Summer Institute of Linguistics and
The University of Texas at Arlington
Publications in Linguistics

Publication 107

Editors

Donald A. Burquest
University of Texas
at Arlington

William R. Merrifield
Summer Institute of
Linguistics

Assistant Editors

Rhonda L. Hartell

Marilyn A. Mayers

Consulting Editors

Doris A. Bartholomew
Pamela M. Bendor-Samuel
Desmond C. Derbyshire
Robert A. Dooley
Jerold A. Edmondson
Austin Hale
Robert E. Longacre
Eugene E. Loos
Kenneth L. Pike
Viola G. Waterhouse

Language in Context: Essays for Robert E. Longacre

Shin Ja J. Hwang
William R. Merrifield
Editors

A Publication of
The Summer Institute of Linguistics
and
The University of Texas at Arlington
1992

© 1992 by the Summer Institute of Linguistics, Inc.

Library of Congress Catalog No: 92-80356

ISBN : 0-88312-183-2

ISSN: 1040-0850

All Rights Reserved

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means—electronic, mechanical, photocopy, recording, or otherwise—without the express permission of the Summer Institute of Linguistics, with the exception of brief excerpts in journal articles or reviews.

Cover design by Hazel Shorey

Copies of this and other publications of the Summer Institute of Linguistics may be obtained from

International Academic Bookstore
7500 W. Camp Wisdom Road
Dallas, TX 75236

[blank]

A Tagmemic Analysis of Coherence in Writing

Carolyn E. Kent
University of Texas at Arlington and
Summer Institute of Linguistics

Interdisciplinary concerns are increasingly of interest in academic circles today. Enkvist (1978:1) has observed that "in recent years, linguistics has been widening its scope to cover many of the problems traditionally dealt with under rhetoric rather than under grammar in the trivium of the seven liberal arts." Linguists share this viewpoint, particularly in respect to the importance of higher-level textual concerns. Longacre (1983:xv) aptly states that "language is language only in context. For too long a time, linguistics has confined itself to the study of isolated sentences." He goes on to say that "a discourse revolution ... is shaping up in response to the demand for context."

Regarding the current convergence of interest in context, Petrosky makes the following observations:

> One of the most interesting results of connecting reading, literary, and composition theory and pedagogy is that they yield similar explanations of human understanding as a process rooted in the individual's knowledge and feelings and characterized by the fundamental act of making meaning, whether it be through reading, responding, or writing. When we read, we comprehend by putting together impressions of the text with our personal, cultural, and contextual models of reality. When we write, we compose by making meaning from available information, our personal knowledge, and the cultural and contextual frames we happen to find ourselves in. (1982:26)

One result of this focus on higher level and extratextual features is a growing interest in coherence.

> In addition to a cohesive unity, written texts must have a pragmatic unity, a unity of a text and the world of the reader. A description of the fit of a text to its context, as well as descriptions of what composition teachers call writing quality, must specify a variety of coherence conditions, many of them outside the text itself. (Witte and Faigley 1981:20)

The term COHERENCE is still in the process of being defined and few researchers have addressed it. The goal of this study is to make a contribution to this new and growing area by examining factors contributing to coherence in texts in an effort to apply recent linguistic findings to classroom pedagogy. An additional goal is to better understand Pike and Pike's (1983) referential hierarchy by applying it to a little-studied genre, that of DESCRIPTION.

Although linguists have been aware of the need for a focus on higher levels, Witte and Faigley (1981:201) contend that "in writing curricula, coherence is often ignored. A great portion of the advice in composition textbooks stops at sentence boundaries. Numerous exercises teach clause and sentence structure in isolation, ignoring the textual, and the situational, considerations for using that structure." Longacre (1983), Grimes (1975), and other linguists have made a vital contribution to what we now know about text structures. The time has come for teachers of writing to begin to apply this knowledge in the classroom.

1. Text production and processing

Until recently, reading (text processing) and writing (text production) were seen as opposite processes, with the former being considered passive and the latter active. It is now almost a given that both are constructive processes (Bracewell, Frederiksen, and Frederiksen 1982, Kucer 1985, Petrosky 1982, Squire 1983, Tierney and LaZansky 1980, and Wittrock 1983). Tierney and Pearson's view is indicative of this position:

> We believe that at the heart of understanding reading and writing connections one must begin to view reading and writing as essentially similar processes of meaning construction. Both are acts of composing. From a reader's perspective, meaning is created as a reader uses his background of experience together with the author's cues to come to grips both with what the writer is getting him to do or think and what the reader decides and creates for

> himself. As a writer writes, she uses her own background of experience to generate ideas. (1984:33)

From a background in composition instruction, Dillon expresses a concern that since reading and writing are similar processes, writing instructors, especially at the college level, should learn from recent developments in the field of reading and adapt a more holistic view of the process involved.

> The meaning of the text is not on the page to be extracted by readers; rather, it is what results when they engage... texts for whatever purposes they may have and with whatever knowledge, values, and preoccupations they bring to it. Thus the written marks on the page more resemble a musical score than a computer program; they are marks cuing or prompting an enactment or realization by the reader rather than a code requiring deciphering. This view has already begun to prove fruitful both in literary criticism and in the study of reading. THE PREVAILING UNDERSTANDING OF COMPOSITION, HOWEVER, HAS NOT UNDERGONE A COMPARABLE OR PARALLEL REORIENTATION [emphasis added]: textbooks and teachers still speak in terms of getting the meaning down on the page, saying what one means, and so on. It seems that some of what we have learned, or at least hypothesized, about constructing texts from the reader's end ought to have implications for the way we think about and teach writing. (1981:xi)

This current focus on the interactive nature of text production and processing leads to a consideration of textual coherence which includes both approaches to texts.

1.1. Coherence versus cohesion. There seems to be considerable fuzziness in the use of the terms COHERENCE and COHESION. In fact, Winterowd now admits that his classic work, *The Grammar of Coherence*, should have been entitled *The Grammar of Cohesion*. He states that "a text can be cohesive without being coherent or coherent without being cohesive, depending to a great extent, of course, on the reader" (1985:100).

It was only about a decade ago that coherence began to be separated from cohesion (Enkvist 1978, Moe 1979). Cohesion is now thought of as being limited to textual features, while coherence is thought of as including those features which give unity and flow, not only within the text, but beyond it—those features which aid in the choice and instantiation of appropriate schemata by the reader (Carrell 1982, Beaugrande and Dressler 1981, Phelps 1985, Tierney and Mosenthal 1983, Werth 1984, Winterowd 1985).

Coherence, although a vague term in much of the literature, is a major concern in text production. The explicit or implicit goal of most writers is to produce a coherent text which communicates to the reader. When discussing those factors which contribute to the perception of a text as coherent, many researchers have focused on only those features within the text usually referred to as cohesion. Mosenthal and Tierney (1984) and Witte and Faigley (1981) have shown, however, that while cohesion may contribute to coherence, the two are not the same. Werth (1984) suggests that coherence should be viewed as a more generic term which encompasses the subcategories of cohesion, collocation, and connectors. Beaugrande and Dressler (1981:6) note that "coherence is clearly not a mere feature of texts, but rather the outcome of cognitive processes among text users."[1]

The reason most researchers have looked at cohesion instead of coherence (no matter which term they use) is no doubt because, as Moe (1979:18) observes, "Linguists consider cohesion to be a measurable linguistic phenomenon, whereas coherence is considered to be more global and is not as directly amenable to evaluation." A very different position is held by Beaugrande and Dressler (1981:7), who see coherence and cohesion as both being "text-centered notions, designating operations directed at the text materials."

Bamberg has addressed the evaluation of the coherence of texts. She suggests that based on recent research in reading it is clear that

> Meaning and coherence are not inscribed in the text... but arise from readers' efforts to construct meaning and to integrate the details in the text into a coherent whole. Although readers are guided by textual cues, they also draw on their own knowledge and expectations to bridge gaps and to fill in assumed information. (1983:419–20)

Foster (1984) found deictic references more important to textual coherence than was the use of cohesive ties. This may be because deixis takes us beyond the written text to the text world. Building on the work of Kintsch and van Dijk (1978), Marzano (1983) proposes that coherence be analyzed by identifying macropatterns—a rather complex task which entails first dividing the text into predication units. A great deal more work remains to be done in the understanding of coherence.

---

[1]Most of the work on cohesion dates from the mid-seventies. Since that time, various scholars (e.g., Fahnestock 1983, Markels 1984, and Stotsky 1983) have addressed the issue, although sometimes calling it coherence. Although little research has been done with coherence, Bamberg (1983:417) has noted that "interest in this topic has intensified during the last five years."

Enkvist (1978:16) has observed that "one basic difficulty in cognitive text modelling is that coherence is not an inherent quality of a text. Coherence is rather a function of the text and of the equipment the hearer or reader brings to its interpretation." Because of this, he goes on to say that "Connexity is . . . a matter of an interaction between the text and the receptor's knowledge base, and when we operate cognitive text models we must know whose knowledge base we are trying to describe." This leads to an examination of what writers know about their potential audiences.

1.2. Audience awareness. Coherence and audience awareness are closely related topics, since reader-related phenomena which are highly important to coherence are often triggered by the author's sense of audience (Baker 1985, Crowhurst and Piche 1979, Flower 1979, Kroll 1978, 1985, Rose 1980, and Wagoner 1983).

Walvoord (1982:30) notes the correlation between audience and coherence by observing "that in all cases the test of whether or not a paragraph is coherent is how easily the reader can follow the thought progression." Similarly, Ede and Lunsford (1984:169–70) observe that "a fully elaborated view of audience . . . must balance the creativity of the writer with the different, but equally important, creativity of the reader . . . It must relate the matrix created by the intricate relationship of writer and audience to all elements in the rhetorical situation."

1.3. Product versus process. From the study of coherence one acquires insights into the ongoing debate which has surrounded the issue of whether texts should be studied by looking at products or at the process of production. Probably the most definitive work on coherence is Phelps' 1985 essay, in which she seeks to posit an integrative theory of text production as both process and product. Broadly speaking, the product is the text as it appears on paper, while the process is the interaction between that text and the world of the reader/analyst. She suggests the need to change "the root metaphor of composition from that of creation to one of symbolic interaction" (14). She distinguishes coherence and cohesion by observing that "just as coherence is the semantic and pragmatic integrity discovered by readers in textual meanings, cohesion is broadly the verbal relatedness of the text as a cuing system" (24). She further states that "after great early confusion between the notions of coherence and cohesion, a distinction between them is beginning to firm up along the lines I have suggested, although the distinction remains rather vague and inconsistent" (24).

1.4. Decontextualization versus context. In spite of the current trend toward a more holistic view of text production and processing, many books still being used in classrooms focus on teaching lower level writing skills (e.g., Adelstein and Pival 1980). Common sense suggests that focus on lower level decontextualized tasks does not develop mature writers who can produce coherent texts.

One cannot consider the importance of the writing context without addressing insights from schema theory in the field of reading. Schemata are the organized conceptual systems which are the basis for understanding. As D'Angelo (1986:436) has observed, "research in schema theory demonstrates the importance of verbal schemata and macropropositions in organizing complete texts." These "verbal schemata and macropropositions" are important factors in the development of coherent texts.

1.5. Description as a genre. The original impetus for this study came from the work of Allen (1982), who strongly encourages the use of the five senses, with a concomitant focus on detail. Following her methodology for teaching writing results in texts that are descriptive in nature. In the field of linguistics, it is not clear whether or not description is a separate discourse genre. It is definitely a type of writing that is pervasive throughout virtually all genres, but whether or not it is a genre in its own right is still open to question. For example, Longacre (1983:10) observes "It may be that descriptive discourse, in which we simply are describing something which we see, is essentially different from expository discourse." Jones is more explicit in her comments regarding description as a genre although she is still unwilling to make a definitive statement:

> I have classed descriptive discourses . . . with expository discourse, although sometimes I lean instead towards classing descriptive as a separate type, on [a] par with narrative and expository discourse. (1977:126)

Since most textual or discourse analysis being done in linguistic circles today focuses on narrative texts, there is very little in the linguistic literature which gives insights into descriptive texts.

In the field of rhetoric, however, the seeds of modern descriptive writing go back to 1866 when Alexander Bain's landmark textbook *English Composition and Rhetoric* came out asserting that all texts could be categorized under one of five types or modes of discourse: description, narration, exposition, persuasion, or poetry. Bain contended in an 1849 essay that he was the first to separate description into a distinct genre (Harned 1985). Whether or not this is true, many of the current writing heuristics still can

be traced back to Bain. Because of his influence, description is here considered a genre in its own right.

1.6. Linguistic perspectives. An early major contribution to the work on cohesion and coherence was Halliday and Hasan's (1976) work, *Cohesion in English*. Although they do not even use the term coherence, they refer to EXOPHORIC REFERENCE which "takes us outside the text altogether" (18). They contend that "The significance of the exophoric potential is that, in instances where the key to the interpretation is not ready to hand, in text or situation, the hearer or reader CONSTRUCTS a context of situation in order to supply it for himself" (18). About the same time, Grimes (1975) made a significant contribution to discourse analysis and an understanding of texts with his *The Thread of Discourse*. Beaugrande (1980, 1984) has done comprehensive work on text production and discourse processing.

Gutwinski cautions us not to confuse the terms coherence and cohesion and contends that

> The rhetoric textbooks define COHERENCE rather vaguely, dealing under that heading with phenomena which, from a linguistic point of view, cannot be treated on a single level of analysis and some of which are not open to linguistic investigation at all. (1976:26)

He prefers to avoid the term "because of the vagueness that accompanies the popular use of [it], and the indiscriminate application of it to a wide range of linguistic and nonlinguistic phenomena" (27).

Pike (1981), on the other hand, in a view shared by Grimes (1975), insists that nonlinguistic phenomena are an appropriate domain for linguistic analysis and observes that

> Until recently, most linguists in the United States have confined their attention to sentences and their included parts. Gradually they are extending their analyses to larger units—paragraphs, monologues, and conversations. With this new focus, linguists may hope to integrate their work with that of literary scholars. (1981:63)

According to Enkvist (1978), there are four basic theoretical models espoused by various textlinguists: (a) sentence-based, (b) predication-based, (c) cognition-based, and (d) social-interaction-based text models. Similarly, in the field of composition, Faigley, Cherry, Jolliffe, and Skinner (1985) contend that there are three basic contemporary views of composing: (a) the literary, (b) the cognitive, and (c) the social. One can see that the last two categories in both disciplines are the same. Faigley et al. go

on to state regarding the cognitive tradition "some of Aristotle's categories have carried through a 2,400-year-old tradition of teaching rhetoric to become useful for discourse linguists such as Pike and Grimes" (1985:16).

While acknowledging a debt to numerous other linguists for their insights regarding text analysis, the linguistics model of tagmemics as developed by Pike was chosen for this study because of the way it handles coherence-related factors. A further reason for this choice was the fact that, as Witte and Faigley (1981:189) have observed, transformational grammar has "not provided specific directions for the teaching of writing."

In an early article, Pike (1959) provides a basic introduction to language from the perspectives of PARTICLE, WAVE, and FIELD (terms borrowed from physics). These concepts were later applied to the writing process by Young, Becker, and Pike (1970). For this current study Pike and Pike's (1983) referential hierarchy was found to be a better tool for discovering how students build coherence into their texts.

The most comprehensive presentation of tagmemics is found in Pike (1967), which presents a strong emphasis on language in context; in fact, Pike and Pike (1983) define the TAGMEME as a UNIT-IN-CONTEXT. They see language as composed of three interlocking hierarchies: PHONOLOGICAL, GRAMMATICAL, and REFERENTIAL. The referential hierarchy was the main tool for the analysis of the texts in this study. It "is by far the largest and most complex of the three hierarchies... It concerns that to which speech refers, the communication referents" (35). Although Longacre has expressed some hesitation regarding the hierarchical nature of referential information, he concedes that "It seems... more and more feasible that some sort of hierarchical arrangement is required if we keep track of information as we do in the human brain" (1983:334).

According to Pike and Pike,

> Reference has to do with what a stream of speech refers to—what it is talking about. It refers to qualities, identities, events, and purposeful sequences of events which make up the total macro-event. If these events were historical they could have been photographed, or if imaginary could have been drawn; in both cases they can be talked about. (1983:6)

The referential hierarchy is a relatively recent addition to their theory and thus has not been fully developed for all genres, although Poythress (1978, 1982a, 1982b) has applied it to the analysis of New Testament Greek and Howland (1981) has used it for a very thorough analysis of a story in the Carib language of Central America. This current work seeks to further its development.

2. Procedures and findings

A total of fifty students from two universities were asked to compose two descriptive paragraphs during one writing session: first, one of a general nature on the topic of fall (or autumn) and then, following an intervention taken from Allen (1982) regarding the use of the five senses, they were each given a packet containing five to ten leaves and asked to use their senses to describe them. Students spent ten to twelve minutes writing each text.

A MANOVA was used to determine the homogeneity of the texts from the two groups of students. Results ($F(2,47) = .406$) indicate no significant difference between the texts produced by the two groups. Texts were evaluated holistically and then examined in order to identify the factors which differentiate quality (high- versus low-coherence texts) and topic (general versus specific texts).

The topics were chosen because of their ambient nature—all subjects were experiencing them to a greater or lesser degree depending on their awareness of the environment at the time the texts were written. The intent here was to utilize what Goffman (1974) terms the natural frame. Jones (1983) specifies *autumn* as an example of a natural frame.

2.1. Holistic scoring. It seems philosophically difficult to evaluate a holistic concept such as coherence by recourse to lower level phenomena such as analytic scoring of various subskills which are thought to relate to the process of text production. Therefore, texts were graded holistically following White (1985), who presents quite a detailed description of the training, organization, and management of a holistic essay reading session.

Two linguists who have worked within the tagmemic model and have had extensive experience in writing and editing were trained as evaluators using Bamberg's rubric (cf. Appendix A). Once the two linguists had developed what White (1985) terms a COMMUNITY OF ASSENT using sample texts, they discussed the rubric and, after gaining permission from the analyst, they adapted Bamberg's four point scale to a seven point scale. Their decision was quite appropriate in that White (1985:164) states that "readers must have the opportunity . . . even to make changes in the scoring guide if they agree to do so." Once these decisions had been agreed upon, they graded the actual texts. Scores were interpreted in light of White (1984:405): "The two scores should be added together to create a full-range distribution of scores. A one-point difference is allowable . . . An excellent reading on a six-point scale will have 5% or fewer discrepant scores; an average reading will have 7–10% of its scores more than one point apart." The interrater reliability of the holistic scores assigned was 100% for the fall texts and

94% for the leaves texts. According to White, this is well within an acceptable range.

2.2. The four-cell tagmeme. Once the texts were graded for coherence, five each of the high- and low-coherence texts on both topics making a total of twenty texts were analyzed for reference to the real world. The basis for this analysis was the procedure outlined in Pike and Pike (1983:35–73). As they themselves readily admit, however, the theory and thus the procedures are still in the process of formation. Note their comment (1983:66) that "each factor we have spoken of, especially role and cohesion, merits considerably more study—and in some instance very extensive studies."

Within Pike's theory of tagmemics, a linguistic unit is described by four cells: (1) slot, (2) class, (3) role, and (4) cohesion. Each of the twenty texts was analyzed in terms of Pike and Pike's referential hierarchy for these four cells (Appendix B). Basic to the referential hierarchy is the idea of ITEM-IN-CONTEXT. Thus Pike (1982) contends, in contrast to many other linguists, that we must not be limited to the text itself, but must go beyond the text both to understand and to analyze it.

Slot. The four-cell tagmeme begins with the first cell entitled SLOT. This contains the dynamic wave perspective and in the referential hierarchy is concerned with spatiotemporal references and relative prominence; that is, whether the event is nuclear or marginal to the larger text, although notation of relative prominence is found under class.

In terms of procedure, the class elements (events or states) are determined first. Then, secondly, where possible, they are placed in chronological order under slot. For some texts or genres where chronology is either not recorded or cannot be reconstructed, the events are placed according to their location in space. For some texts neither location in time nor space can be determined.

Regarding temporal references, there is a tendency for the better texts to keep a chronology moving through the text and to include references to at least three if not all four seasons. An interesting example is found in one text where we find *previous falls*, *summer*, *fall*, and *winter* all explicitly mentioned. In fact, sentence four of this text serves as a transition between a personal description and a factual description: *These colors seem to be a last glow before the green of summer fades into the black and white scheme of winter.* Here we see what seems to be a very deliberate attempt on the part of the author to make the time frame explicit by fitting fall into its immediately preceding and succeeding context.

On the other hand, two of the low-coherence texts show no spatiotemporal reference whatsoever. Others mention only the fall season. In another text, the last part of its final sentence of *life gradually preparing to sleep* may be a

veiled reference to winter, but it is not explicit enough to state unequivocally. These are extreme examples, but they show the kinds of difference found between the two sets of texts. The presence or absence of temporal reference is an important factor differentiating high- and low-coherence texts.

Both the high- and low-coherence fall texts had an equal number of references to location; that is, only two of the high-coherence texts and two of the low-coherence texts had references to location. As the statesman Henry Clay is quoted as having said, however, "Statistics are no substitute for judgment." An examination of references to location in the high-coherence texts reveals that location is clearly stated early in the text—in the first or second sentence. On the other hand, in one low-coherence text we are given the vague location in the title *I* [sic] *least where I come from* and we are not told until next to the last sentence that it is probably Indiana. Even then it is not clear if Indiana is the location for the whole text. So there is a qualitative difference in the way locations are stated which is not reflected in the statistics.

Since the focus of this study is the higher-level features which are evident in coherent texts, only higher-level or geographic locations have been noted above, thus locations such as sitting *around the crackling fire* or raking the leaves *into a big pile* were not considered to be locations on this level.

In the leaves texts, there are no references to higher-level locations in either the high- or low-coherence texts. In one text we find the leaves on the tree and then on the ground. It may be that such lower-level locations may have to suffice. For this study, however, it was decided that since only geographical locations were included under slot for the fall texts, the same should hold true for the leaves texts with the result that no locations were found.

Although relative prominence is a feature of slot, it is noted under class. For this study prominence was not addressed since I prefer to consider the top two cells (slot and class) as being more text related while the bottom two cells (role and cohesion) are more related to the larger context. According to Jones (1977), prominence or judgments of nuclearity may be determined more by the reader's purpose than by purely textual concerns. Because of this, I contend that it is inappropriate to include such reader-related concerns under the more strictly textual orientation of slot and class.

Class. The second cell is entitled CLASS and contains the more static particle perspective. It contains the "substance of reference: the events, identities, attribute relations, and place relations" (Pike and Pike 1983:35–36). In the referential hierarchy this cell contains the actual events as set forth in the text.

According to Pike and Pike (1983:37), the first step in analyzing the referential hierarchy is to "list in chronological order the smallest events that we understand to have happened as communicated to us by the stream of speech." Because it is the most substantive of the four cells, it was used to

calculate the proportion scores for the other cells, thus it has no proportion score itself and no transformations were involved. As a result, discussions of class incorporate the actual number of references to events and states.

It must be noted that while it is appropriate when working with narrative texts to focus on events, it is much more appropriate to look at states when working with descriptive texts. It was decided to keep the focus on states where that was what the authors chose to write about, since observer viewpoint is significant to tagmemic analysis (Pike and Pike 1977). In terms of procedures, both events and states are always expressed in present tense under class. Any reference to tense is recorded under slot.

Role. The third cell is entitled ROLE and is a relatively new and important addition to the theory (i.e., it was not included in earlier versions which only dealt with particle, wave, and field). For the referential hierarchy, this cell contains the purpose or reason for each event listed under class.

In analyzing role, "purpose takes precedence over reason and is introduced by *to*, whereas reason is introduced by *because*" (Pike and Pike 1983:37). Note the Pikes' earlier observation (1976:348) that "the addition of purpose [role] as such a feature . . . has been a crucial turning point in the development of this approach."

The referential role may or may not actually be found in the text itself, but is often deduced by the reader (or analyst) and thus may differ from reader to reader. When role is deduced by the reader it appears in square brackets.

Authors of high-coherence texts supplied an average of 5.3 reasons or purposes as opposed to only 1.8 for the low-coherence texts. In terms of quality, role was much easier to analyze in the high-coherence texts than in the low-coherence texts. In the latter, spelling or grammar can make the assignment of purpose or reason difficult. For example, one low-coherence text states: *Their intricate shapes with never one exactly the same, could only be formed by nature.* One must first determine what possible meanings the writer might have had in mind and then, based on that guess, determine what the role might be. Similarly, spelling problems can so obscure the meaning that it is very difficult to determine the role as in another text where we find: *The simbol type tinker of leaves rubbing against leaves is dull, but still orchastrate a synthphony that is nice to here.*

Another problem encountered in the analysis of role was the need to form a dichotomy from what may more properly be thought of as a continuum. Each item under role was marked as being either in the text or supplied by the analyst. It was actually very difficult to make role assignments which necessitated a choice between only two options. It may have been more useful to borrow at least a three-way option such as that proposed by Pearson and Johnson (1978), who suggest that information can be textually explicit, textually implicit, or scriptally implicit.

Another concern when dealing with role is the possibility of different perspectives. These are permitted and even encouraged by Pike; but they can result in a less than elegant analysis. As an example, when stating a reason for why leaves change color, should the explanation be the popular one that it depends on cool temperatures, or a more technical one, such as that given by Brackman (1987) that a decrease in daylight, as well as temperature, leads to the buildup of the abscission layer which causes chlorophyll production to cease? Other reasons can be given, such as *it's because of the variety of the tree* or *God/nature made them that way.* Any of these reasons would be acceptable under role, but could lead to a lack of agreement between various analysts.

Cohesion. The fourth column contains the referential COHESION with the relational or field perspective. In the referential hierarchy, it is concerned with the larger sociocultural system against which the events may be interpreted. According to Pike, "We specify in these cells factors of background situations, background beliefs, implicit assumptions, attitudes, and truth-versus-falsehood" (1981:57). For this study, the cohesion cell was deduced by the analyst, almost without exception.

Typical types of cohesion found in more than one text included those of (1). There seems to be a tendency for the high-coherence texts to have a wide variety of items under cohesion, while the low-coherence texts seem to be more limited.

(1)

	High-coherence fall texts	Low-coherence fall texts
nature	22	11
author evaluation	9	5
typical human activity	5	

	High-coherence leaves texts	Low-coherence leaves texts
sight	12	27
touch	8	10
personification	8	
smell	6	5
nature	6	
author evaluation	5	

In terms of cohesion, one text is of interest because the author chose to write about fall on the beach in southern California. There is something jarring about this topic—even to someone from southern California, since for most of us, our schema for fall does not include beaches and surfing.

2.3. The significance of tagmemic analysis. Once the twenty texts had been analyzed for the dependent variables of slot, class, role, and cohesion

for the referential hierarchy, scores were then calculated for each. The number of events/states found under class for each text was the basis for computing the proportion scores for the other three dependent variables: for slot, the total number of references to time and location for each text was divided by the total number of event/states for that text; role was determined by dividing the number of times the author of the text supplied a purpose/reason by the total number of event/states for that text; and cohesion scores were obtained by counting the number of separate topics in the cohesion column and dividing by the number of event/states. An arcsine transformation was used to accommodate for the use of proportion scores. These transformed proportion scores for four-cell analysis are presented in (2). Means (M) and standard deviations (SD) using the transformed scores are presented in (3).

(2)

Fall texts with high-coherence				Fall texts with low-coherence			
text	slot	role	cohesion	text	slot	role	cohesion
101	1.47	1.67	1.85	121	1.45	1.45	2.16
111	2.00	1.43	1.43	125	1.45	.98	2.46
232	1.12	1.20	1.45	137	1.05	.00	1.57
248	1.22	1.22	1.92	212	1.05	.74	1.05
254	1.18	1.81	1.49	222	.88	.61	1.47

Leaves texts with high-coherence				Leaves texts with low-coherence			
text	slot	role	cohesion	text	slot	role	cohesion
301	1.05	1.41	1.57	319	.85	1.22	1.41
311	1.14	2.37	1.71	337	.98	.98	1.22
404	1.57	1.92	2.29	436	.00	.85	1.05
442	.95	1.43	1.57	444	.00	.77	1.71
448	.74	1.57	2.09	458	.74	.74	1.33

(3)

High-coherence fall texts				Low-coherence fall texts			
	slot	role	cohesion		slot	role	cohesion
M	1.398	1.466	1.628	M	1.176	.756	1.742
SD	.362	.270	.237	SD	.260	.530	.564

High-coherence leaves texts				Low-coherence leaves texts			
	slot	role	cohesion		slot	role	cohesion
M	1.090	1.740	1.846	M	.514	.912	1.344
SD	.307	.407	.327	SD	.477	.196	.245

A two-by-two MANOVA was then computed based on the transformed scores for the independent variables of topic (fall and leaves) and quality (high and low, as determined by trained raters using the criteria in Appendix A) and the three dependent variables of slot, role, and cohesion. This was followed by univariate and discriminant analyses. These addressed the issue of variation across text topic and quality conditions. The MANOVA indicated a nonsignificant interaction effect for the product of quality and topic, $F(3,14) = 1.235$, $p = .334$. However, significant main effects were found both for quality, $F(3,14) = 6.374$, $p = .006$ and for topic, $F(3,14) = 4.875$, $p = .016$.

Of the three dependent variables, only slot revealed significant main effects for both quality ($F = 6.124$, $p = .025$) and topic ($F = 9.048$, $p = .008$). Role proved to be significant for quality ($F = 21.179$, $p = .001$) but not for topic ($F = 1.656$, $p = .217$). Cohesion was found to be nonsignificant for both quality and topic.

3. Summary and conclusions

The analysis of the referential hierarchy revealed various factors which contribute to the differences between high- and low-coherence texts on both of the topics used in this study. Use of reference to persons or personification is probably the most distinguishing factor of high-coherence texts. Related to this is the use of objects as metaphor to explain the human condition. The use of metaphor is no doubt effective because it serves to expand the referential cohesion of a text.

On the other hand, the low-coherence texts are distinguished by a certain vagueness. Analyzing either role or cohesion for these texts involves a great deal of uncertainty, since the authors have not supplied enough purpose or context. For instance, the low-coherence leaves texts contained a great deal of detail; however, this detail was not placed in a larger context so it was up to the reader or analyst to decide why these particular details were incorporated.

Referential slot seems to be the most significant factor which enables a reader to picture the scene, or as Pike and Pike (1983:6) suggest "If these events were historical they could have been photographed, or if imaginary could have been drawn." The better texts have more spatiotemporal references which help to develop a real world context for the text which, in turn, leads to better coherence for the reader.

Referential role helps the reader to understand the purpose/reason why an author chose a certain perspective for focus or prominence. The better texts give more purposes/reasons for the statements made under class.

Although the texts used in this study were descriptive in nature, similar work needs to be done for other genres. Pike and Pike (1983), and Howland (1981) have applied the study of the referential hierarchy to narrative texts. Pike (in press) has recently done an analysis of hortatory texts using the referential hierarchy. Much more work needs to be done on a variety of text types.

Evelyn Pike (personal communication) is currently refining the kind of time under slot to accommodate possible future time such as is found in one text where we are told that *Perhaps some children will gather them together into a big pile and jump into their midst with cries of delight* and *Perhaps someone will put them into a big pile and set them on fire.* These events are hoped for, but their realization may be thwarted. Contrast this with another text which states regarding the similarities between fall and sunset that *Color flares briefly and then recedes to rest and wait for a fresh burst of life in the spring like a new dawn.* There is a much greater degree of certainty that these latter events will actually come to pass than there is that some children will play in the particular leaves described in the previous text. These different types of time may need to be accounted for in the analysis.

There may be a number of reasons that cohesion failed to show a significant effect. A major reason may be, however, that cohesion is a factor related to the society as a whole and should be measured by the amount of agreement between various readers/analysts. It is probably not a factor that can be measured quantitatively by any one person's reaction to a given text.

Regarding the referential hierarchy, students should be encouraged to locate their texts in both time and space in order to develop an adequate context for their readers. They should also be encouraged to include purposes and reasons for the statements they make about events or states. In light of current trends in reading and writing, those features which are outside the text cannot and should not be ignored, especially if we are to learn more about text production and those factors which enhance coherence. In spite of those who would suggest otherwise, extratextual concerns are an appropriate and viable domain for linguistic study.

Phelps has made a major contribution to what is known about coherence with her suggestion that texts should not be analyzed in terms of either process or product, but should be seen as both. This study has examined text production considering both the existing documents, and the process the reader or analyst may be going through to reconstruct or re-create the meaning of the text.

A further focus of this study has been the application of Pike and Pike's referential hierarchy to an analysis of a genre previously unanalyzed in this model, that of description. The referential hierarchy, and the tagmemic theory of linguistics from which it comes, have been shown to be appropriate

tools for the analysis of writing. As Pike has observed regarding the application of tagmemic theory to composition instruction:

> If tagmemic formulas can help students learning to write expository prose in English, we regard that outcome as an incidental but appropriate outcome of the very different purpose for which they were developed: to provide a generally useful scheme for studying the structures of the languages of the world. (Pike 1981:64)

References

Adelstein, Michael E. and Jean G. Pavil. 1980. The writing commitment. 2nd ed. New York: Harcourt Brace Javanovich.

Allen, Terry D. 1982. Writing to create ourselves. Norman: University of Oklahoma Press.

Baker, Linda. 1985. Differences in the standards used by college students to evaluate their comprehension of expository prose. Reading Research Quarterly 20:297–313.

Bamberg, Betty. 1983. What makes a text coherent? College Composition and Communication 34:417–29.

———. 1984. Assessing coherence: A reanalysis of essays written for the National Assessment of Educational Progress, 1969–1979. Research in the Teaching of English 18(3):305–19.

Beaugrande, Robert de. 1980. Text, discourse, and process. Norwood, New Jersey: Ablex.

———. 1984. Text production: Toward a science of composition. Norwood, New Jersey: Ablex.

——— and Wolfgang U. Dressler. 1981. Introduction to text linguistics. New York: Longman.

Bracewell, Robert J., Carl H. Frederiksen, and Janet Donin Frederiksen. 1982. Cognitive processes in composing and comprehending discourse. Educational Psychologist 17:146–64.

Brackman, Bob. 1987. Why do leaves change their colors? Gardens and More 1(10):34–35.

Carrell, Patricia L. 1982. Cohesion is not coherence. TESOL Quarterly 16:479–88.

Crowhurst, Marion and Gene L. Piche. 1979. Audience and mode of discourse effects on syntactic complexity in writing at two grade levels. Research in the Teaching of English 13:101–09.

D'Angelo, Frank J. 1986. The topic sentence revisited. College Composition and Communication 37:431–41.

Dillon, George L. 1981. Constructing texts: Elements of a theory of composition and style. Bloomington: Indiana University Press.

Ede, Lisa and Andrea Lundsford. 1984. Audience addressed/audience invoked: The role of audience in composition theory and pedagogy. College Composition and Communication 35:155-71.

Enkvist, Nils Erik. 1978. Introduction: Coherence, composition, and text linguistics. In J. Ostman (ed.), Coherence, pseudo-coherence, and non-coherence, reports on text linguistics: Semantics and cohesion, 1–26. Abo, Finland: Research Institute of the Abo Akademi Foundation.

Fahnestock, Jeanne. 1983. Semantic and lexical coherence. College Composition and Communication, 34(4):400–16.

Faigley, Lester, R. D. Cherry, D. A. Jolliffe, and A. M. Skinner. 1985. Assessing writers' knowledge and processes of composing. Norwood, New Jersey: Ablex.

Flower, Linda. 1979. Writer-based prose: A cognitive basis for problems in writing. College English 41:19–37.

Foster, Dan. 1984. Coherence, cohesion, and deixis. Paper presented at the 35th annual meeting of the Conference on College Composition and Communication, New York.

Goffman, Erving. 1974. Frame analysis: An essay on the organization of experience. New York: Harper and Row.

Grimes, Joseph E. 1975. The thread of discourse. The Hague: Mouton.

Gutwinski, Waldemar. 1976. Cohesion in literary texts. Janua Linguarum Series Minor 204. The Hague: Mouton.

Halliday, Michael A. K. and Ruqaiya Hasan. 1976. Cohesion in English. London: Longman.

Harned, Jon. 1985. The intellectual background of Alexander Bain's *Modes of discourse*. College Composition and Communication 36:42–50.

Howland, Lillian G. 1981. Communicational integration of reality and fiction. Language and Communication 1:89–148.

Jones, Larry B. 1983. Pragmatic aspects of English text structure. Summer Institute of Linguistics and the University of Texas at Arlington publications in linguistics 67. Dallas.

Jones, Linda K. 1977. Theme in English expository discourse. Edward Sapir monograph series in language, culture, and cognition 2. Lake Bluff, Illinois: Jupiter Press.

Kintsch, Walter and Teun A. van Dijk. 1978. Towards a model of text comprehension and production. Psychologicval Review 85:363–94.

Kroll, Barry M. 1978. Cognitive egocentrism and the problem of audience awareness in written discourse. Research in the Teaching of English 12:269–81.

———. 1985. Rewriting a complex story for a young reader: The development of audience-adapted writing skills. Research in the Teaching of English 19:120-39.

Kucer, Stephen L. 1985. The making of meaning: Reading and writing as parallel processes. Written Communication 2:317-36.

Longacre, Robert E. 1983. The grammar of discourse. New York: Plenum.

Markels, Robin. 1984. A new perspective on cohesion in expository paragraphs. Carbondale: Southern Illinois Press.

Marzano, Robert J. 1983. Toward a working model for the analysis of cohesion and coherence in writing.

Moe, Alden J. 1979. Cohesion, coherence, and the comprehension of text. Journal of Reading 23:16–19.

Mosenthal, James H. and Robert J. Tierney. 1984. Cohesion: Problems with talking about text. Reading Research Quarterly 19:240–44.

Pearson, P. David and Dale D. Johnson. 1978. Teaching reading comprehension. New York: Holt, Rinehart and Winston.

Petrosky, Anthony R. 1982. From story to essay: Reading and writing. College Composition and Communication 33:19–36.

Phelps, Louise W. 1985. Dialectics of coherence: Toward an integrative theory. College English 47:12–29.

Pike, Evelyn G. In press. How I understand a text—via the structure of the happenings and the telling of them. In Sandra A. Thompson and William C. Mann (eds.), Discourse descriptions: Diverse analyses of a fundraising text. Amsterdam: John Benjamins.

Pike, Kenneth L. 1959. Language as particle, wave, and field. The Texas Quarterly, 2(2):37–54.

———. 1967. Language in relation to a unified theory of the structure of human behavior, 2nd rev. ed. The Hague: Mouton.

———. 1981. Tagmemics, discourse, and verbal art. Ann Arbor: Michigan Studies in the Humanities.

———. 1982. Linguistic concepts: An introduction to tagmemics. Lincoln: University of Nebraska Press.

——— and Evelyn G. Pike. 1977. Grammatical analysis. Summer Institute of Linguistics and the University of Texas at Arlington publications in linguistics 53. Dallas.

——— and ———. 1976. Referential versus grammatical hierarchies. LACUS Forum 3:343–54.

——— and ———. 1983. Text and tagmeme. Norwood, New Jersey: Ablex.

Poythress, Vern S. 1978. Thirteen-box tagmemic theory. Studies in Language 2:71–85.

———. 1982a. A framework for discourse analysis: The components of discourse, from a tagmemic viewpoint. Semiotica 38:277–98.

———. 1982b. Hierarchy in discourse analysis: A revision of tagmemics. Semiotica 40:107–37.

Rose, Mike. 1980. Rigid rules, inflexible plans, and the stifling of language: A cognitivist analysis of writer's block. College Composition and Communication 31:389–401.

Squire, James. 1983. Composing and comprehending: two sides of the same basic process. Language Arts 60:581–89.

Stotsky, Sandra. 1983. Types of lexical cohesion in expository writing: Implications for developing the vocabulary of academic discourse. College Composition and Communication 34:430–46.

Tierney, Robert J. and Jill LaZansky. 1980. The rights and responsibilities of readers and writers: A contractual agreement. Language Arts 57:606–13.

——— and James H. Mosenthal. 1983. Cohesion and textual coherence. Research in the Teaching of English 17:215–29.

——— and P. David Pearson. 1984. Toward a composing model of reading. In J. M. Jensen (ed.), Composing and comprehending, 33–45. Urbana: ERIC Clearinghouse on Reading and Communication Skills and National Conference on Research in English.

Wagoner, Shirley A. 1983. Comprehension monitoring: What it is and what we know about it. Reading Research Quarterly 18:328–46.

Walvoord, Barbara E. 1982. Helping students write well: A guide for teachers in all disciplines. New York: The Modern Language Association.

Werth, Paul. 1984. Focus, coherence, and emphasis. London: Croom Helm.

White, Edward M. 1984. Holisticism. College Composition and Communication 35:400–09.

———. 1985. Teaching and assessing writing. San Francisco: Jossey-Bass.

Winterowd, Walter Ross. 1970. The grammar of coherence. College English 31:828–35.

———. 1985. Counterstatement. Response to Gary Sloan, "Transitions: relationships among T-units." College Composition and Communication 36:100–04.

Witte, Stephen P. and Leslie Faigley. 1981. Coherence, cohesion, and writing quality. College Composition and Communication 32:189–204.

Wittrock, Merlin C. 1983. Writing and the teaching of reading. Language Arts 60:600–06.

Young, Richard E., Alton L. Becker, and Kenneth L. Pike. 1970. Rhetoric: Discovery and change. New York: Harcourt, Brace and World.

Appendix A: Measures of coherence

Essays meeting the following criteria will be rated FULLY COHERENT (4) on the four point holistic coherence rubric:

identifies topic
does not shift topics or digress
orients the reader by describing the context or situation
organizes details according to a discernible plan that is sustained throughout the essay
skillfully uses cohesive ties such as lexical cohesion, conjunction, and reference to link sentences and paragraphs together
concludes with a statement that gives the reader a definite sense of closure
makes few or no grammatical or mechanical errors that interrupt the discourse flow or the reading process

Essays that are PARTIALLY COHERENT (3) will meet enough of the criteria above so that a reader will be able to make at least a partial integration of the text.

Essays will be rated INCOHERENT (2) when some of the following prevent a reader from integrating the text into a coherent whole:

does not identify the topic and the reader would be unlikely to infer or guess the topic from the details provided
shifts topics or digresses frequently from the topic
assumes the reader shares his/her context and provides little or no orientation
has no organizational plan in most of the text and frequently relies on listing
uses few cohesive ties such as lexical cohesion, conjunction, or reference to link sentences and paragraphs
creates no sense of closure
makes numerous mechanical or grammatical errors resulting in a rough or irregular discourse flow.

Essays receiving the lowest score (1) will be literally INCOMPREHENSIBLE because of missing or misleading cues which prevent readers from making sense of the text (Bamberg 1983:428).

Appendix B: A four-cell referential event tagmeme

1. Slot	2. Class
Where the subevent occurred [in time or space], as nuclear or marginal to the including event	What happened, emically defined as being members of the paraphrase set acceptable to the narrator
3. Role	4. Cohesion
Why the actor performed the event—or the cause deduced by the narrator	How the event coheres with the underlying belief system of the hearer as expected or reported of him by the narrator (or with truth as seen by the OUTSIDE analyst in relation to some other frame of reference)

Adapted from Pike (1982:101)