Readable Writing: The Role of Cohesion and Redundancy

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Why did the turtle cross the road? To get to the shell station. Why did the hamburger go away from the bun? Because it wanted to be on the tray.

The first riddle is funny in a way that the second is not, and the humor has to do with the play on meaning of turtle, shell and a brand of gasoline, a play which is missing in the second riddle. When my four-year-old daughter made up the second riddle, she was in a stage of children's language development where she had not yet learned a key characteristic of jokes: that one has to have an awareness of language as language and of variation and play in meaning (deVilliers and deVilliers 171-72). This metalinguistic awareness comes somewhat later in language development.

For students learning to write, the ability to write readable prose requires a similarly broadened view and an ability to shift from the perspective of the writer to that of the reader. Some writing texts help students develop this ability to shift roles (Flower; Kiefer). Beginning writers are often unable to make this shift, and they may claim, for instance, that if they state the point they are trying to make at the beginning of an essay, the reader will have no motivation to read the rest. Despite this claim, when students read essays in which the point is stated clearly in the opening, they judge them to be “good.” Unlike children engaged in language acquisition, writing students can be taught to shift from a writer's perspective to a reader's. Doing so can help students understand important factors that make writing readable.

In the past year or two, much of the research published in the major composition journals has concentrated on how to put students in touch with themselves and with their readers. Readability has the interaction between writers and readers as its central concern as well. In fact, readability research looks exclusively and specifically at how readers and writers interact in a text, and it examines ways to enhance and improve factors which connect reader and writer in a text. While some of this research involves reporting numerical findings such as readability scores for texts and counts of various features, the broader view of the diverse literature in this area which follows here shows that reader-writer-text relationships are the main interest of readability scholars. Although readability index factors are not the only ones that make
“good” or readable writing, current research in reading and writing shows that some of them are pertinent to it. An understanding of “reader-based prose” (Flower 187) indicates that readers rely on two interwoven factors in text to get meaning: cohesion and psycholinguistic redundancy. Understanding how these characteristics help readers derive meaning from print helps account for the nature of readable prose in which readers and writers connect.

Research on Cohesion

Cohesion, the first of these two features, has been shown to play a central role in reading. The major text on cohesion is Halliday and Hasan’s *Cohesion in English*. Although much has been written about cohesion, I review the basic definitions and categories here because of their pertinence to my point. The simplest definition of cohesion is that it “refers to relations of meaning that exist within the text and that define it as a text” (Halliday and Hasan 4). Cohesion connects a string of sentences to form a text rather than a series of unrelated statements.

Cohesion in English presents a detailed system for analyzing cohesive relationships within a text. The unit of analysis for cohesion is the cohesive tie. One simple example of a cohesive tie is a pronoun and its antecedent. Pronoun/antecedent ties and other cohesive ties may occur within a single sentence, but they also occur across sentences. Cohesive ties among sentences are those which contribute most strongly to creating a unified text. Halliday and Hasan discuss five major types of cohesive ties that occur in text: reference, substitution, ellipsis, conjunction and lexical cohesion (13). These are found in texts as “particular features—repetitions, omissions, occurrences of certain words and constructions—which have in common the property of signalling that the interpretation of the passage in question depends on something else. If that ‘something else’ is verbally explicit, then there is cohesion” (13).

Cohesive elements can be words or sentence structures and may or may not be adjacent to one another in the text. Cohesive ties can be categorized and counted.

Studies of cohesion in reading show that cohesion makes a substantial contribution to readability, and this is the reason cohesion studies are of interest (Irwin, “Cohesion” 38). Two important studies, one by British scholar L. John Chapman and one by Judith Irwin, make clear the importance of cohesion to reading and comprehending. The findings demonstrate, first, that the perception of cohesive relations in text develops over time as students mature as readers. Moreover, increasing the level of cohesion in text improves reading comprehension as measured by reading time and recall of content.

The study conducted by Chapman involved fifteen hundred children between the ages of eight and fifteen and demonstrated that readers show
growth in their ability to perceive cohesion in text and to use it to support comprehension as they get older. Chapman used a specialized version of the Cloze procedure (wherein a text is prepared with every n\textsuperscript{th} word deleted, and readers are asked to fill in the resulting blanks) called the GAP technique. In the GAP technique, only a few words are deleted from a text, and those chosen play a key role in the cohesive ties of the passage. The subjects in his research showed a clear developmental pattern, such that beginning readers were unable to fill in the blanks, those in the middle stages could produce fill-ins somewhat acceptable in the passage, and fluent readers could fill in the blanks with the same words the author used or very close synonyms. Chapman concludes that readers develop an awareness of cohesion over time and make major use of it to get meaning from print.

Judith Irwin's study shows how mature readers make use of cohesion in text, and it shows that increasing the numbers of cohesive ties can improve readers' comprehension. Irwin designed two versions of a passage (differing in the number of cohesive ties) and then used reading time and recall as measures of comprehension (Irwin, "Effect"). In terms of both measures, the version with more cohesive ties produced significantly better comprehension. Cohesion plays a central role in reading comprehension, and if writers increase the number of ties, readers will understand a text more fully and easily.

Studies on cohesion by scholars interested in writing are less clear on its virtues (Haswell). Some of the disagreement stems from diverse views of what cohesion is and how it differs from coherence. Again, though much has been written on these topics, I want to give basic definitions here because of their relationship to my claim that cohesion and redundancy are central to readable writing. \textit{Coherence} refers to the ways in which the parts of a piece of writing are linked together to form a whole. It is often confused with \textit{cohesion}; the difference is an important one of scale. While cohesion pertains chiefly to links among sentences and within them, coherence is the broader characteristic of unity of the text as a whole. Both cohesion and redundancy contribute to coherence in texts.

These terms require full and careful explication. Reading scholars disagree less on the terminology, as indicated by Moe and Irwin:

Cohesion is only one component of coherence. In addition to cohesion, at least one other factor must be present for a text to have coherence; that factor is organization. Other factors like situational consistency add coherence to text. . . . Cohesion exists within text and adds to the coherence of text. It may be useful to think of coherence as something the reader establishes—or hopes to establish—in the process of reading connected discourse. . . . coherence is both a text-related and a reader-related phenomenon. (5)

Larson, who provides a fine summary of major studies on cohesion in composition research (66-72), agrees with this definition and goes on to say, "The determination of coherence is fundamentally an interpretation by a
reader. It is part of a transaction between text and reader—between the reader's world and the writer's language" (72). Coherence comes from cohesion and redundancy. Both come from the writer's language, cohesion specifically from the ties the writer builds in, while redundancy comes from both the writer's language and the "reader's world" in a particular linguistic and psycholinguistic sense.

Writing research on cohesion is still in a fairly basic stage, despite a huge number of studies which have appeared since Witte and Faigley's early research in this area. Larson's recent summary indicates disagreements over terminology and disparities in the findings of researchers. For example, Neuner found, like Witte and Faigley, that ties do not define good writing; but when he examined cohesive chains (sets of ties semantically related to one another), he found that good student writing has longer chains, more diverse vocabulary, and more mature word choices. Other research supports Neuner's findings (Yang). Haswell complains that writing research on cohesion is "a mess," even though he intuitively supports the idea that cohesion is important to good writing (314). Diverse studies from different points of view will eventually illustrate the ways writers use cohesion as a tool to help readers process text.

Reading research on cohesion seems to provide strong evidence of its importance to the process of getting meaning from print. There is good reason to expect that in due course, writing research will show clearly the role of cohesion in good writing. While this basic research in the composition area continues, the evidence from reading research suggests that it is one of two key factors contributing to readable writing. The second is psycholinguistic redundancy.

**Redundancy and Readability**

The best definition and most careful exposition of the role of redundancy in reading comes from the work of Frank Smith. Smith says that redundancy consists of

> Information that is available from more than one source. In reading, [redundancy] may be present in the visual information of print, in the orthography, the syntax, the meaning or in combinations of these sources. . . . Redundancy must always reflect non-visual information; prior knowledge on the part of the reader permits redundancy to be used.

(311)

Redundancy is the characteristic of written language that helps ensure that the reader gets the message, so it is another means by which readers and writers can connect in text. Redundancy is complex: it resembles cohesion in that readers are not usually conscious of its presence and importance, but it differs from cohesion in that some forms of it do not appear in a text but come
from readers' contribution to the meaning.

The nature of readers' contributions to redundancy is explained in the work of psychologists Lyn Haber and Ralph Haber. They note that readers make use of three overlapping kinds of knowledge to tap the redundancy that makes reading possible. First is knowledge of visual input, including letter and word shapes and printing conventions. A second is knowledge of language rules, including letter co-occurrence and syntactic and semantic co-occurrence rules and restrictions. Finally, there is knowledge of the world, which incorporates both experience with real world events and also broader knowledge of text types and styles (171-88).

All of this knowledge is mobilized in the process of getting meaning from print, according to the Habers. Their research has looked carefully at the interaction of what readers see on the printed page and information they already have. Redundancy makes reading possible because it helps enhance our vision:

With higher redundancy, greater amounts of text are perceptually accessible for processing. It is this relationship of redundancy to the size of the field of view that provides the mechanism by which expectancies operate in and facilitate the reading process.

(188)

While psycholinguistic studies show that our visual and memory capacities are limited, the Habers' work demonstrates that redundancy helps us overcome our physical and mental limitations in reading and comprehending text (see Smith 64-86).

Some of the evidence of the importance of redundancy in reading lies in common sense experience. We can condense language substantially for a classified ad or telegram with little loss of meaning. Or think, for instance, of the speed at which you read novels or newspaper articles compared to the speed at which you might read a text in theoretical physics, and think of the likely differences in your level of comprehension. In part, these differences are the result of the relative amounts of redundancy in these texts. Novels are often highly redundant, drawing heavily on readers' prior knowledge of human behavior as well as their general knowledge of language. The more readers know about a text, the less they have to look and the less they have to see, as the Habers point out. Theoretical physics, for most readers, is considerably less redundant than a best-seller.

My own research supports this claim as well. One study shows that increasing redundancy generally improves readability. I defined redundancy syntactically and semantically in terms of particular rewriting strategies, such as putting sentences into more predictable subject-verb-object order and adding definitions and explanations. I made these changes in three passages of text that were on different topics but that were of the same length and approximately the same readability level. I used a Cloze procedure as a
measure of the comprehensibility of the passages.

In the study, 240 first-year college students read the passages and filled in the Cloze blanks. Increasing both syntactic and semantic redundancy significantly improved comprehensibility of two out of three passages. In the third passage, the increased redundancy made no significant difference to comprehensibility. (Further studies showed that the third passage was anomalous in ways which precluded the impact of the increased redundancy.) In general, however, my research suggests that increasing redundancy improves a text insofar as it becomes easier to understand. Moreover, this research has a pragmatic element to it, in that it may suggest particular writing strategies that could be taught in the classroom and that might yield more readable writing. I'm hedging purposely. My findings thus far are not so clear-cut and require a careful explication of the ways in which redundancy and cohesion interact in good writing.

First, though, there are several pieces of evidence in the research on writing that support the importance of redundancy to good writing. Some of this evidence draws on common sense advice to writers. Writing texts generally advise students to begin by stating a clear thesis or the point of a paper at the outset, supporting this point with evidence in the body, and restating the point at the end. Such a structure creates the simplest kind of redundancy which arises from repetition.

Other standard advice to writers suggests that they tie their explanation of an especially complex point to something in the reader's personal experience, creating redundancy between what is provided in the text and the reader's non-visual, experiential prior knowledge. In a way, I was creating this kind of redundancy above when I mentioned reading experiences with novels and theoretical physics texts. When writers are advised to define specialized terms in their texts, they are creating a kind of semantic redundancy. These kinds of common sense strategies for student writers are good examples of redundancy, and they are instances of the ways in which redundancy contributes to the coherence of a text, the ways its parts "hang together."

Additional evidence for the role of redundancy in writing comes from studies of writing quality. Some of this research, like the work on cohesion, is based on Halliday's analyses of language. Barbara Couture, seeking a way to describe "good writing," discusses its "thematic unity" as arising from the interaction of elements in a Halliday-based semantic system. In Halliday's scheme, meaning comes from three functions of language: the ideational (the argument or point of a text), the interpersonal (the relationship of writer and audience), and the textual function (the choices of language, including words, sentences, and so on). The thematic unity of a text derives from the "interdependent realizations of ideational, interpersonal and textual functions" (Couture, "Systemic" 74). Such unity relies, in part, on redundancy.
Yet another aspect of redundancy demonstrating its relationship to writing quality appears in the work of William Vande Kopple on the functional sentence perspective. This work, as Vande Kopple makes clear, also draws on Halliday's theory of language. Vande Kopple looks at given-new structure in sentences and discourse. The given information taps redundancy, drawing on both readers' prior knowledge and the development of the text. Vande Kopple has found in several studies that a given-new arrangement of information in substantial paragraphs produced "significantly more readable and memorable" passages than those arranged in other ways (86). The findings from reading research that I discussed earlier are consistent with Vande Kopple's results.

Writing research, then, supports the importance of redundancy to readable writing, and while the research discussed so far pertains to passages of a paragraph or more, redundancy also pertains to individual sentences and to relations between and among sentences; thus, redundancy and cohesion are more closely related than the discussion so far might suggest. In fact, they are related in ways essential to the nature of good writing because both contribute importantly to the coherence which is at the center of a piece of good writing.

Cohesion and redundancy are related to one another in various ways. First, cohesive ties create redundancy. Where a pronoun refers back to a noun in a preceding sentence or sentences, information overlap or redundancy is created. Indeed, each kind of cohesive tie contributes to the redundancy of the text as a whole. Referential ties of pronouns and antecedents are the simplest example. Ties of substitution, where synonyms are substituted for a particular noun, again provide more than one source for the same information. Similarly, lexical cohesion, achieved often through repetition or the use of a broader term for another word, presents the concept behind an idea more than once. Even ellipsis, because readers are expected to fill in the missing information, contributes to the redundancy which derives from the reader's prior knowledge. Finally, conjunctions, the fifth category of cohesive tie, make explicit important meaning relations in the text. These connections in meaning are a form of cohesion which contributes importantly to readers' ability to get the author's full message. Insofar as conjunctions help connect the writer's ideas, they enhance information overlap, and so derive from redundancy.

Halliday and Hasan, writing about cohesion, mention the concept of texture which distinguishes texts from non-texts. Texture consists of cohesion and two other features of text:

One is textual structure that is internal to the sentence: the organization of the sentence and its parts in a way which relates it to its environment. The other is the "macrostructure" of the text, that establishes it as a text of a particular kind—conversation, narrative, lyric, commercial correspondence and so on. (324)
It should be clear that the first of these features is a kind of syntactic redundancy, and the second relates to the redundancy which comes from readers' prior knowledge of types of texts, such as story grammars and other general information (Smith 238). It should also be clear that these concepts are remarkably similar and have overlapping elements, but they are not the same thing.

Continuing Research

The study mentioned above in which I showed that increasing redundancy improves readability, had, as I said, generally consistent results. I tested three passages on three different topics. On two of the three passages, increasing syntactic and semantic redundancy improved the Cloze scores. In the third case, the changes I made in the writing to increase redundancy yielded no significant difference in Cloze scores. My further studies showed that this anomalous passage was, in its original form, much less cohesive than either of the other two. It had substantially fewer cohesive ties. And there were other factors in this passage which precluded better Cloze scores with the addition of redundancy ("Readability").

My recent research has examined the separate and combined effects of redundancy and cohesion. I have continued to work on the same three passages. In a study now in progress, I have altered the passages to increase both syntactic and semantic redundancy, to increase cohesion by adding cohesive conjunctions, and to increase both factors without making a major change in the length of the passage. I have had first-year college students read the passages aloud and write brief summaries. My analysis to date of the readers' oral reading errors or miscues suggests that readers generally make fewer miscues and generally preserve more meaning in their miscues in the presence of increased redundancy and when redundancy and cohesion are combined. Evidence from the written summaries is thus far inconclusive.

Considerable work remains to be done. At present, I am dissatisfied with my strategies for measuring readers' responses to these texts. I plan an additional study on these three passages using Chapman's GAP technique; it may prove more sensitive to changes in cohesion and redundancy levels in the passages. I also feel it is important to test a large number of passages and to look at passages on diverse topics with a large group of readers. Finally, I am keenly aware that I am looking exclusively at text and not considering in any direct way reader interest, motivation and other affective factors which also play a role in readable writing.

Other work also remains. Here, I have reviewed an admittedly eclectic collection of research evidence on cohesion and redundancy. Much research is currently in progress in these areas, and while there are presently some conflicts in the findings, basic research is often diverse, conflicting and
otherwise messy. Psychologists like the Habers represent one group pursuing the questions of interest here, but there is also other work being done in psychological studies of language and memory (Horowitz; Kintsch; Kintsch and Vipond), in discourse analysis (Kintsch and van Dijk; van Dijk), in theoretical and applied linguistics (Bensoussan; Carrell), in composition theory (Couture; Kies; Pappas), and in reading research (Anderson and Pearson; Davison and Green; Tierney and Mosenthal). This work may help to clarify the contribution of cohesion and redundancy to readability, and it will in due course set out practical implications that will make a real difference in teaching writing.

My own tentative findings suggest strongly that cohesion and redundancy are certainly important to the linkage between reader and writer in readable text. These complex factors are intertwined in ways I have tried to describe. Cohesion pertains to specific relationships among and across elements in the text, and strong empirical evidence suggests that it contributes directly to readable writing. Redundancy plays a broader role, encompassing Halliday and Hasan's notion of texture and some reader factors related to the role of readers' prior knowledge in creating a kind of redundancy. There is much common sense evidence to support the importance of redundancy in reading and some empirical support as well. Reading research, as well as some new findings in writing, demonstrate the importance of cohesion and redundancy to comprehension and, hence, to readable writing.

Works Cited


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