction writing, news
writing, and academic writing. (4) An *integrative grammar*, encom-
passing relations between grammar and other linguistic levels, is
close to what has elsewhere been called *communicative grammar*
(Leech and Svartvik, 1994). It contrasts with an "autonomous
syntax" view of grammar.

The Differentness and Sameness of Spoken Versus Written Grammar

The recent availability of spoken English corpora has led to
a new radical focus on *the grammar of speech*, with revealing
results.[17] In this section I contrast this approach (Approach A),
which emphasizes the *differentness* of spoken grammar from
previously articulated grammatical models, with one (Approach
B) that, along with notable differences of frequency, asserts the
underlying *sameness* of spoken and written grammar. Approach A
is best represented in the work of Carter, Hughes, and McCarthy
at the University of Nottingham (henceforward I will call them

the "Nottingham School"); Approach B is represented by Biber, Johansson, Leech, Conrad, and Finegan (Biber et al., 1999). However, I will also give some initial attention to other important publications on spoken grammar, representing these opposing trends: Although not thorough-going corpus-based studies, these do rely considerably on corpus data.[18]

Approach A: The "Differentness" of Spoken Grammar From Traditional Written Models

As an influential example, Brazil (1995) takes a radical approach in proposing that to understand spoken grammar, we have to adopt a totally different model from those traditionally applied to written language. Since grammar in speech has to be constructed and interpreted in a linear way, he rejects previous models of sentence grammar based on constituency (e.g., IC analysis, phrase structure), in favor of a process-oriented, linear grammar that shows how "speakers assemble their utterances a bit at a time as they go along" (p. 21). This linear grammar, which Brazil elaborates in detail, is an extended variant of a familiar formal model: that of finite-state grammar.[19] However, Brazil's grammar has a strong communicative and discoursal orientation: he sees grammatical constructions as elaborated step by step to satisfy communication need. Brazil deliberately leaves it unclear, though, whether this model should apply also to written language.[20]

Brazil's rhetorical stance is found also in other writers on spoken grammar. The message is that both grammatical tradition and the academic mainstream have ignored the nature of spoken language and that corpus data can provide a revelatory new approach. This view finds a strong echo not only in the work of Carter, Hughes, and McCarthy at Nottingham, but also in a study emphasizing the lack of fit between spoken and written syntax, that of Miller and Weinert (1998):

> There is a range of syntactic constructions in spontaneous spoken English. . . . Conversely, there is a range of syntactic constructions typical of written English. The constructions

> typical of spontaneous speech do not occur in written texts except in the representation of conversation. The constructions typical of written English are very rare in spontaneous speech . . . (pp. 2–3)

This again recalls the stance of the Nottingham School (see especially Carter and McCarthy, 1995; McCarthy & Carter, 1997; Hughes & McCarthy, 1998; McCarthy, 1998), whose often persuasive and revealing analyses of spoken English, based on the CANCODE corpus, emphasize that previous standard grammars (such as Quirk, Greenbaum, Leech, & Svartvik, 1985) have been too much wedded to the written word. While anticipating common ground between spoken and written grammar, McCarthy goes so far as to argue that there should be no prior assumption that the grammar of speech and the grammar of writing share the same framework:

> Spoken grammar must always be elaborated in its own terms, using spoken data. If, at the end of the exercise, spoken and written are shown to have many features in common, then this is a convenience to be thankful for, and not something that can be prejudiced without careful research. (McCarthy, 1998: 90)[21]

In some respects, indeed, the Nottingham School has argued for a different model of grammar for speech: for example, an elaborated model of the clause (see "Pre-clause and Post-clause Satellites," below). They also argue for a close integration of spoken grammar and discourse analysis (see especially McCarthy, 1998, pp. 69–89; Hughes & McCarthy, 1998).

Approach B: The Underlying "Sameness" of Spoken and Written Grammar

In contrast, the approach represented by Biber et al. (1999) is holistic, in the sense that it uses the same framework of categories, structures, and rules for both spoken and written grammar. This framework is essentially that of Quirk et al. (1985), and there is a sense in which Biber et al. continue a tradition of

the "Quirk grammars" in also assuming a common grammatical framework for both spoken and written English. Such an assumption is common, in fact, wherever spoken and written grammar are compared. It is made, for example, by Halliday, in his insightful and readable book *Spoken and Written English* (1989): "Spoken English and written English are both kinds of English, and the greater part of their patterning is exactly the same" (p. 87).

However, the grammar of Biber et al. is more clearly performance-based and corpus-based than that of Quirk et al.: It often reveals very marked differences of frequency in the way grammar is used in speech and in writing. Using the 40-million-word Longman Spoken and Written English (LSWE) corpus, Biber et al. compare a large subcorpus of *conversation*[22] with similarly large subcorpora of *fiction writing*, *news writing*, and *academic writing*, to reveal differences that exist in English across spoken and written registers or genres. Nevertheless, in this four-way comparison, conversation, as the quintessential spoken variety, stands out clearly as being frequently very different, in terms of grammatical probabilities, from the written varieties. Some grammatical features (such as dysfluency phenomena, in so far as they are grammatical) are almost entirely restricted to the spoken variety, but in general the same descriptive framework applies to all four registers, as a basis of comparison without which the grammar of these varieties could not be meaningfully differentiated.

Comparison of the Two Approaches

Do these two positions have substantive consequences, or do they simply amount to differences of emphasis and attitude? We could attribute their difference to the fact that those taking Approach A have mainly restricted their attention to spoken corpus material, whereas Biber et al. have characterized spoken grammar through the comparative analysis of both spoken and written corpus data. In general, however, the difference between positions A and B is a matter of rhetorical emphasis. For example, it can be argued of Brazil's position A that it is the *rhetoric* of his

approach that insists on the incompatibility of his grammar of speech with grammar tradition. In practice, the finite state and phrase structure models he contrasts can be reformulated in terms of one another, by using a well-known equivalence of (process-oriented) automata with (structure-oriented) grammars (see Parkes, 1995, pp. 33–34, 55, 93).

Let me here, therefore, suggest that the difference between Approaches A and B can easily be overemphasized. There are some apparent differences of substance: For example, the claim that the sentence is not an appropriate unit for spoken language appears difficult to reconcile with Approach B. On the other hand, I will argue that it is possible to adopt Approach B (with Biber et al.), claiming that *what has been discovered about the nature of spoken grammar is compatible with the thesis that there is a common underlying grammar system.* In this way, the new understanding of spoken grammar brought to light by Approach A corpus studies can be accommodated within a unified grammar of English. I will first clarify this discussion by characterizing the notion of *performance grammar* more carefully. This notion, I will argue, depends on the prior notion of a descriptive grammar:

1. A *descriptive grammar* of English specifies the system or repertoire of rules, structures, and categories that are instantiated in English texts/discourses.

2. A *performance grammar* takes the descriptive repertoire as given and shows how it is deployed in one or more varieties of the language (e.g., the four registers studied by Biber et al.).

3. The *deployment* of the repertoire is shown in terms of relative *frequencies* (as observed in a corpus), which converts into estimated *probabilities*, within a predictive model of native-speaker (NS) grammatical behavior.

It is quite possible, given this model, that some grammatical features will have a probability at or very near zero—i.e., there are some parts of the repertoire that will just not be used in some variety. In this way, the model of performance grammar allows us

to accommodate claims made from a "differentness" position, that there are peculiarities of spoken grammar that can scarcely be paralleled in written grammar, or vice versa. However, although this performance model allows one to say, on the basis of corpus evidence, that feature *X* is virtually confined to variety *Y*, or excluded from variety *Z*, such statements according to Approach B are meaningful only in quantitative terms, as extremes on a scale of probability. Taking this position allows one to say, therefore, that although two varieties of the language (say, spoken language and written language) share the same descriptive grammar (a common repertoire), they are very different in terms of performance grammars (i.e., the probabilistic implementations of that repertoire).

This unified model has two advantages. First, it is compatible with the idea that there is a scalar relation between the grammar of speech and the grammar of writing. The view that written texts are speechlike to varying degrees, and that spoken texts resemble written texts to varying degrees (as statistically demonstrated by Biber [1988], for example), can be accommodated more easily in this model than in one that insists on a radically different approach to spoken grammar. Second, it has the advantage of being suitable for both performance and competence grammars. That is, it makes sense to suppose that something corresponding to this repertoire is represented in the mind of the native speaker (NS). Otherwise, we would have to postulate a "split competence" in the mind of the literate NS, as if the NS made use of different grammars, one for speech and one for writing. It is surely more plausible to believe that in speaking and in writing, the NS makes an often very different deployment of what is basically the same repertoire. Hence, the argument here is that if both approaches are compatible with the evidence, Approach B, on grounds of simplicity, is preferable.

Frequency in Spoken Performance: Pointers to Grammatical Function

Another argument for Approach B is that it allows us to explain the major differences between spoken performance and written performance in functional terms. A corpus-based performance grammar is both formal and functional: It is formal in that it identifies formal, grammatical features observable *internally* in texts, and functional, in that it relates these formal features to *external* factors influencing grammatical choice—e.g., psychological, interactional, and discoursal factors.[23] These two binary distinctions also align themselves with a third one, between the *quantitative* and *qualitative* analysis of corpus data. In representing grammatical differences as used in different subsections of a corpus, we have to make use of quantitative methods. In relating these quantitative differences to factors external to language, on the other hand, we depend on qualitative analysis.

Approaches A and B apparently differ in the way they handle the form–function or internal–external relation. Brazil goes further than others in representing grammatical choices as dependent on communicative needs, proposing that function determines form.[24] In a similar way, the Nottingham school has rightly given prominence to the close interrelationship between spoken grammar and discourse analysis. In fact, McCarthy (1998, p. 78) goes so far as to claim that "discourse drives grammar, not the reverse." Biber et al., on the other hand, approach things initially from the formal end, which is arguably fundamental to corpus-based grammar; they observe the corpus data as showing the frequency of grammatical features or categories in different varieties of English, and then (as a second step) seek to account for these quantitative differences in terms of functional explanations. Hence, in summary, these two approaches appear to adopt the following contrasting directionalities: (A) discourse → grammar; (B) grammar → discourse. However, these differences are surely again more rhetorical than real, reflecting differences of perspective. Looking at grammar from the speaker's point of view, we

naturally see it as a means to realize communicative goals within a context of discourse. On the other hand, looking at grammar from the addressee's point of view (or for that matter, from the observer's point of view, in examining corpus data), we see it as a linguistic phenomenon to be interpreted. In practice, at the level of scientific explanation, both perspectives are needed.

For example, Biber et al. (1999, pp. 1041–1051) examine a wide range of grammatical features that are more frequent (often markedly so) in conversation than in the three written registers of fictional, news, and academic writing. At an observational stage, this tells us there is something interesting to explain. At a subsequent explanatory stage, most of such features group themselves into categories on the basis of functional characteristics of conversation. The most important functional categories are listed below in "declarative" form, together with the grammatical features associated with them.[25]

Conversational Grammar Reflects a Shared Context

Private, face-to-face communication takes place on the basis of shared context—physical, psychological, and social. This aspect of conversation is reflected in the high differential frequency[26] of features that reduce the length and complexity of utterances, by making use of information retrievable from the linguistic or non-linguistic context. Such features include the following:

> *personal pronouns* (as contrasted with nouns, which are notably more frequent in the written registers);

> *substitute and other "pro-forms"* such as *so* (as a substitute for a clause), *do* as a pro-verb, *do it* and *do that* as pro-predicates, etc.;

> *various types of ellipsis*, such as front ellipsis (as in *Doesn't matter* or *You want a double?* where the subject and/or auxiliary is omitted), and ellipsis across independent syntactic units such as independent clauses, for example:[27]

(1) A: (...) there's this effort to, to ban Tarzan from the school somewhere.
    B: *Why?*
    A: *Because he and Jane aren't married.*

nonclausal material: i.e., "stand-alone" elements that are not attached to any clause or sentence and that reflect a general simplificatory tendency in conversational grammar. For example, the following snatch of conversation contains no complete clause, although it is coherent enough in terms of a shared context:

(2) A: Oh, sailboats. Yeah, yeah.
    B: How about that.
    A: Oh yeah. Oh yeah. Pretty good sized boats.

Conversational Grammar Avoids Elaboration or Specification of Reference

There is a negative reason, too, why conversation tends to be syntactically simple. Shared context means that generally there is no need to specify in detail the reference of linguistic expressions. Complexity is avoided in both clausal and nonclausal structures. Conversation has a very low mean phrase length, more particularly of noun phrases—an observation clearly related to the high frequency of personal pronouns noted above. Conversation also has a high frequency of elliptic genitives such as *hers, mine, yours*, and *theirs*. The avoidance of syntactic elaboration is also related to a low degree of specification or precision in meaning: for example, general "hedges" such as *sort of*, *kind of*, and *like* (as an adverb) and coordination tags such as *and stuff* and *that sort of thing* abound in conversation, allowing a speaker to take refuge in strategic imprecision:

(3) A: Is that what you do?   B: Well, *sort of*, but not really.

(4) It's *kind of* hard sometimes though, isn't it?

(5) So these'll be okay in ice and snow *and stuff*?

A further symptom of the conversational tendency to cut down explicit content is the low lexical density of conversational texts (i.e., a low number of content words—nouns, verbs, adjectives, and adverbs—as a proportion of all words).

Conversational Grammar Is Interactive Grammar

Another key conversational trait, not unconnected with those above, is interactiveness. Conversation is a kind of activity (a) shared by more than one person, and (b) progressing through the participants' responses to one another's contributions, (c) putting a premium on immediacy, responsiveness, and reciprocity. In grammar, obviously dialogic features that are closely identified with this function include questions and imperatives, as well as first- and second-person pronouns (which are exceptionally frequent even when compared with personal pronouns in general). Particularly telling is the tendency for interactants to share in the "co-construction" of grammatical units, for example, where one speaker completes a clause begun by another speaker:

(6)   A: *I played, I played against um* B: *Southend*.

Less obviously, negatives are particularly frequent in conversation, as is also the conjunction *but*; these reflect speakers' tendency to interact through contrastive perspectives. The interactiveness of conversation also shows up strongly through routinized particles loosely integrated with clause grammar, often completely stand-alone elements. These include peripheral adverbials (stance or linking adverbials such as *actually, anyway*), vocatives (*mom*, *Fran*, etc.), discourse markers (e.g., *well, now, you know*), attention signals such as *hey*, response forms such as *yeah*, and greetings (*hi, bye,* etc.).

Conversational Grammar Highlights Affective Content: Personal Feelings and Attitudes

Conversation, being interactive, is powerfully associated with the expression of feelings and attitudes. One aspect of this is the use of polite formulae, which, again, are highly routinized: *Thanks, Sorry, Please, Would you . . . , Could you . . . , Can I . . . ,* etc. Many vocatives have not only an appellative but also an attitudinal function, especially one of marking familiarity: *honey, mum, guys, dude, mate, Rose, Rosy*. Exclamatory components, often stand-alone or loosely attached, also have an obvious emotional impact, whether they are interjections such as *oh, ah,* and *wow*, expletives such as *God, my gosh,* and *hell*, or stand-alone exclamations such as *what a rip off*, *the bastard,* and *good boy*. Further, in conversation, common adjectives are mostly expressive of evaluation and attitude: *good, lovely, nice*, etc.; some of these occur characteristically with intensifying coordination: *good and . . . , nice and . . .* , etc. Particularly common in conversation are personal stance markers, whether in the form of adverbials (e.g., *of course*), matrix clauses (e.g., *I guess . . .*), or modals (e.g., *could*).

Conversational Grammar Has a Restricted and Repetitive Lexicogrammatical Repertoire

Related to routinization and lack of specification is a tendency for speakers to rely on more limited resources of language, in terms of lexical and grammatical choice, than writers do. Biber et al.'s study (1999, pp. 1001–1014) of recurrent word sequences (presumably accessed from lexical formulae in the NS's long-term memory) reveals that the frequency of such locutions overall is considerably higher in conversation than in academic prose. At the same time, conversation has a low type-token ratio compared with the written registers. Both these findings illustrate the relative paucity of conversation's lexical resources, a tendency also shown by heavy reliance on a small list of "favorite" items to fill particular grammatical slots, e.g., favorite subordinators: *if, because,* and

when; favorite modals: *can, will, would, could*; favorite adverbs: *there, just, so, then, anyway, though, now* (Biber et al., 1999, pp. 1049–1050). This functional characteristic of conversation (and of spontaneous spoken language in general) obviously has a strong connection with the pressures of real-time processing, to which I now turn.

Conversational Grammar Is Adapted to the Needs of Real-Time Processing

To quote Miller and Weinert (1998, p. 22): "Spontaneous speech is produced in real time, impromptu, and with no opportunity for editing, whereas written language is generally produced with pauses for thought and with much editing." This means that, unlike written registers, conversation suffers from the pressures of real-time processing, bringing overload on the short-term (working) memory (Clark & Clark, 1977, p. 202; Gathercole & Baddeley, 1993; Ellis, 1996, pp. 102–108), particularly for the speaker. Well-known syntactically relevant reflexes of this constraint include, first, normal *dysfluencies* (see Levelt, 1989) such as hesitation pauses, hesitation fillers, repeats, retrace-and-repair sequences, incompletions, and syntactic blends (anacolutha). This last is illustrated by:

(7)   [uh he's (a closet yuppie] is what he is)

The noun phrase *a closet yuppie* is in effect the last part of one clause, and the first part (subject) of another clause, where both clauses overlap in structure, as indicated by the parentheses and brackets.

Second, a different kind of real-time constraint on conversation is manifest in omissions and other *reductive* mechanisms that have the effect of shortening the message, e.g., ellipsis/elision of auxiliaries (8) and negative and verb contractions (9):

(8)   *You got* to put your clothes in the dryer, Nancy. (Cf. You've got . . .)

(9)   I do*n't* think *it's* fair. (Cf. I do not think it is fair.)

Dysfluency and reduction are both ways of synchronizing the planning and execution of an utterance. When planning holds up execution, dysfluencies result. When planning runs ahead of the utterance's execution, reduction permits the utterer to catch up. For example, Carter and McCarthy (1995, p. 147) find that initial ellipsis is particularly likely to occur when the speaker uses prefabricated routines such as *Don't know* or *Good thing* . . . , which patently require little recall or planning effort.

   A third influence of real-time processing on grammar is the most interesting, because most integral to the syntax of spoken language. There are several ways in which spoken grammar appears to be "streamlined" to relieve pressure on the working memory (see Biber et al., 1999, pp. 1066–1072).

   1. One is the use of small independent grammatical units, which are labeled *C-units* in the discussion below. It has often been observed that the "sentence," regarded as a maximal unit of written syntax, is inappropriate to the analysis of spoken language. Instead, according to Biber et al. (1999, p. 1071), units averaging less than six words are the maximum operative units of spoken syntax.

   2. A second is the operation of what may be called the *add-on principle*. Spoken utterances often attain considerable complexity, but on further observation, they are generally decomposable into short clause-like chunks, chained together in a simple incremental way for ease of processing. This principle is particularly noticeable in narrative; in the following example, the add-on chunks are separated by vertical lines (|):

   (10) Well, | you know | what I did , | I looked in the trunk | I was going to Vicky's | and getting everything all set, | so I exchanged the batteries and everything [*Other Speaker*: Uh-huh] | picked up the tape recorder, | made sure everything

> was all set, | slammed the trunk | and, as I was slamming it, I was thinking, | my keys!

The vertical lines here occur at a point where a new clause starts, whether related to what precedes by coordination, parataxis, or subordination.[28] These chunks have a strong link with intonation units (Chafe 1987). Words such as *and, but, or, so*, and *because* also commonly signal a particular kind of connection, but equally, the linkage may be conveyed by direct juxtaposition of clauses. Both types of linkage are illustrated in:

> (11) It was pretty cool, it was pretty chill. And uh the food was hell it was good.

3. The real-time processibility of spoken syntax, bearing in mind limited working memory, is also evident in the simplicity of structure particularly associated with the beginning and middle of clauses. For example, unlike in written syntax, where a clause often begins with a relatively complex subject, subject noun phrases in speech typically consist of a single word (a pronoun), and subject noun phrases of more than two or three words are a rarity. Thus in (10) above, all subjects are *I*, *you,* or zero. In spoken syntax, the end-weight principle (Quirk, Greenbaum, Leech, & Svartvik, 1972, p. 943) comes into its own: The more complex noun phrases in this example occur after the verb, where they do not hold up the decoding of the clause as a whole, although even here the noun phrases consist of no more than two or three words (*the trunk*, *the batteries,* etc).

More could be added on this aptness of spoken syntax for real-time processing, but here it will help to take an overview of the functional explanation of formal features of conversational grammar, in Figure 1.

The connections between the functional topics can be understood as follows. *Shared context* links to *interactiveness*, in the sense that interactive dialogue enables grammatical shortcuts on
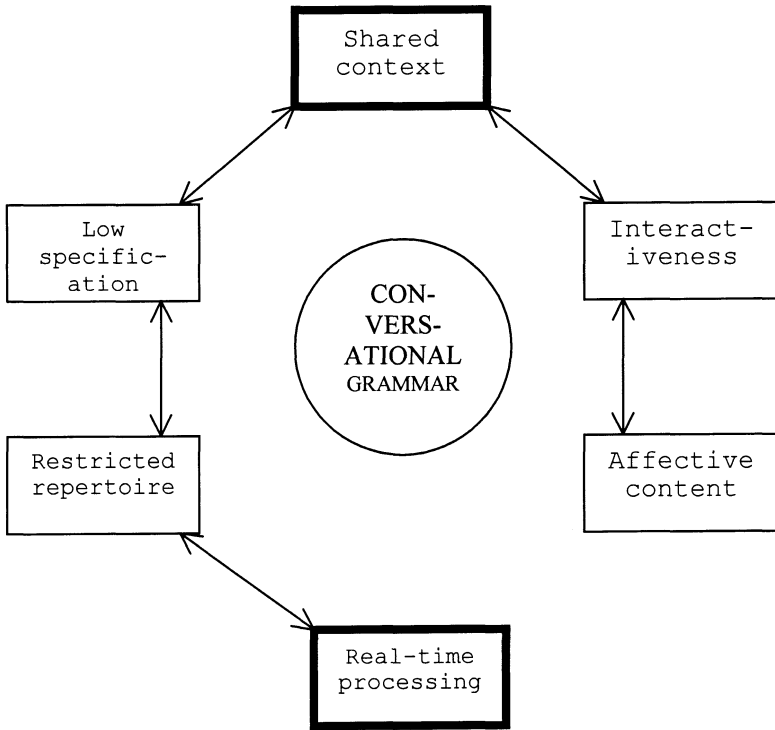
Figure 1. The interrelated functions associated with conversational grammar

the basis of ongoing shared context. In addition, *shared context* links to *low specification*: If we share context, we tend to rely on implicit reference, which requires little or no elaboration. *Low specification*, in turn, connects with *restricted repertoire*, because the lack of need to elaborate and specify means that the speaker can rely on a repetitive repertoire of much-used words and phrases. *Restricted repertoire* in turn ties up with *real-time processing*, because on-line pressures encourage reliance on a limited repertoire of items readily retrievable from memory. *Interactiveness* clearly associates with *affectivity*, each involving personal and experiential aspects of communication.

Figure 1 is intended to suggest, by prominence, that the principles of shared context and real-time processing are the two key factors in explaining the functional nature of conversation. These are indeed two situational factors that exist independently of language, and yet they influence the linguistic shape of conversation more than any others. On the other hand, low specification and restricted repertoire, on the left of the diagram, are more closely bound up with the linguistic and cognitive nature of conversation.

Such functional explanations invariably display the multi-functionality of linguistic features, and the six factors above are no exception. For example, the general phenomenon of simplification or reduction in spoken grammar can be jointly explained by the two major functional factors of shared context and real-time processing.

The Relative Simplicity of Conversational Grammar

It is often commented that the grammar of speech or conversation is simpler and less "structured" than that of most written texts.[29] As a supporter of Approach B, my task here is to argue that, if there is such a difference between speech and writing (and I believe that broadly there is), it can be accommodated within a unified grammatical system (Approach B), as well as within the "radical difference" framework of Approach A.

Both McCarthy (1998, pp. 79–82) and Miller and Weinert (1988, pp. 73–74) claim that one area of grammar where spontaneous speech is simpler and less integrated than writing is its relative lack of subordination. However, Biber et al. (1999, pp. 674, 826) show that certain types of subordinate clause (e.g. *that* complement clauses and finite adverbial clauses) are actually more frequent in conversation than in the three written registers. Since there are different ways of measuring frequency of subordination, it is difficult to say whether conversational grammar is in this respect simpler than the other varieties in terms of subordination. But the general picture that emerges from Biber et al.

(1999) is that finite clauses (except those in the noun phrase) are more frequent in conversation, and nonfinite clauses are more frequent in the written registers. But (as also noted by Miller & Weinert) the most notable difference of complexity, quantitatively speaking, between conversational syntax and the syntax of the three written registers lies in the relative simplicity of phrase structure in spoken language—particularly the brevity of noun phrases and prepositional phrases. Striking as such differences are, they are purely matters of frequency.

A less tractable issue linked with grammatical simplicity is the problem of "sentencehood" in spoken grammar. As many have maintained,[30] for spontaneous speech it is necessary to discard the sentence as the primary unit of grammatical description, in spite of the key status it has traditionally been accorded in the syntax of the written language. Instead, Miller and Weinert follow Halliday (1989) in opting for the clause complex as the maximal analytic unit of grammar. In Biber et al., the C-unit, a less extensive unit, with an average length of 5 to 6 words (see Biber et al., 1999, p. 1071)—as compared with an average length of about 17 words for a written sentence—is adopted as the maximal "syntactic chunk" of spoken grammar. Apart from the term C-unit (see, e.g., Chaudron, 1988), other terms used to label roughly the same "maximal chunk" in spoken grammar are *text unit* (as in the ICE-GB Corpus) and *AS-unit* ("analysis-of-speech unit"; see Foster, Tonkyn, & Wigglesworth, 2000).[31] While avoiding technical detail, we can describe this C-unit as either a main clause, or a stand-alone nonclausal unit, together with any clauses embedded within it (see Biber et al., 1999, pp. 1069–1104). Another way to think of it is as a maximal parsable unit: a unit that can be grammatically analyzed but that cannot be *grammatically* connected to anything else to form a more extensive syntactic unit. The claim that English conversation can be described in terms of such (averagely) simple syntactic units apparently amounts to a claim that, at its "top" end, conversational grammar lacks the integrated structure of the sentence—surely a simplification of the grammatical system, not just a matter of frequency.[32]

Nevertheless, it can be argued that this is a not a difference of system, but that even in written texts, *there is no grammatical unit corresponding to the canonical sentence*. Instead, the sentence is a unit of *graphology*—a unit of the writing system. This argument is explored in the next section.

The Non-sentencehood of Conversational Grammar

The fact that conversational syntax cannot be segmented into units corresponding to written sentences has been one of the most persuasive arguments in favor of Approach A—the thesis that we need a different approach to grammar when we examine spoken language. In this and the following sections, I will consider that argument, but then proceed to claim that we can apply it to written grammar as well.

The best way of persuading someone of the nonviability of sentences in spontaneous spoken language is simply to ask them to segment a transcription of spontaneous speech into sentences.[33] The segmentation is likely to end up being arbitrary in a number of ways. The most obvious segmentation criterion—sentence-final punctuation—is unreliable: If a period occurs in a speech transcription, it can only be an artifact of the transcription process, for there are no periods as such in speech. Second, if one tries to apply the criterion of the traditional division into simple sentences (having a main clause only), complex sentences (having a main clause plus embedded clauses), and compound sentences (having coordination of main clauses by *and, or, but*, etc.), then two main stumbling blocks occur:

1. *First stumbling block:* In conversational language, about a third of the syntactically independent units (C-units) that occur are nonclausal (see Biber et al., 1999, p. 1071)—i.e., they do not have a clause structure with a main verb, but instead typically consist of a single (non-verb) phrase or word. These do not fit into any of the traditional criteria of a sentence,

although they have sometimes been labeled by various grammarians as "minor clauses" or "minor sentences."

2. *Second stumbling block:* In conversational language, the criterion of coordination between main clauses works clearly only in cases where the two clauses share some structure (e.g., a common subject) and can therefore be seen as jointly included within a larger unit. In other cases, a coordinator such as *and* cannot be treated as an indication of grammatical connection, since in conversation such coordinators often have a loose discoursal linking function, beginning fresh utterances or turns. Thus, in (12), there is reason for considering the first *and* a grammatical connective, but not the second:

> (12) A: So we can drink ourselves silly *and* get a bill for about ten pounds.
>
> B: *And* all that wonderful food!

Turn- and utterance-initial words such as *So* and *And* illustrated here are of marginal grammatical status, similar to *But* (or even *Because*; see McCarthy, 1998, p. 81) in their ability to latch one utterance or turn loosely onto another. Hence here it is safest to abandon the traditional concept of a "compound sentence" and to treat as a discourse connective each coordinator that begins a new independent clause or equivalent nonclausal unit. This means that *and, or,* and *but* at the beginning of C-units are comparable to conjuncts like *anyway* or *however* rather than to grammatical conjunctions, which link elements within a larger grammatical structure. That is, such coordinators are to be treated as connectives at a discoursal rather than grammatical level.

To return to the first stumbling block above: The wide range of nonclausal C-units that occur in conversation will become obvious to anyone transcribing a page or two of spontaneous dialogue. Here I present a sampler of typical examples. The top line illustrates interjections and other one-word isolates, whereas the remaining examples have phrasal structures:

(13) oh, yeah, uh-huh, huh, mhm, okay, whoops, hi, bye-bye, thanks, sorry.

My God. More sauce? Any luck? Saturday? Why not? In California?

No crying. Up the stairs, now. Careful when you pick that up. Thirty pence please.

Very special. What an unfortunate first experience.

The bloody key!—The key to the bloody boiler! Glad you could make it.

Thanks a lot. Sorry about that. Not a lot. With or without ice?

However, such phenomena also occur, admittedly far less frequently, in written grammar. Even prototypically written registers contain more than a sprinkling of grammatical material that is not sentential, and indeed is nonclausal: material found routinely in headlines, titles, lists, etc., as in (14), but also found in running text, as in (15). Both the following examples are from newspapers (quoted in Biber et al., 1999, p. 224); the first is a headline, and the second is from a feature on wine:

(14) *Elderly care crisis warning*

(15) And now for something completely different: *cheap and cheerful claret*.

Many more examples are easy to find. Here are two further examples from data listed in J. Aarts (1991, pp. 60–62):

(16) And then yesterday.

(17) Suddenly–out of the dark–a dog . . .

A similar point in favor of Approach B can be made in the case of conjunctions such as *and, but, so,* and *because*, just discussed. The argument for regarding *and* and *but* as discoursal linkers in spoken grammar was that, at the top level, they link grammatically independent units, and indeed in conversation often introduce a new turn. However, the difference between spoken and written grammar here is a matter of frequency only. Despite

prescriptive disapproval, sequences like the following, in which *And* introduces a new sentence or paragraph, are far from infrequent in writing (Biber et al., 1999, pp. 83–84):

> (18) Such crazy fervor! *And* now all the racism, all the strange erotic persuasions.
> [Saul Bellow, *Mr. Sammler's Planet*]

Hence the characterization of coordinators as words that both link (grammatically) *within* C-units and link (discoursally) *between* C-units applies to both spoken and written language.

Pre-clause and Post-clause Satellites

We turn finally to another area where spoken grammar seems to operate on different structural principles from written grammar. More than one grammarian of speech has noted the capability of spoken language to build more complex structures, by adding C-units as "satellite slots" to the front or rear of a larger (usually clausal) unit (see Dik, 1981; Aijmer, 1989). Carter and McCarthy (1995) refer to *pre-clause* and *post-clause* slots, filled respectively by *topics* and *tails*. Examples of topics are dislocated or stand-alone elements such as these:

> (19) *His dad's foot*, he's still limping isn't he?

> (20) *QPR* we were preciously close. *Birmingham* we were preciously close.
> [discussing football results]

and cases of what transformational grammar has called *left dislocation* (where a later pronoun stands proxy for the initial stand-alone noun phrase), as in:

> (21) *Poor old Doctor Jones*, he said you'll never wear your heart out.

> (22) *North and south London* they're two different worlds aren't they? in a way

Topics, like many other conversational structuring devices, appear to be multifunctional. They behave as thematic components, giving initial pride of place to whatever is uppermost in the speaker's attention span. On the other hand, they also help processibility and information management by breaking up an utterance into smaller chunks: for example, complex noun phrases in subject position (*Poor old Doctor Jones said . . .*) are avoided by this device.

Tails are of various types, both clausal and nonclausal, sometimes occurring in combination:

> *Tag Questions, Comment Clauses, and Retrospective Hedges*
>
> > (23) And then they're open seven days a week *you say*.
> >
> > (24) And it was her second car they she'd ever had *sort of thing*.
> >
> > (25) North and south London they're two different worlds *aren't they? in a way*.
>
> *Retrospective Elaboration or Reinforcement (by Copying or Partially Copying a Previous Phrase)*
>
> > (26) I do*n't* care about work and them being in a muddle, *no not at all*.
> >
> > (27) I mean she *never* liked that car. *Ever*.
> >
> > (28) He's had *a blind* put up—*a special blind that that leads straight across the fanlight.*
> >
> > (29) You always remember *numbers*. Don't you? *Car numbers and telephone numbers and*—
>
> *End Dislocation (or Reinforcement of a Pronoun by a Following C-Unit, Typically a Noun Phrase)*
>
> > (30) I mean *it* was the only one with a—with its own kitchen, *the one I was gonna have*.
> >
> > (31) Do I stir *it* first *the tea*?

(32) I reckon *they*'re lovely. I really do *whippets*.

Self-Answering Following a Question

(33) What time they supposed to be back, *early*?

(34) Which off-button, *the button on the TV or the clicker?*

Like topics, tails can be multifunctional, often serving an affective purpose (see McCarthy & Carter, 1997), but also acting as a retrospective qualification, reinforcement, or clarification of what has just been said. They enable the speaker to repair, not so much a dysfluency, as an unclear communicative effect in the preceding unit. Also like topics, they can relieve working memory pressure, by reducing the processing complexity of individual C-units. For example, (28) above would be difficult to process if recast as a single clause: *He's had a special blind that that leads straight across the fanlight put up.* Here note the awkwardness of the lengthy nonfinal noun phrase.

These satellite elements appear to back the view that spoken grammar is special—not, in this case, in its simplification of sentence structure, but in its elaboration of the clause. Carter and McCarthy (1995, p. 152) put forward a proposal for an extended clause structure, in which topics and tails can be added to the body of a clause, sometimes in combination, as in (25) above. According to this proposal, the extended clause in spoken English has a potential structural pattern: *pre-clause + clause + post-clause*. However, my own preference (following a similar preference for limiting the scope of syntax in the case of C-units linked by coordinators) is to regard such "satellites" as grammatically independent of, though discoursally tied to, the "core" structure they precede or follow. There are five reasons for preferring this analysis.

1. The links that bind a topic or a tail to its "body" are connective devices such as pronoun anaphora, lexical repetition, coordination, and parataxis, which are elsewhere independent

of grammatical form. For example, pronoun anaphora can link items both within and across sentence or clause boundaries. These linkages are not structural, i.e., syntactic, but belong to the realm of textual *cohesion* (see Halliday & Hasan, 1976).

2. The fact that topics and tails are typically nonclausal in form is not a reason for regarding them as syntactically dependent. Nonclausal C-units are extremely common in speech. In a count of clausal and nonclausal C-units in 20 sequences of 50 C-units from 20 samples of American and British conversation (Biber et al., 1999, p. 1071), it was found that more than a third of all C-units were nonclausal.[34] On the other hand, pre-clause and post-clause elements such as front-dislocated and end-dislocated phrases are not common[35] and could only account for a small minority of the phrases that would otherwise have a stand-alone status as C-units.

3. Some "satellites" can face both ways, being a satellite to both a previous and a following clause:

> (35) I don't, as I say I don't want anything too big, but should be able to get one for about seventy pounds, *even the new ones that go, that just goes forwards and backwards*, that's all I want it to do. [discussing a new cupboard]

> (36) . . . they got *one of the teachers that we always play jokes on* / *one of the young women* / they got *her* to write it. (example from Miller & Weinert, 1998, p. 59)

The highlighted part of (35) is a noun phrase that fills a tail slot with respect to the preceding clause (clarifying the pronoun *one* in the previous unit), and also fills the topic slot with respect to the following clause. (The dysfluent switch from plural *go* to singular *goes* is irrelevant to this point.) The part of (36) separated by /.../ has a similar double function.

4. C-units that have a function similar to pre-clause elements can themselves be clauses. For example, the initial highlighted

part of (37) is a clause similar in its topic-affirming function to a front-dislocated noun phrase.

(37) *There's this one guy*, um, *he*'s on the Ann Arbor station in the evening but *he*'s on other stations throughout the country.

5. The body of the extended structure can be nonclausal, as in:

(38) And *you*, less of *your* smirking.

In (38), the initial *you* has the topic-affirming function of the topic in cases of front dislocation. But the main structure is not a clause, but a nonclausal C-unit.

The conclusion I draw from these five points is that the above possibilities of co-occurrence cannot be contained within a sequence of grammatical slots *pre-clause + clause + post-clause*: a looser concept of discoursal linkage or cohesion is needed to explain them, rather than one of grammatical structure. As discoursal patterns involving more than one C-unit, these require no *grammatical* explanation. Further, note that phenomena like front and end dislocation, however characteristic of spoken language, are not restricted to the spoken medium, but also occur in written texts such as prose fiction:

(39) But *Anna-Luise* what could have attracted *her* to a man in his fifties?
[Graham Greene, *Doctor Fischer of Geneva* (1980)]

(40) He couldn't make sense of *it* at first: *the uncertain whiteness, the fluttering, as of snowflakes*.
[from J. Aarts (1991, p. 61)]

These extracts are not direct imitations of speech, in quotation marks, but are parts of the author's narrative. Hence, even if the view is taken that such extended clause patterns are part of syntax, it cannot be argued that this structure is limited to the syntax of speech.

Spoken and Written Grammar Revisited:
One System or Two?

The unified grammar of Approach B may still seem implausible. One important claim (as implied above) is that the sentence, as a unit, belongs to the written language only, and that the maximum parsable unit in speech is a unit, here termed a C-unit, that is on the average much shorter than the average sentence. Another point is that the C-unit frequently consists not of a clause, but of a lower-level unit such as a phrase or a word. Surely this must mean that the C-unit-based grammatical *system* for spoken English is simpler than, and hence different from, the sentence-based system for written English?

This argument actually depends on the traditional assumption that the sentence, as a structure of one or more clauses as canonically described, is a unit of the grammar of written English. There is no doubt that a unit of this kind predominates in the prototypically written registers of English, such as academic writing and news writing. But this does not mean that it is a grammatical unit. My argument is that, on the contrary, the sentence is an orthographic unit (distinguishable by initial capitalization and final punctuation) which may or may not correspond to a single C-unit. For example, the following is a sentence consisting of two (syntactically independent) C-units: *Part of her life was ending; a part she had loved.*

Hence the C-unit, although set up primarily for the description of spoken grammar, provides a suitable working framework also for written grammar. There is no support here for the idea that the written language is based on "sentence grammar," and is therefore essentially different from the grammar of speech. If we look at other varieties of written language, too, this bringing together of the grammar of speech and the grammar of writing has the additional advantage of enabling a single grammar to apply to "mixed registers" such as prose fiction. Fictional texts are "mixed" in that, in addition to features of written grammatical style, they contain an admixture of grammatical phenomena

strongly characteristic of speech, and indeed often imitative of speech. However, the admixture of spoken grammatical features in fiction writing is not limited to obvious simulations of the spoken word, but is found more covertly in interior monologues and other narrative styles, as already illustrated in (39) above. Moreover, this admixture is not just found in fiction writing, but in other written registers, such as journalistic prose, as seen above in (15).

The preceding arguments have presented the case for Approach B (spoken and written English share the same grammatical repertoire, but with different frequencies), on the assumption that if Approach B can be squared with observed facts, it is a simpler hypothesis than Approach A.

Conclusion, Including Implications for Language Teaching

New research on spoken English grammar, making use of electronic corpora, can increase our knowledge and understanding of the grammar of speech in many ways, whether or not the perspective of "differentness" (Approach A) or "sameness" (Approach B) is dominant in the mind of the investigator. There are also some useful implications for language teaching.

With some exaggeration, we can represent the Nottingham school (e.g., Carter & McCarthy, 1995, pp. 154–155), like Brazil (1995), as portraying the grammar of spoken language as a kind of "terra incognita" for which the official maps of the grammatical tradition, being centered on the written language, provide inadequate help. In that tradition, features of spoken grammar have been either absent or marginalized; consequently, say Carter and McCarthy, there is as yet no accepted metalanguage for discussing them. The atlas of the spoken grammar has yet to be written— although research is increasingly providing help for the explorer.

In this context, the corpus grammarians mentioned in this review have done some very useful exploration and brought home some helpful maps, valuable for the classroom as well as for research. Carter and McCarthy (1995, p. 155) suggest that instead

of the standard grammar pedagogy of the "three Ps" (Presentation, Practice, Production), consideration might be given to the more exploratory, data-driven methodology of the "three I's" (Illustration, Interaction, Induction, where illustration means examining real data). This chimes well with Brazil's comment, "An exploratory stance is not entirely a bad one for teachers to adopt," for the learning of spoken English. If spoken grammar is a terra incognita, then teaching should help learners to discover it for themselves.

It is difficult to argue against the use of real data. However, the debate on the use of authentic speech data in the classroom has not been one-sided. For example, Podromou (1997), while praising the advantages of corpus resources for teaching, raises concerns that the elliptic, context-bound, and culture-bound nature of conversational data can cause irrelevant comprehension problems for the learner. More wide-ranging concerns are voiced by Widdowson (2000).

In general, the corpus revolution encourages a pragmatic approach to teaching grammar, with emphasis on the availability of appropriate real data, and (where needed) computational tools, together with the integration of spoken grammar with functions, discourse, and lexical patterning.

However, the question arises as to whether *the grammar of speech* needs to be taught as a topic in itself. There is comfort for the learner, I would argue, in the conclusion that, for practical purposes, NSs and NNSs have one grammatical competence to acquire, not two. If one had to learn two radically different grammar systems, one for speech and one for writing, the burden on the learner would be more prodigious than it is. Assuming this not to be the case, it is also a comfort to the learner that features characteristic of spoken grammar tend to be found in the spoken variety of different languages. Miller and Weinert (1998, pp. 190–262) illustrate how typical (de)focusing features such as situational ellipsis and "left dislocation" are found in various languages, showing that functional constraints of the spoken language exert similar constraints on different language systems. This suggests that NNS learners of a language may be able to

adapt universal strategies for handling speech for use with the target-language grammar; in that case, the need for special instruction in spoken grammar is less compelling. For the acquisition of spoken grammar, it may well be that the kind of exploratory, data-driven learning suggested by Carter and McCarthy is just what is needed. Hughes and McCarthy (1998, p. 281) emphasize, however, that this focus on data is not just a matter of scanning concordances, but of discourse-based tasks, fitting grammar into its broader human context:

> Discourse-based grammar tasks should focus first and foremost on the people involved in producing the language sample, their relationships, and the ideas that they are conveying rather than merely on a section of text as a setting for a grammatical structure.

There is a final piece of comfort for the learner in the thought that grammatical complexity is less in evidence in speech than in writing. As this review has shown, "economical" exploitation of grammar in conversation is evident on various levels: (a) simplicity of phrases; (b) use of C-units much shorter than sentences; (c) frequent reliance on nonclausal fragments; (d) resort to the "add-on" principle; and (e) reliance on a restricted lexical range, and on the "idiom principle," which goes hand-in-hand with a simple, quasi-finite-state model of syntax (see Pawley & Syder, 1983; Sinclair, 1991; Nattinger & DeCarrico, 1992). Although this remains controversial (partly depending on where one draws the limits of grammar), my conclusion is that grammar plays a lesser role in the total communication process in speech than in writing. This is yet another reason why, for learners, new understandings of spoken grammar need to be integrated in a larger discourse framework, rather than treated as "another thing to be taught."

<div align="right">Revised version accepted 10 May 2000</div>

Notes

[1]*Grammar* as a term derives from the Greek root *graph-, gramm-* "write." With a few notable exceptions, the classical Western tradition of grammar

largely ignored the spoken language until the later twentieth century (see McCarthy, 1998, pp. 15–18, for an overview). Modern syntax, especially in the Chomskyan tradition, has often reinforced the association between grammar and the written language—as terminology such as "left-dislocation" and "right node raising" makes plain. It is regrettable that descriptions primarily of adult written competence have implicitly informed discussion of the target competence for language acquisition research. Certainly for L1 acquisition and naturalistic L2 acquisition, it is *spoken* language that should be regarded as the principal input to language acquisition.

[2]The Brown Corpus, archaically entitled "A Standard Sample of Present-Day American English, for Use with Digital Computers," consisted of 500 written text samples selected from 15 different genres. For details of this and other "first generation corpora," see Kennedy (1998, pp. 23–32).

[3]Not surprisingly, "second generation corpora" were typically much larger than those of the first generation: For example, the British National Corpus (BNC), constructed about 30 years after the Brown Corpus, is 100 times larger (100 million words as compared with 1 million). The main Bank of English corpus (associated with the COBUILD project at Birmingham) consists of over 329 million words. See Kennedy (1998, pp. 33–56).

[4]I do not include here task-oriented dialogue corpora, which are unnaturalistic in the sense that the speakers were assigned dialogue tasks which they then performed for the purposes of the recording. Although useful from many viewpoints, these have been developed largely for purposes of speech and language technology and cannot be easily applied to research relevant to human language learning and use of grammar, where the range of situations in which language might occur cannot be strictly controlled. They include the Switchboard corpus of the Linguistic Data Consortium (LDC), and the Edinburgh Map Task corpus (see Thompson, Anderson, & Bader, 1995).

[5]The Child Language Data Exchange System (CHILDES) is a major exception, although here the term "Exchange" still maintains the tradition of data being passed among individual researchers. See the discussion below, after paragraph 5.

[6]Further information on these tools can be obtained from the following websites: WordCruncher, http://www.wordcruncher.com/product/html; WordSmith, http://www.liv.ac.uk/~ms2928/index.htm.

[7]The term "feature" is here used in the general sense of Biber (1988 and elsewhere) to mean a descriptive category the incidence of which can be observed and counted in texts.

[8]Availability of corpora is generally subject to licensing agreements and the payment of a fee. Important distributors of English language corpora are ICAME (the HIT Centre, Harald Hårfagresgt. 31, N-5007 Bergen, Norway, or via Internet at http://www.hd.uib.no), and Oxford University Computing Services (for the Oxford Text Archive, and also for the BNC, 13 Banbury Road, Oxford, or via Internet at http://ota.ox.ac.uk).

[9]The works of Bengt Altenberg, Karin Aijmer, and Anna-Brita Stenström on these topics in spoken grammar are particularly noteworthy: They may be consulted through the ICAME bibliography of corpus-based studies maintained and published by Altenberg (1991), an updated version of which (1995) is available on-line from ICAME (E-mail: icame@hd.uib.no).

[10]See remarks in Owen's (1982) somewhat overcritical review of Svartvik and Quirk (1980).

[11]The BNC was compiled by a consortium consisting of Oxford University Press, Longman Group, Chambers, Oxford University, Lancaster University, and the British Library. Its creation was funded by the Engineering and Physical Sciences Research Council and the Department of Trade and Industry, as well as by the British Library and the participating publishers. See Burnard (1995).

[12]At a conference in 1958, Chomsky argued:

> Any natural corpus will be skewed. Some sentences won't occur because they are obvious, others because they are false, still others because they are impolite. The corpus, if natural, will be so wildly skewed that the description would be no more than a mere list. (University of Texas, 1962, p. 159)

At an ICAME conference at Freiburg in 1999, Bas Aarts reported (in a paper entitled *Corpus Linguistics, Chomsky and Fuzzy Tree Fragments*) an interview he had recently conducted with Chomsky, suggesting that in 1999 Chomsky's view of the value of corpora remained decidedly negative.

[13]This comment does not apply to corpus compilations of a restricted and/or artificial nature for language technology, such as the LDC's Switchboard corpus already mentioned (Note 4). General corpora of spoken American English, apart from the Longman Corpus of Spoken American English used by Biber et al. (1999), are now making progress. The spoken part of the ICE subcorpus for American English is being compiled, by Charles Meyer (University of Massachusetts, Boston) in association with Jack Du Bois. Other corpora are planned or in preparation. For example, Charles Fillmore, Nancy Ide, and others are planning an American National Corpus broadly comparable to the BNC (further details at http://www.cs.vassar.edu/~ide/anc/nsf.html).

[14]The polarization of linguists into empirical corpus linguists and "armchair linguists," who rely on native-speaker intuition, is handled amusingly by Fillmore (1992, p. 35):

> These two don't speak to each other very often, but when they do, the corpus linguist says to the armchair linguist, "Why should I think that what you tell me is true?", and the armchair linguist says to the corpus linguist, "Why should I think that what you tell me is interesting?"

[15]It is unfortunate that the established term "performance" in "performance grammar" appears to place the focus on the actual process of producing or generating language. Although corpora do not provide this, they illuminate linguistic performance in the more general sense of providing "language instantiated through use in real contexts."

[16]The bringing together of grammar and discourse analysis is an important aspect of performance grammar, as will become clearer later in this article. The integration of lexis and grammar is another recurrent theme in corpus grammar, particularly in the work of John Sinclair, who has stressed the inseparability of these two linguistic resources (a view originally associated with M. A. K. Halliday). Sinclair contrasts the *idiom principle* with the *open choice principle* typical of "virtually all grammars" and characterizes it as follows: "The principle of idiom is that a language user has available to him or her a large number of semi-preconstructed phrases that constitute single choices, even though they might appear to be analyzable into segments" (Sinclair 1991, p. 110). This view, like that of Miller and Weinert (1998, pp. 384–385) that "ready-made language is as important as productive rules," is particularly appropriate to spoken language. See Pawley and Syder (1983) and Nattinger and DeCarrico (1992) on the application of this kind of thinking to L1 and L2 acquisition.

[17]At the same time, it would be misleading to suggest that prior to the electronic corpus revolution the features specific to spoken language were ignored in English grammars. For example, Jespersen (1947, p. 115) deals in detail with the characteristic ellipses of spoken language (as in *Think so? Where you been?*), citing examples of fictional dialogue. Quirk et al. (1972), while emphasizing the "common core" grammar common to speech and writing, also made use of spoken corpus data and gave an account of such typically spoken features as "left dislocation" and "right dislocation" or (using their own terms) "pronoun reinforcement" and "noun phrase tags" (1972, pp. 970–971), e.g., *The book I lent you—have you finished it yet?* and *They're all the same, these politicians*.

[18]Of the authors to be newly mentioned in the following paragraphs, Brazil uses as data a small number of monologue (narrative) transcriptions. Miller and Weinert, in addition to Russian and German data, make use of a combination of corpora compiled at Edinburgh and Glasgow: a small corpus of Scots English conversation, plus two task-oriented corpora—collected under rather special "laboratory" conditions—see Note 4 above. Halliday also uses a small corpus of spoken English—interestingly, also collected at Edinburgh—published in Halliday (1970).

[19]Brazil's grammar of speech therefore bears comparison with the extended finite-state parsers popular in computational linguistics in the 1980s, such as augmented transition networks (ATNs); see Winograd (1983).

[20]In an earlier study (Leech, 2000), I wrongly attributed to Brazil (1995) the view that spoken grammar and written grammar are quite different. This

was a regrettable mistake. Rather, his view on written grammar was one of complete agnosticism (Brazil, 1995, pp. 11–12).

[21]For a somewhat different emphasis, however, see McCarthy and Carter (1997, p. 422), who voice the need "to describe written and spoken grammar as far as possible within a single integrated framework" alongside the need for description "to be located within frameworks specifically developed for spoken discourse and conversation analysis."

[22]Biber et al. use this term "conversation" in a somewhat loose operational sense, to refer to the data collected by a demographic sampling method. That is, a broad stratified sampling was undertaken of English-speaking populations according to region, gender, age, and socioeconomic group, and the individuals thus selected were lent a quality Walkman, with which they recorded the everyday talk in which they engaged (as speaker or hearer) for a period of a few days. In practice, a very high percentage of the data collected by this method came within the common understanding of conversation as face-to-face spontaneous private dialogue. But some other kinds of dialogue (e.g., telephone talk, service encounters, and instructional dialogue) were also incidentally represented. Although the terms "conversation," "spontaneous speech," and "spoken discourse" are distinguished in the present article, for the present purpose the distinction is relatively unimportant, conversation being by far the most typical and frequently encountered variety both of spontaneous speech and of spoken discourse in general.

[23]This functional analysis can be carried out partly by reference to contextually determined corpus design features. Most wide-coverage spoken corpora are divided into various subcorpora representing different genres, activity types, or registers, and grammatical differences between these subcorpora can be analyzed and interpreted. However, whereas contextual information applicable to a whole piece of discourse data is normally readily available, more local features can generally be retrieved only by the human analyst examining the context.

[24]Brazil says that his grammar of speech "begins with the speaker's perception of what communicative need must be satisfied at the time concerned" (1995, p. 222).

[25]The following subsections are broadly based on Biber et al. (1999, pp. 1041–1050), "A Functional Survey of Conversation." In that section, references are given to other parts of the book in which the major frequency differences between conversational grammar and three varieties of written grammar are specified. In the present article, these findings, many of them paralleled in other studies, are not given in quantitative detail, but are simply briefly illustrated to provide a condensed survey. Many of the distinctive traits of spoken grammar, as illustrated here, are also found in other studies apart from Biber et al. (compare, for example, Biber [1988], Chafe [1982], and Halliday [1989]).

[26]High differential frequency means high frequency in comparison with other subcorpora representing other varieties of the language. In the present

discussion, this amounts to a very significantly higher relative frequency than is found in the written registers of the LSWE corpus.

[27]This example, and subsequent examples of conversation (except where another source is cited), are taken from the LSWE Corpus.

[28]However, where an anticipatory clause is introduced by left-branching structure, for example, *as I was slamming it* in (10), this is not counted as a separate chunk, as this whole clause would need to be held in memory while the following main clause structure is decoded. On relevant principles governing complexity or difficulty of linear syntactic processing, see Hawkins (1994), especially the principle of "early immediate constituents" (EICs), p. 77.

[29]An exception to this is Halliday's view (1989, p. 87) that "the spoken language is . . . no less structured and highly organised than the written." Regrettably, there is no time to consider Halliday's argument here; it depends considerably on his theoretical interpretation of terms such as parataxis and hypotaxis.

[30]J. Aarts (1999), Biber et al. (1999), Brazil (1995), McCarthy (1998), and Miller and Weinert (1998), among others, all seem to agree on the nonviability of the sentence in spoken grammar.

[31]Foster et al. also discuss the C-unit or AS-unit as a spoken counterpart of the T-unit (Hunt, 1965), widely cited as a unit for measuring complexity in written data.

[32]Incidentally, an important observation here is that relative simplicity of grammatical structure does not imply any corresponding simplicity in the communication process. Rather, my contention is that in conversational language *grammar has a lesser role in the total communication process,* as contrasted with the registers of written language. In other words, the resources of communication are differently allocated in conversation, such that grammar (and lexis) is relatively less important than in written texts. The communicative load of shared context and of interactive discourse factors (including prosodic and paralinguistic factors) is correspondingly increased. We can even argue that there is a kind of communicative deficiency in spoken grammar, if it is divorced from its setting in discourse. McCarthy's equation of "grammar-as-discourse" is pertinent against this background: There is a sense in which the boundaries of grammar, in the spoken medium, become difficult to separate from the discourse factors that are necessary to give grammar communicative coherence. For example, conversational transcriptions are peppered with small words variously called "interjections," "particles," "expletives," "discourse markers," etc., which are either grammatically isolated or loosely attached to a preceding or following grammatical unit. These are detached or peripheral elements in syntax, but perform many important interactive functions in dialogue.

[33]The fact that conversational syntax cannot be segmented into units corresponding to written sentences has been taken by Carter and McCarthy and Miller and Weinert as an important symptom of the different principles of construction underlying spoken and written grammar. Since I have espoused

Approach B, I aim to explain, at the end of this section, why the *non-sentencehood* characteristic of conversational language does not conflict with this position. Here, of course, we are concerned primarily with spontaneous speech, rather than with nonspontaneous, particularly scripted, speech, which is to a greater or lesser extent modeled on or influenced by the written language.

[34]Nonclausal units, however, have a mean length of less than two words, as compared with more than five words in the case of clausal units. It is also true that the precise method of segmenting transcribed dialogue into C-units is likely to cause some variation in word counts. Yet no one who studies conversational dialogue from this point of view is likely to dissent from the general finding that conversation is peppered with non-clausal units that are grammatically independent of other units.

[35]The frequency of each type of "dislocation" given in Biber et al. (1999, p. 957) is more than 200 occurrences per million words. However, this must be compared with a vastly higher frequency of nonclausal units (cf. Biber et al., 1999, p. 1071) of more than 70,000 per million words. These clause satellites represent a fascinating but not overwhelmingly common phenomenon in English speech.

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