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ABSTRACT
        The purpose of this monograph is to provide a basic
discussion of the general nature of syntactic complexity. The
monograph describes how the rules of language produce syntax and
raises some questions about reading difficulty. The contents include:
"Arrangement," which discusses 12 basic sentence types, noun
determiners, verb expansions, negative expansions, adverbial
expansions, and intensifier expansions; "Rearrangement," which looks
at yes or no questions, passive sentences, irregular word order, and
reordering word order; "Addition," which discusses coordinating
conjunctions, adverbial function, relative clauses, present and past
participle phrases, a caution about participles and adjectives,
absolute constructions, possessives, noun phrases, and multiple
additions; "Deletion," which looks at imperative sentences, passive
sentences, deletion of identical elements to form a series, and verb
phrases; "Substitutions," which discusses vocabulary, pronouns, noun
phrase substitutions, and the verb "do"; "Agreement," which discusses
grammatical agreement and metaphors; "Easy to Read Syntax," which
looks at oversimplistic syntax; "Applications," which discusses
application activities that measure some aspects of syntactic
complexity; and "Summary." (WR)

Syntax and Readability

by

John Dawkins
Research for Better Schools
Philadelphia, Pennsylvania

INTERNATIONAL READING ASSOCIATION

Contents

The International Reading Association attempts, through its publications, to provide a forum for a wide spectrum of opinion on reading. This policy permits divergent viewpoints without assuming the endorsement of the Association.

Foreword

John Dawkins is right in his first paragraph: His book will be useful to all who are concerned about reading materials, whether for production or for consumption. Even linguists will have to read it to find out what he knows that they may not know; or, with more delight, what they know that he has not said. Researchers who have not been cited in his bibliography, which is obviously selective rather than comprehensive, can have their day of regret on being omitted.

One person who would have read this book with great interest and pleasure was William Scott Gray, often called the Dean of Reading, the first President of the International Reading Association. He would have been pleased to see the clear delineation of syntactic sources of difficulty. As the author of the definitive summaries of reading investigations over many years and an assiduous retriever of new information, he would have taken pleasure in writing John Dawkins a personal letter, complimenting him, and in some gracious way suggesting other sources to consult and other readability investigations to be made. He would have seen this book as a good and much needed effort which deserved commendation.

He would have thought how useful such a reference would have been to him and May Hill Arbuthnot and their editors, when they dared to write preprimers to precede the primer, and made it possible for more children to succeed in beginning reading. Soberly he would have agreed that, had syntactic faults been considered in our early studies of readability, our judgments of appropriate syntax for children would have been improved.

He would then have paid John Dawkins the supreme compliment of having his work cited in the annual summary of investigations, and of using its substance as a guide in his own subsequent publications for children.

Thank you for the fine contribution, John Dawkins.

Constance M. McCullough, *President*
International Reading Association
1974-1975

Introduction

We may or may not succeed in devising an adequate yet usable formula to rate syntactic complexity on a readability scale (see Botel, et al., 1973). But limited success of that kind should not be our only goal. Study and research in syntactic complexity cannot help but yield insightful knowledge to all who are concerned with reading materials—writers, editors, elementary teachers, supervisors, teachers of teachers, psycholinguists, sociolinguists, and more. The purpose of this monograph is to provide a basic discussion of the general nature of syntactic complexity. It describes how the rules of language produce complex syntax and raises some questions about reading difficulty. Hopefully, the reader interested in what makes processing written syntax easy or difficult will find some part of the discussion useful; hopefully, too, the teacher of reading will find the treatment of grammar and readability relevant in a way that a more theoretical grammar cannot be.

Inherent in any language are the processes that operate on a finite numb of symbols (vocabulary) to produce an infinite number of possible sente· These processes are syntax. Without oversimplifying too much we can des.. in a general way how processes produce (and explain) the variety and complexity among sentences. The processes are discussed in the following sections of this volume:

1. Arrangement (or the order of elements in simple sentences)
2. Rearrangement
3. Addition
4. Deletion
5. Substitution
6. Agreement

The concluding sections consider some writing and research questions:

7. Easy to Read Syntax
8. Applications
9. Conclusion

It should be pointed out that a grammar has certain objectives and procedures that are not the concern here We are concerned with clarifying some general grammatical processes that underlie the complex structures of English; at the same time, we will raise questions about reading difficulties that may result from syntactic complexity.

1.0 Arrangement

A number of basic arrangements of words produce the different simple sentences. In the past these sentences have been called sentence patterns or kernel sentences or sentence types. It is not possible to definitively list *all* of the sentence types, for the results will vary with the kir ` grammatical analysis. For our purpose, however, which is the study of sen' complexity, we define any sentence as *simple* if no word can be removed from it without destroying the grammatical unity called a sentence; and, following this criterion, we can readily list the simple sentence types* that are produced by arranging word-elements into grammatical orders. The following twelve sentence types may be considered a basic list:

1. Subject+Verb (The girl ran.)
2. Subject+Verb+Object (The girl ran the team.)
3. Subject+Verb+Indirect Object+Direct Object** (The boy gave me a dime.)
4. Subject+*be*+Subject complement (noun) (Tom was the captain.)
5. Subject+*be*+Subject complement (adjective) (The boy was happy.)
6. Subject+*be*+Adverb (The boy was nearby.)
7. Subject+Linking Verb+Subject complement (noun or adjective) (The boy turned cool.)
8. Subject+mid verb+complement (The fish weighed a pound.)
9. Subject+verb+object+object complement (noun) (We named the girl our leader.)
10. Subject+verb+object+object complement (adjective) (We found the boy happy.)
11. *There*+certain rearranged *be* sentences (There was a boy at home.)
12. *It*+*be*+complement (It is Jane. It was late.)

*The terms *simple* and *complex* are to be distinguished from the same terms in traditional school book grammars. Here, any sentence is complex which is the result of combining two or more simple sentences.

**Notice that if we remove a part from sentences 3,9,10, and 11 we may still have a sentence, but it will be a different type. For example, *the dog* may be removed from *We showed Mary the dog*, but by doing so we produce sentence type 2. Sentences 3,9,10, and 11 are therefore simple because we cannot remove a part of any sentence without changing its type.

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All normal children in beginning reading can understand all of the pre-viously listed sentence types, as can be shown by using a familiar vocabulary and orally testing comprehension of each type. But these pupils are still learning to decode the alphabetic system and to relate written sentences with the grammar that they have internalized for oral language, and it seems clear that the more familiar sentence types are easier to read than the others. For example, although the child can comprehend (or process) sentence types 3,9, and 10, these are not as familiar as the other types. Note also that each of these sentence types contains an extra lexical item (noun or adjective) to be processed.

It must be remembered that this list of sentence types. though basic, is limited. For example, Carol Chomsky (1969) has shown that a few basic structures may not be acquired by children in the primary grades. Consider the following sentence used by Chomsky:

John asked Bill what to do.

If a child does not comprehend in careful oral communication who is the subject of *do,* the structure will be even more difficult to process in reading. One of our needs, then, is to identify these structures and to account for them in instructional materials.

Basic sentence types can be expanded in particular ways that make them neither new sentence types nor grammatically more complex, although they may be more difficult for beginning readers. There are five types of expansions: determiner, verb, negative, adverb, and intensifier.

1.1 *Determiner Expansions.* Noun determiners are part of a noun phrase and as such should not be considered expansions of the simple sentence. The following determiners are among the most frequently occurring words in the language:

Singular	*Plural*
a boy	_____ boys
the boy	*the* boys
this boy	*these* boys
that boy	*those* boys

(The absence of *a* in the plural *boys* functions to signal indefiniteness just as does the presence of *a* in the singular.)

There are also quantifying determiners such as *three, many, some,* and *few.* Since these function in the same manner as the above determiners, they are not syntactically more difficult. But they may be more difficult semantically, a difficulty which can be measured, to a limited extent, by graded word lists.

Again, there are the possessive pronoun determiners *my, her, your,* etc., which may be explained grammatically as coming from the addition of another

sentence.* For example, *Her dog* in the sentence *Her dog is big* is usually explained as coming from the sentence *She has a dog.* These possessive sentences account for the possessive determiners in *her dog, our cat,* and so on.

The theoretical difficulty of these sentences is obvious as soon as we realize that *her* refers to a lexical item. For example:

(1) The girl went to school. Her dog did, too.

The meaning of *her* includes (refers back to) *The girl,* all of which is a genuine semantic and grammatical complexity. Yet, if the referent of *her* is clear, as in sentence (1), is *her dog* actually harder to understand than *a dog?* We may be tempted to answer negatively, yet we should note that Fagan (1970, p. 253) found that, using a cloze technique, pupils in grades 4,5, and 6 had difficulty filling in the correct possessive pronoun.

The determiner + noun structure is not called an expansion because it functions as a grammatical unit. However, there are words called predeterminers that do expand the determiner + noun structure. The common words are:

(2) *one of* the girls ...   (5) *some of* the girls ...

(3) *both of* the girls ...   (6) *none of* the girls ...

(4) *all of* the girls ...   (7) *any of* the girls ...

Even for the beginning reader, expansions such as (2) through (7) are probably no more difficult to read than *both girls, some girls,* and *Mary's girls.* However, a structure like *some (of the) girls* requires cross reference and logical analysis, reading processes that typically involve some degree of difficulty. In such cases, the difficulty may vary with the degree of comprehension expected of the reader. Pupils reading a paragraph with such a structure may respond with general comprehension yet not be able to paraphrase or analyze accurately. If we expect the latter, the complexity of *some (of the) girls* may be very real but if we expect only the former, the complexity is probably negligible.

1.2 *Verb Expansions.* First, there is the verb group that is expanded by adding any of the so-called "helping verbs," *be* and *have:*

(8) He runs. (main verb)

(9) He *is* running. (*be* + main verb)

(10) He *has* run. (*have* + main verb)

(11) He *had been* running. (*have* + *be* + main verb)

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*It seems appropriate to include possessive determiners in this section on simple sentence expansions: possessive pronouns are among the most frequently occurring words and are probably processed just as the other determiners. (For a fuller discussion of possessives, see 3.9.)

Expansions with modal verbs create semantic difficulty, although the modals *will, can,* and *do* are not difficult, even for beginning readers, because of the frequency of their use. For example, (14) and (15) are probably harder for beginning readers than (12) and (13):

(12) They *will* like it.

(13) They *can* do it.

(14) They *might* like it.

(15) They *could* do it.

Compare (16) and (17) with (18-20):

(16) He *should* go.

(17) He *may* go.

(18) He *should be* going.

(19) He *must have* gone.

(20) He *might have been* going.

The grammar of modal verbs is not complex, but the semantics is. Modals refer to the probability of occurrence or imply a moral judgment about occurrence; there may even be a slight ambiguity about which is meant [compare (12-20)]. Though simple grammatically, the abstractness of their meaning and the possible ambiguity of their interpretation make modal verbs difficult to process. Again, however, the difficulty probably varies with the degree of comprehension expected; the pupil may not be able to paraphrase or to analyze, but he may comprehend the larger meaning.

1.3 *Negative Expansions.* Any main verb can be expanded with a negative (*not* or *n't*). If there is no helping verb or modal for the negative to attach to, then *do* is added as in (24):

(21) He was running. ⟶ He was *not* running.

(22) He would run. ⟶ He would*n't* run.

(23) He had run. ⟶ He had*n't* run.

(24) He ran. ⟶ He did*n't* run.

Although grammatically simple and frequent in occurrence, negatives have been shown to create difficulty in the reading process (see Schlesinger, 1968, pp. 45-49).

The prefix *un-* that attaches to adjectives generally expresses more than mere negation. For example, consider the difference between (25) and (26):

(25) He was not kind.   .

(26) He was unkind.

Sentence (25) does not say that he was *unkind,* only that he was *not kind.*

Difficulty in reading apparently comes from negation of the positive statement, which is not what operates with *un-* words. Stated another way, *un-* words are not part of a syntactic process that is difficult to manipulate; they are, instead, vocabulary items.

In passing, we should note that *un-* also attaches to verbs but it signifies reversal of the action, not negation, as in *untie, undress, undo*. These, too, are vocabulary items.

1.4 *Adverbial Expansions.* Adverbs of place and time can be optionally added to all simple sentence types. For example,

(27) He ran *home*. (place)

(28) He ran *home yesterday*. (place, time)

(29) We named the girl our leader *in school yesterday*. (place, time)

Manner adverbs are not normally added to sentence types 4, 5, 6, 8, 11, and 12 as listed on page 1. The manner adverb is acceptable in type 1:

(30) He stopped *quickly*. (how)

But not in type 4 (asterisk indicates that the sentence is ungrammatical):

(31) *He was the captain *quickly*.

When lexical items (nouns, verbs, adjectives, and adverbs) are added to a sentence, the difficulty increases; the additional words generally mean an additional concept to be considered in the total relationship. For this reason, adverbial expansions should probably be counted in measuring syntactic complexity. It can be argued, however, that the subject+verb(+adverbial) type, which has only three lexical items even with the adverbial addition, is no more difficult than the subject+verb+object type, which also has three lexical items.

1.5 *Intensifier Expansions.* The chief intensifier is *very*, which modifies adjectives and adverbs:

(32) He was very happy.

(33) He left very happily.

Very is lexically similar to *more* and *most* and *so*. It is the essence of adjectives and adverbs of manner that they be compatible with intensifiers.

The words *chief* and *main* can function as noun intensifiers:

(34) The chief intensifier is *very*.

There is no reason to suspect that intensifiers add to sentence complexity. If anything, they probably improve clarity (if not style) by emphasizing the nature of the main words in the sentence organization; in (34), for example, the noun-ness of the word *intensifier* is emphasized by the word *chief*.

1.6 *Summary*. To summarize, a limited number of simple sentences form a starting point in the consideration of syntactic complexity. These may be expanded by certain additions that are considered grammatically to be part of the simple sentence. To the skilled reader, these expansions are probably insignificant. However, in the initial stages of reading they are bound to be a source of some difficulty, at least when they add a lexical item (concept) or introduce a logical relationship. For example, negatives and modals appear to be difficulties, and a reading program might recognize them as such by giving pupils an opportunity to practice reading them.

2.0 Rearrangement

We have said that arrangement is the process that puts words into the grammatical orders of the various simple sentences. The process of rearrangement retains the elements of a simple sentence but changes one form of a sentence to another (statement to "yes" or "no" question, active to passive) or changes the style (that is. word arrangement).

2.1 *"Yes" or "No" Questions.* How are these the same? How are they different?

(1) The man will talk. ⟶ Will the man talk?

(2) The rain has begun. ⟶ Has the rain begun?

(3) Jean is going. ⟶ Is Jean going?

(4) He should be eating apples. ⟶ Should he be eating apples?

Notice in the following examples that the word *do* is added as part of the rearranging process when a helping verb or modal is not used. *Do*, in this sense, is a high frequency function word and cannot be said to introduce a difficulty.

(5) The man talks. ⟶ Does the man talk?

(6) The rain began. ⟶ Did the rain begin?

(7) The girls like apples. ⟶ Do the girls like apples?

Because of the extra process that goes into a rearranged sentence, we can hypoth:size that it is more difficult than the simple sentence from which it comes. The analysis and processing required to answer a question may indeed be an additional difficulty, for a question refers to information in linguistic form (Bormuth, 1969). In itself, however, the syntax of a question is probably not a difficulty.

2.2 *Passive Sentences.* How are these the same? How are they different?

(8) The child found the money. ⟶ The money was found by the child.

(9) A man drove the car. ⟶ The car was driven by a man.

A passive sentence is formed by rearranging the subject and object of an active sentence. Passive sentences are clearly more difficult to process than active sentences, as studies have shown (see Schlesinger, 1968, pp. 45-49). Not only is there an additional process but the final arrangement of words is in conflict with the "actor—acted upon" sequence of the normal (and more common) simple

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active sentence. The added words *be* and *by* are again high frequency function words and do not in themselves add difficulty.

2.3 *Irregular Word Order—Adverbs.* Whenever the expected word order is not followed, we can hypothesize that the rearrangement adds a degree of difficulty. To begin with perhaps a trivial difficulty, it is more common for adverbs and adverbials to be added at the end of a simple sentence:

(10) He found the money quickly. (manner)

(11) He found the money yesterday. (time)

(12) He found the money at home. (place)

Any rearrangement must conform to the rules of the grammar (be accept-able to a native speaker), so with this acceptability criterion in mind we can try rearranging the adverbials:

(13) Quickly he found the money.

(14) He quickly found the money.

(15) He found quickly the money.

Sentence (15) is probably unacceptable; at least, we will probably not find it in print. If we try these arrangements with sentences (11) and (12), we can ask which ones are acceptable. Are there any differences in predictability among the different rearrangements? If so, are they important enough to be counted differently in measuring readability? Next, we can try the same rearrangements when the adverb is a phrase or clause. Here, for example, is a clause:

(16) The boy found the money when he went home.

Why is the following rearrangement, which is found in good writing, clearly more difficult to read?

(17) The boy, when he went home, found the money.

For one thing, after *The boy* . . . one would hardly predict *when*. For another, research has shown that a) the longer the reader must carry information in mind before the sentence (or clause) is resolved, the greater the difficulty; and b) the more information the reader must carry before the resolution, the greater the difficulty (Schlesinger, 1968, pp. 85-87).

How can this difficulty be measured? And can this measurement also indicate the differences between (18) and (19)?

(18) The man, while driving, fell asleep.

(19) The man, while driving with the radio turned to soothing music, fell asleep.

One more example of rearrangement with adverbs is their order when two or more are present in the same sentence. For example, it is more common for adverbs of place to precede adverbs of time, as in:

(20) He found the money *at home yesterday*.

When this arrangement is violated, we can assume that it gives the reader a somewhat harder job, for the violation of one's expectations (predictions) may interfere with the processing of the entire sentence.

2.4 *Irregular Word Order—Inversions*. For stylistic purposes, a few sentence types permit rearrangement. These are infrequent, and therefore not highly predictable:

(21) She is happy.
    (a) Happy she is.
    (b) Happy is she.

The adjective *happy* is a complement of the verb *be*. Try rearranging the other complements of *be* in the same way:

(22) She is the captain. (noun complement)

(23) She is in Honolulu. (adverb complement)

Notice the different degrees of frequency (and so of predictability) that accompany (22) and (23) when rearranged as in (21a) and (21b). Notice also that the sentence "She is there" [identical in pattern with (23)] when rearranged to produce "There she is," does not result in similar difficulty. It is the high frequency of the rearranged sentence that cancels out the difficulty.

The complements of objects can also be rearranged:

(24) We found the girl happy. —► Happy we found the girl.

Other examples of rearrangement will be found under *Addition* and *Substitution*, where they combine with these processes and, by virtue of the combined processes, produce a more complex syntax.

In conclusion, we can note that even short sentences may be difficult when a rearrangement produces unusual word order. The reader might look for other rearrangements in the syntax of simple sentence types, analyzing them in terms of grammatical structures and predictability.

2.5 *Irregular Word Order—"It" and "There" Sentences*. For stylistic reasons, a writer can change the emphasis in a simple sentence as follows:

(25) John threw the ball.

(26) It was John who threw the ball.

If the object gets the focus, we will have:

(27) It was the ball that John threw.

Or we can focus on the adverb:

> (28) The cat chased the squirrel up into the trees.

> (29) It was up into the trees that the cat chased the squirrel.

Some dialects permit focus on a predicate adjective:

> (30) All her kids were happy.

> (31) It was happy that all her kids were.

Is such refocusing harder for the young reader to process? It probably is in (27), where the object is reordered in front of the subject. We would suppose also that (26) is harder than (25), at least for the beginning reader, who might well need systematic practice with derived syntactic structures.

2.6 *Irregular Word Order—Sentence Type 2 Reordered to Type 4 with Wh-Refocusing.* This reordering recasts the *subject + verb + object* sentence type so that the focus can be put on any of the sentence parts: subject, verb, whole predicate, adverb, or complement. With the wh- refocus we put the appropriate wh- word first and then a form of *be* before the sentence part receiving the focus. For example, look at sentence type 2 with the focus being put on the object.

> *Sentence type 2:* The ball hit Harry.
>
> *Put "what" in front:* What the ball hit Harry.
>
> *Put "be" before the object:* What the ball hit was Harry.

Here we focus on the adverbial.

> *Sentence type 2:* The ball hit Harry on the arm.
>
> *Put "Where" in front:* Where the ball hit Harry on the arm.
>
> *Put "be" before the adverbial:* Where the ball hit Harry was on the arm.

The reader might try the same process on the other sentence parts, noting what happens when grammatical and nongrammatical sentences are produced.

These refocused sentences are synonymous with sentence type 2, but surely they are more difficult. Our conventional perception of the coded information has been disturbed, so our comprehension requires first, some experience with the process and second, our attention to it. New readers have had little experience with the process, for syntactical refocusing is not common in speech (gesture and stress are used instead); nor are they able to give due attention to it, for their attention is on the many other matters involved in learning to decode and comprehend printed language.

When we focus on the subject, the subject (with *be* in front of it) must move to the end of the sentence.

Sentence type 2: Good luck won the game.

Put "What" in front: What good luck won the game.

Put "be" before the subject: What was good luck won the game.

Move "be" + subject to the end: What won the game was good luck.

Subject refocusing surely makes a more difficult sentence to process for almost any reader in almost any context.

2.7 *Summary.* When conventional word order is rearranged, we can assume that a degree of difficulty has been added. But how much is added is an unresolved question. (Or, to put it another way, what count should we give to each different rearrangement in an effort to measure readability?) For example, how can we measure (29-31), assigning each a level of difficulty that is consistent with our other measurements?

(29) The man fell asleep while driving.

(30) The man, while driving, fell asleep.

(31) The man, while driving with the radio turned to soothing music, fell asleep.

This difficulty suggests that we can more easily determine a sequence of difficulty among various syntactic structures than we can assign meaningful levels to particular structures.

3.0 Addition

Addition is the essential process in the production of complex sentences. For example, the two simple sentences which follow can be added in at least three different ways, producing at least three kinds of complex structures that do not have equal difficulty for the reader:

(1) The birds eat the insects. The insects harm the trees.
    (a) The birds eat the insects, and the insects harm the trees.
    (b) The birds eat the insects that harm the trees.
    (c) The birds eat the insects harming the trees.

Addition may not be the only process in the formation of complex sentences, for when we add sentences the syntax may also involve the processes of rearrangement, substitution, or deletion. It is evident that the more processes involved in a syntactic structure, the more complex the syntax, which in turn suggests the more difficult the reading. As a guiding principle, this statement is worth remembering; however, the investigation of syntactic complexity will have to take note of important exceptions.

3.1 *Coordinating Conjunctions.* How are the following the same? How are they different?

(2) Nick survived the party. Martha enjoyed it.

(3) Nick survived the party, and Martha enjoyed it.

Sentence (3) uses an addition process, but is it harder to read? Evidence does not support this notion. Indeed, sentences joined by the conjunction *and* have often been found to be as easy as short sentences not joined in this manner. Editors misled by superficial notions of sentence length might "simplify" reading materials by omitting conjunctions and thus cut natural compound sentences into two short sentences. The usual result, however, is to give the string of sentences a choppy, unnatural feel; sometimes, too, the conjunction provides a meaningful relationship between sentences, so its omission produces harder, not easier, reading.

How are the following sentences the same? How are they different?

(4) Nick survived the party. He never went again.

(5) Nick survived the party and never went again.

Note the deletion of *he* in sentence (5). Does the extra process make the

sentence more difficult? According to Fagan (1971), this type of deletion does result in more errors. For the beginning reader, at least, it reduces the clues to meaning; if there is a question in the writer's mind, he can help the child by keeping, rather than eliminating, optionally deletable redundancies.

The other coordinate conjunctions are *but, or, so, for,* and *yet,* and the reader might ask himself why these are ordinarily more difficult to process than *and.* For example, the adversative *but* is clearly difficult for young children (Katz and Brent, 1968, pp. 506-507):

(6) Foerster flew to Miami and relaxed on the beach.

(7) Foerster flew to Miami but relaxed on the beach.

3.2 *Adverbials.* The adverbial function may be carried out in much the same syntactical manner by words (simple adverbs), phrases (usually prepositional phrases), or clauses (subject+verb structures).

3.2.1 *Words.* As we have seen in 1.4, simple sentences may have adverbs added to them without a change in basic structure:

(8) Georgette got the answer *easily.* (subject+verb+object)

(9) He was captain *yesterday.* (subject+*be*+complement)

(10) We hurried *home.* (subject+verb)

3.2.2 *Phrases.* Adverbial phrases (prepositional phrases) are, of course, structurally more complex than one-word adverbs.

Moreover, the meaning of some prepositions is not easily paraphrasable or analyzable, at least for primary grade children who will not precisely distinguish between:

(11) We will be in Chicago around noon.

(12) We will be in Chicago by noon.

Again, however, unless our objective is the skill of precise analysis or paraphrase, the difficulty of general comprehension may not be increased by a semantic subtlety like that in (12).

A great many prepositions are among the frequently used words, suggesting that the following examples of prepositional phrases meaning manner, duration, and place are not more difficult than single word adverbs:

(13) Georgette got the answer *with ease.*

(14) He was captain *for a year.*

(15) We hurried *to the house.*

Although we have no way to properly measure semantics, we must certainly be aware of it in all aspects of reading. Different types of adverbials vary in semantic difficulty. For example, *causality* is evidently more difficult in meaning

than *time* (Vygotsky, 1962, pp. 106-107). Thus, even though the lexical item in (16) is easier than the lexical item in (17), the causal adverbial makes (16) more difficult.

(16) The old lady died of poisoning.

(17) The old lady died in the forenoon.

3.2.3 *Clauses.* Adverbial clauses (subordinate clauses) involve the same semantic questions with the additional complexity of adding a whole sentence (clause). For example, use the conjunctions *after, because, if, since, when, where* to add the two sentences in (18). What are the differences in meaning? Which conjunctions make the sentence addition harder to read?

(18) The rain fell all night. The streets were flooded.

Adverbial clauses are clearly more difficult than adverbial words and phrases. But the difficulty is not only in the length and sentence structure of the addition, it is also in the meaning of some of the subordinate conjunctions. For example, research does not offer definitive answers on the relative complexity of *if* or *because* as opposed to *when* or *where* but in clauses, as well as in phrases, conditionality and causality must be more difficult than time and place (Ervin and Miller, 1963, p. 125).

3.3 *Relative Clauses.* In how many different ways can you add the following sentences?

(19) The boy bought a dog. He had a dollar.

One of the ways is, *The boy who had a dollar bought a dog,* the device of a relative clause.

When adding two sentences, the condition for forming a relative clause is the presence of noun phrases having identical reference in the two sentences. In (19), for example, *The boy* and *he* have identical reference, permitting a relative to substitute for one noun phrase and attach to the other noun phrase. The relationship between the noun phrase and verb then indicates the relative pronoun choice: *who, whom, whose, that, which.* If the noun phrase is the subject (and human), the form *who* is chosen:

(20) A girl told me your story. She saw you. →

A girl who saw you told me your story.

If the noun phrase is the object, then (in formal English) the form *whom* is chosen:

(21) A girl told me the story. I saw her. →

A girl whom I saw told me the story.

If the verb i.. the relative clause is in the *be* form, different deletion and rearrangement processes are possible (see 4.2). Study the addition and deletion processes in (22), then do the same thing with (23-25), noting when and how deletion can operate:

(22) The cat got stuffed. The cat was eating the mouse. →

    (a) The cat that was eating the mouse got stuffed. →

    (b) The cat eating the mouse got stuffed.

(23) Sara Jane catches birds. Sara Jane is the cat.

(24) The cat catches birds. The cat is there.

(25) The cat catches birds. The cat is mean.

Deletion produces acceptable sentences in (22-24), although (23) requires a particular kind of adjustment to be acceptable:

(26) Sara Jane, the cat, catches birds.

In speech, the adjustment is pause intonation and it is matched in writing with commas.

Now notice what happens in (25), which is renumbered here as (27):

(27) The cat catches birds. The cat is mean. →

    (a) The cat that is mean catches birds. →

    (b) *The cat mean catches birds. →

    (c) The mean cat catches birds.

The asterisk in (b) indicates that the sentence is not grammatical; an extra rearrangement process is necessary to turn (b) into the acceptable (c). According to transformational grammar theory, *The mean cat* is more complex in grammatical structure than any of the other relatives (for example, compare *The cat there*) because of the extra process needed to produce it. Yet it is surely easier to process. No doubt this is because *The mean cat* is perceived as a single unit.

3.4 *Present Participle Phrases.* In the last section, sentence (22) reduced to a participial phrase:

    The cat eating the mouse got stuffed.

But in the following sentences there is no *be* to be deleted:

(28) The boy ran to school. He didn't see the plane.

Identical noun phrases permit not only substitution of *who* for one of them but deletion of one (with a change of the verb to *-ing,* the participial form):

(29) Running to school, the boy didn't see the plane.

Often, either sentence may become a participle:

> (30) Charlie laughed. Charlie thought he'd won the argument. →
>> (a) Laughing, Charlie thought he'd won the argument.
>> (b) Charlie laughed, thinking he'd won the argument.
>> (c) Charlie, laughing, thought he'd won the argument.

The options provide a stylistic opportunity for emphasis.

3.5 *Comment on 3.1-3.4.* We see that sentences can be added in different ways, a fact of fundamental importance in grammar, composition, and literature. (Different ways of expressing content is what transformations, language facility, and style are all about.)

Our question is whether some ways of adding are more difficult to read than others; and if so, why, since the same two sentences underlie each of the ways. For example, compare the difficulties of (a) through (e), all derived from (31):

> (31) The old man left. He thought he'd won the argument. →
>> (a) The old man left, and he thought he'd won the argument.
>> (b) The old man left and thought he'd won the argument.
>> (c) The old man who thought he'd won the argument left.
>> (d) The old man left, thinking he'd won the argument.
>> (e) Leaving, the old man thought he'd won the argument.

In comparing the difficulties of the above sentences, we can make the following observations: In (a) all elements of the source sentences are retained; in (a) and (b) the conjunction preserves the relationship between the two source sentences; in (c) the relative pronoun *who* retains the subject although some difficulty results from the interruption of the subject in the main clause from its verb *left*; in (d) and (e), however, a subject in one of the source sentences is deleted and there is no conjunction to relate the two sentences. Moreover, the structures in (d) and (e) are less frequent in speech as well as in writing, but especially in writing found in children's books. Finally, when the participle comes first in the sentence, as in (e), the postponed identification of the subject adds one more difficulty.

3.6 *Past Participle Phrases.* The *-ing* participles are usually called *present participles* and the *-ed* or *-en* participles *past participles.* There are important differences between them. Compare the sentences in A and B and make a judgment about their relative difficulty:

<center>A</center>

(32) The hunting animal ran quickly.

(33) The stealing child was discovered.

(34) The biting dog ran for Marsha.

<center>B</center>

(35) The hunted animal ran quickly.

(36) The stolen child was discovered.

(37) The bitten dog ran for Marsha.

The structures in A and B are reduced relative clauses and both are produced as follows:

A(32) The animal ran quickly. The animal was hunting. →

    (a) The animal which was hunting ran quickly. →

    (b) The animal hunting ran quickly. →

    (c) The hunting animal ran quickly.

B(35) The animal ran quickly. The animal was hunted. →

    (a) The animal which was hunted ran quickly. →

    (b) The animal hunted ran quickly. →

    (c) The hunted animal ran quickly.

An important difference can be noted in the above structures: The second sentence in the examples in B is passive *(The animal was hunted)*. And, as we have seen, the passive sentence is more difficult than the active.

Some past participles are produced from an active sentence, however, as the next example reveals:

(38) The car caused a congestion. The car had stopped. →

    (a) The car that had stopped caused a congestion. →

    (b) The car stopped caused a congestion. →

    (c) The stopped car caused a congestion.

In this case, (38c) seems to be no more difficult than the present participle construction. There is another difficulty now, however, for (38c) is ambiguous; it could be produced from either an active or a passive verb. The construction is active in (38) and passive in (39):

(39) The car caused a congestion. The car was stopped (by the police). →

    (a) The car that was stopped caused a congestion. →

    (b) The car stopped caused a congestion. →

    (c) The stopped car caused a congestion.

The possible ambiguity of (38c) or (39c) suggests that either structure should be considered a difficulty in reading. With few exceptions, however, the ambiguity will not exist in context.

3.7 *A Caution About Participles and Adjectives.* Syntactically, participles seem clearly to be a more difficult structure to process than adjectives. An adjective is simply an attribute, as its source indicates *(The child was happy.* → *The happy child . . .),* but a participle may involve an implicit object as in (32), where the verb *hunting* has an implicit object; or it may involve a deleted agent as in (35), where the animal was hunted by someone or something; or it may contain possible ambiguity, as in (38-39).

Depending upon their placement in the sentence, participles and adjectives can be easily confused. The reader should know that in almost all cases adjectives can be identified simply by putting *very* in front of them (it is the nature of adjectives to show degree, as in *happier, happiest,* and *very happy*). If the word is a participle, the addition of *very* sounds ungrammatical, as in *The very stealing boy* and *The very stolen boy.* This device will distinguish those adjectives that end in *-ing* and *-en* from true participles. Try this with the following examples:

(40) We saw a haunting ghost.

(41) We heard a haunting melody.

(42) The forgotten letter was in the desk.

(43) The drawn picture is better than the printed picture.

Some examples will be ambiguous. For example, *broken* in (44) could be an adjective or a participle because it could come from either:

(44) The broken chair . . . .

    (a) The chair was (very) broken.

    (b) The chair had broken.

If the expression is ambiguous, and if either interpretation is acceptable in context, then the ambiguity would seem to be of no consequence, in which case the difficulty level is that of the adjective, not the participle.

3.8 *Absolute Constructions.* Deletion of *be* is the key to this addition:

(45) Her fingers were trembling. She opened the letter. →
Her fingers trembling, she opened the letter.

(46) Her fingers were numb. She couldn't strike the match. →
Her fingers numb, she couldn't strike the match.

Our examples show the absolute construction at the beginning of the sentence. Typically, however, it comes at the end where it is used to add details and description. Often there will be a series of two or more of them:

(47) She entered the room, her head down, her eyes averted.

The absolute is simple enough to describe or to use, yet it is used frequently only in writing for an adult audience. Since it is hardly ever heard in speech, it is probably not part of the beginning reader's grammatical repertoire; therefore, children may well be puzzled by the absence of *be*, as in the above examples. Of course, this conclusion is only the author's surmise. The question is one of a number scattered throughout these pages that can be researched without sophisticated apparatus, without a great many subjects, and without an inordinate amount of research time.

3.9 *Possessives.* Possessives are usually said to be derived from a separate sent :nce. For example:

(48) John has a cat. It is crazy. →
John's cat is crazy.

The whole sentence with *have* substitutes for the noun phrase in the other sentence. Regular possessives, such as *John's cat*, create little reading difficulty since, like adjectives modifying nouns, the whole noun phrase is probably perceived as a single unit.

Possessive pronouns (see 1.1), which are probably easier to process in reading than possessive nouns, are more complex structurally and semantically than the nouns. For example, *His cat is crazy* is derived from the sentences *He has a cat* and *The cat is crazy.* In addition, *his* must have an antecedent in a previous sentence, making it more complex than *John's* which refers directly to *John.*

The apparent simplicity of grammatically complex pronouns probably has a perceptual explanation. The pronouns *he, him,* and *his,* and the noun to which they grammatically refer (*The man, John,* etc.) may each have mentally the same one-to-one correspondence. If something like this is true, the complexity in the rules of language does not, in this case, correspond to a complexity in perception (but see 5.2).

Is there any reason to think that the phrase possessive is more difficult than the apostrophe structure? Compare the following:

(49) I like the girl's name.
(50) I like the name of the girl.

3.10 *Gerund Noun Phrases.* Although the gerund construction looks much like the participle construction, it is more difficult in important ways.* For

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*The terms *gerund* and *participle* are the traditional terms, the first used for the *-ing* verb having a nominal function and the second, for the *-ing* and *-ed* verb having a modifier function.

example, *running to the store* might function as a participle in

    (51) Running to the store, John fell.

or as a gerund in

    (52) Running to the store is fun.

The grammatical and semantic differences between the participle and gerund are significant, and they suggest that the gerund is more difficult.

    First, compare these examples:

    (53) Jane fell *running to the store.* (participle)

    (54) Jane considered *running to the store.* (gerund)

    (55) *Running to the store* isn't easy. (gerund)

Sentences like (53) were examined in 3.4. The identical noun phrase *Jane* is deleted from the added sentence and the verb is changed to *-ing*. In sentence (54) the identical noun phrase is again deleted, the verb changed to *-ing*, but now the added sentence is substituted for a noun phrase:

    (56) Jane considered *something*. Jane ran to the store. →

        Jane considered running to the store.

Notice that the gerund has more abstract meaning than the participle. For example, *We saw Jane running* is concrete, while *Running is difficult* is abstract. Even when subjects are incorporated into the sentence, abstractness remains, as in *Running is fun for Jane*. Familiarity, however, makes many one-word gerunds seem as easy to process as common nouns. For example, consider *swimming, hunting, playing,* and *running* used in a sentence such as *Swimming is popular with the kids.* A useful measurement of semantics or vocabulary in reading difficulty will consider such differences as those between specific and general, concrete and abstract, animate and inanimate; probably it is this more than the grammar that makes the gerund harder to read than the participle.

    3.11 *Infinitive Noun Phrases.* Optional ways of adding the following two sentences include (a) and (b), which are examples of infinitive noun phrases:

    (57) Jane ran to the store. *Something* frightened her. →

        (a) For Jane to run to the store frightened her.

        (b) To run to the store frightened Jane.

Now add the following sentences to produce the same two options:

    (58) Bill liked *something*. Bill ran. →

        (a) *Bill liked for Bill to run. →

        (b) *Bill liked for to run. →

        (c) Bill liked to run.

In this case, assuming that Bill is the same person, (a) and (b) are not acceptable in standard English. We must delete both *Bill*, the identical noun phrase, and *for*. But try the same two options again:

(59) Bill liked *something*. Jane ran. →

    (a) *Bill liked for Jane to run. →

    (b) Bill liked Jane to run.

In most dialects (a) is probably not acceptable.

In addition, different verbs have different requirements, as you can see from:

(60) Bill arranged *something*. Jane ran. →

    (a) Bill arranged for Jane to run.

    (b) *Bill arranged Jane to run.

3.12 *"The Fact That" Noun Phrases.* Another way of adding the two sentences in (57) used to illustrate infinitive noun phrases is an option called "The fact that . . .":

(61) Jane ran to the store. Something frightened her. →
    The fact that Jane ran to the store frightened her.

Add the following to produce a similar "The fact that" sentence:

(62) She hates me. Something is unimportant. →
    The fact that she hates me is unimportant.

From "The fact that" sentences we find that the first two words, *The fact*, are optionally and frequently deleted:

(63) That she hates me is unimportant.

3.13 *Extraposition Noun Phrases.* Sentence (63) is synonymous with (64), although they do not appear similar:

(64) It is unimportant that she hates me.

What happens is that the pronoun *It* stands in for the subject noun phrase (thereby refocusing it), which then moves to the end. This rearrangement does not require the presence of *be*. More examples:

(65) That Hilda loved Edgar disturbed no one. →
    It disturbed no one that Hilda loved Edgar.

(66) That Frances could count to a thousand astounded the whole class. →
    It astounded the whole class that Frances could count to a thousand.

We have shown the extraposition sentence to be derived from "The fact that" sentence. This is probably not grammatically correct. Both the "The fact

that" and the "It" sentences are no doubt derived from the same source sentences. (This fact, incidentally, explains their synonymity. For more on these sentences, the interested reader can consult the treatments of "extraposition" and "*it* delection" in most any standard transformational grammar.)

Our concern is with the relative difficulty of sentences, and it appears from grammatical theory as well as the common sense of perception that the "That" sentence represents natural order while the "It" sentence represents refocused order. Grammatically, the underlying sentence seems to start with the pronoun *It* plus a complement sentence:

(67) It + that Frances could add to a thousand . . . .

This order also corresponds to what ordinarily we would consider the topic of our discourse; it is then followed by the predicate *(astounded the whole class)*. Next, a transformation optionally produces the *It* deletion:

(68) That Frances could count to a thousand astounded the whole class.

Or else the extraposition sentence:

(69) It astounded the whole class that Frances could count to a thousand.

Because of the rearranged word order, we can surmise that the extraposition sentence will be more difficult to comprehend.

3.14 *Wh-Noun Phrases.* The wh-noun phrases are included under "Addition" because two sentences are involved in their production. The wh-questions produced by substitution (see 5.3) provide the elements and (with one modification) the structure for the wh-noun phrase. For example, in the sentence below, the predicate is questioned by substituting *what* for it, then rearranged, and the question itself substituted for the noun phrase *something*.

(70) *Something* surprised us. Selby ran. ➞
      (a) *Something* surprised us. Selby did what. ➞
      (b) *Something* surprised us. What Selby did. ➞
      (c) What Selby did surprised us.

The reader might try the same thing with *someone* in the next example. Change *someone* to *who* (if it were an object, it would be changed to *whom* in formal standard English), rearrange the wh-word if necessary, then substitute the question sentence for the noun phrase *something*:

(71) Jean knows *something*. Someone lost the money.

The entire set of wh-words can be substituted in a similar way, as in 5.3, where they are used to produce questions. These wh-questions are basically

identical to the wh-noun phrases in the following examples:

    (72) Jean knows where John went.

    (73) Jean knows why he left.

    (74) Jean knows how he drives.

These examples are simple subject+verb+object sentence types, yet they are "complex" because one noun phrase is itself basically a sentence. That sentence, in turn, involves a substitution process as well as a rearranging process. Structurally, then, the syntax of these should be difficult for the beginning reader. Moreover, they are not even frequently occurring structures. For these reasons, all of the noun phrases in sections 3.10-3.14 merit consideration in any measure of syntactic difficulty.

3.15 *Multiple Additions.* We have been looking at additions of only two sentences, but the majority of sentences beyond the primer level involve the addition of more than two sentences; and a sentence having three additions, all other factors being equal, will be more difficult than a sentence having two additions.

Quite obviously, readability should take multiple additions into account. To illustrate, the sentences in the paragraph which follows might be added in a variety of ways, and the reader might want to try several ways with readability in mind. Using all the sentences of this paragraph, add them to produce a paragraph with a total of five sentences, then rewrite it with a total of four, then three, and then even two sentences. What will be the differences in readability?

> Jerome crawled through the window. He held the flashlight.
> Darcy had given him the flashlight. Except for the beam of
> light, it was dark everywhere. The beam was weak. The
> streetlight was broken. The moon was behind the clouds.
> Not one light was burning in the whole house. Suddenly he
> heard a creak. It was on the floor above. He was afraid. He
> knew the sound meant something. Mr. Trousseau was up
> there. He was waiting for Jerome.

Another consideration in multiple addition is the degree to which the basic subject+verb relationship is obscured. When a complex sentence separates subject from verb by a number of other words, that fundamental relationship (the prime elements of meaning) is obscured. Here are two examples:

    (75) The girl who lost the money that Jack found is heartbroken.

    (76) The wind whispering through the trees and along the banks of the river brought tidings of warm weather.

Readability that simply counts additions is not measuring this distance between subject and verb. And notice that this consideration is not solely a

matter of multiple additions; it is much more a matter of where the additions occur—between subject and verb. Should a measuring device also account for significant distance between subject and verb?

3.16 *Summary.* This section has explored a variety of ways in which reading difficulty is created by syntactic operations. We have been looking at syntax that involves additions, but we have found that frequently more than addition is involved—rearrangement (as in extraposition) or deletion (as in infinitive noun phrases). Until it has been proven otherwise, we can assume that each additional process adds an element of complexity. Moreover, when a rearrangement or deletion distorts our normal perception, we can again assume additional complexity. And when a particular structure is infrequent, we have another indicator of difficulty. Finally, we suggested that the subject-verb relationship is basic in syntactical meaning, so when that relationship has been made less clear than usual (by the separation of the two or by a possible ambiguity), then still another element of difficulty has been added to a sentence.

This is perhaps the place to introduce another problem. In an attempt to estimate the readability of a passage, we must not forget the larger context. Linguistic communication involves numerous redundancies, which without question means that a difficulty in one sentence may be cancelled by a redundant element in a later sentence. All reading teachers are aware of the method of comprehending new words by examining the surrounding context. We can do the same thing with syntax.

For example, the sentence, "It was a new hat that was sported by Ezra," will presumably be counted as a difficulty in a second grade reader. But should it be counted difficult if the context clarifies it? Consider the following:

> What would Ezra wear today? We sat in our seats and
> wondered. Then the bell rang, and then the door opened,
> and there he was. It was a new hat that was sported by Ezra
> today. He took it off and smiled. "Hi! Miss French," he said,
> and he waved the new purple hat for all to see.

4.0 Deletion

Deletion is the process that omits certain words or parts of sentences, always according to the rules of the language. A deletion would seem to make the sentence harder to read, but this is not necessarily the case.

4.1 *Imperative Sentences.* The normal form of the imperative is "Close the door," "Stop," and so on, a form that is reached by deleting from the simple sentences:

(1) You will close the door.

(2) You will stop.

An intermediate form of the sentence deletes only *will,* producing "You close the door," "You stop," and so on.

The imperative is one of the basic sentence patterns and is so familiar that we need say no more. In this case, deletion does not add difficulty.

4.2 *Relative Clauses.* In 3.3 we saw that relative clauses with *be* can be reduced:

(3) The boat that is in the harbor is blue. ➔

The boat in the harbor is blue.

In addition, the relative pronoun itself can be deleted when it comes from the object of the added sentence:

(4) The boat is green. I bought it. ➔

(a) The boat that I bought is green. ➔

(b) The boat I bought is green.

It is this deletion that permits us to avoid the over formality of *whom* in these constructions:

(5) A girl will be considerate. You taught her. ➔

(a) A girl whom you taught will be considerate. ➔

(b) A girl you taught will be considerate.

The deletion is an additional process in these sentences, but because of familiarity we might hypothesize that deletion itself does not cause difficulty. However, Fagan (1970, p. 251) found it to be among the more difficult transformations to process.

4.3 *Passive Sentences.* When rearrangement has changed an active into a passive sentence (see 2.2), the phrase beginning with *by* can be deleted.

(6) Jerome caught Michele.

 (a) Michele was caught by Jerome.

 (b) Michele was caught.

Sentence (6b) shows the deletion which may optionally accompany passives. Deletion of the agent of the action would seem to increase reading difficulty, for it deletes information. Moreover, there is potential structural confusion, for the sentence resulting from deletion might look like an adjective complement sentence:

(7) Michele was caught. (passive)

(8) Michele was tired. (ambiguous)

(9) Michele was lucky. (adjective complement)

In practice, of course, professional writers do not delete the *by* phrase if there is much chance that it would cause confusion. For this reason, the deletion will not usually result in added difficulty.

4.4 *Deletion of Repeated Verb Phrases.* When all or part of a verb phrase is deleted because it repeats a previous verb phrase, the difficulty could be increased. In professional writing these deleted sentences will appear next to the full sentence, a context where their meaning should be perfectly clear. It might be argued, however, that the deletion device reduces clues to meaning. In easy-to-read sentences, such as the following, the reduction might not be significant for mature readers, but can we say that for beginning readers?

(10) Sadie will go to the races. Sherry will go too.

(11) They are going to Europe, and so am I.

(12) You have seen the truth. We all have.

4.5 *Deletion of Identical Elements To Form a Series.* In the last section, we saw deletion of the following type:

(13) Marcy is going to France. I am too.

That is deletion of an understood element, but it could occur when the elements are *not* identical, as in:

(14) Marcy went to France. I will.

Deletion is more common when sentences are added to form a coordinate relationship among the different elements and to delete the identical elements:

(15) Marcy went to France. Jeff went to France. →
  Marcy and Jeff went to France.

It is this type of structure that forms what is commonly called a series. Typically, examples have three or more items in a series, but the structure is the same as in (15):

(16) Marcy went to France. Jeff went to France. Ann went to France. ➔
Marcy, Jeff, and Ann went to France.

Deletion to form a series is common with all the main parts of a sentence—noun phrases, verb phrases, nouns, verbs, adjectives, and adverbs (including adverbials). It would be interesting to know if these vary in difficulty. Perhaps, as with other less common (predictable) structures, a series of function words will indeed lead to reading difficulty. Here are examples of modals to consider:

(17) The President could, should, and will resign.

(18) Donna might, Alice can, and I will go to Miami.

Compare (18) with (19). Is not (18) more difficult?

(19) Donna walked, Alice drove, and I flew to Miami.

4.5.1 *Noun Phrases in Series*. Coordinate addition of (20) produces (a):

(20) Sam laughed. Al laughed. Jack laughed. ➔
(a) Sam laughed and Al laughed and Jack laughed.

Then deletion of identical elements produces (b)·

(b) Sam, Al, and Jack laughed.

Sentence (b) delays resolution by the verb, so this is a potential difficulty. The more items in the series, the greater the difficulty:

(21) Sam and Al laughed.
(22) Sam, Al, and Jack laughed.
(23) Sam, Al, Jack, and Pete laughed.
(24) Sam, Al, Jack, Pete, and Matilda laughed.

The increased difficulty here is also a matter of information load. If the difficulty is significant, to what should we attribute it—deletion, information load, or both?

4.5.2 *Verb Phrases in Series*. Compare (20b) in the last section with the following:

(25) Sam skipped. Sam jumped. Sam ran. ➔
(a) Sam skipped and Sam jumped and Sam ran. ➔
(b) Sam skipped, jumped, and ran.

Since (25b) does not delay resolution by the verb, as does (20b), it is probably less difficult to read.

To consider a different question, there is reason to believe that (26b) is more difficult for beginning readers than (26a):

(26) The squirrel ran up the tree. He chattered at the cat. ➝

   (a) The squirrel ran up the tree, and he chattered at the cat. ➝

   (b) The squirrel ran up the tree and chattered at the cat.

If (26b) is more difficult, as some research indicates. the deleted information must be helpful for beginning readers. One can see that if this series is extended, the subject might be forgotten:

   (c) The squirrel ran up the tree, chattered at the cat, quarreled with a
        jay, and worried about the boy.

4.5.3 *Comparing Elements in Series.* The difference between noun phrase and noun and between verb phrase and verb is illustrated in (27-30).

(27) A boy I know, a girl you know, and a man he knows walked on the
     beach. (noun phrases in series)

(28) Milk, eggs, and cheese were on the counter. (nouns in series)

(29) One guy coaches the team, plays quarterback, and argues with the
     referee. (verb phrases in series)

(30) One guy coaches, plays, and argues. (verbs in series)

The difference in difficulty in these is not in series structure but in the amount of information contained in the noun phrases and verb phrases as opposed to the noun and verb structures.

Which would seem to be more difficult for the young reader, the use of adjectives in (31) or (32)?

(31) The flag was red, white, blue, and green.

(32) The red, white, blue, and green flag was there.

It seems that complexities added to subjects prior to verb resolution are more difficult than complexities added after verbs. Again, this relates to information overload; it can be avoided by a helpful organization of the information.

The following example of adverbs (adverbial prepositional phrases) in series is similar in difficulty to a series of verb phrases:

(33) Jerry went into the house, up the stairs, and into her room.

A series of adjectives will be easier than a series of adverbials or verb phrases. The difference results no doubt from the fact that *be* is the tie to adjectives, while a lexical verb is the tie to adverbs. For example, (35) is probably more difficult than (34):

(34) The plane was long, dark, and beautiful.

(35) The plane flew up, over, and around.

The difference can be accounted for in a measuring device by not counting *be* and its forms as a lexical item. This would agree with modern grammars, most of which do not call *be* a verb but a type of marker that appears only in the surface structure of sentences. Consistent with this is the principle that "meaning" is generated in deep structure.

4.6 *Summary*. Because deletion reduces the clues to meaning, there is reason to suspect that deletion will add to the difficulty of a sentence—but it all depends. There is evidence for thinking that deletion adds to difficulty in the relative clause structure. On the other hand, in the passive structure, where deletion of the agent would seem to be significant, the expected difficulty probably occurs only in careless writing.

Deletion that results in items in a series produces a difficulty that can be measured simply by counting the lexical items in the series. But the items in a series may extend to indefinite length, obviously making a more difficult sentence. However, since they function as syntactic repetitions, the difficulty should be less than what we would obtain by adding each item separately. For example, how much more difficult is (37) than (36)?

(36) The girl packed her records.

(37) The girl packed her records, books, letters, notebooks, camera, and photos.

If we simply counted lexical items, (36) would total three and (37) would total eight. But (37) is surely not that much more difficult.

There is also the question of distance between subject and verb resolution. A series of noun phrases, nouns, or adjectives that increases this distance seems to be more difficult than a series that does not.

5.0 Substitution

As the name indicates, substitution is simply the replacement of one item by another in a given arrangement of items.

5.1 *Vocabulary*. The most obvious substitution type is the substitution of one vocabulary item for another. Synonyms and near synonyms may be substituted with little change in meaning but with a significant change in difficulty. Vocabulary is the main concern of traditional readability formulas, and it is demonstrably a major factor in difficulty. As our concern is syntax, we shall make only one more point about vocabulary: the student interested in word difficulty should examine carefully the work of recent linguists who, while studying the relationship between word and syntax, have learned a lot about the organization of meaning (see Bierwisch, 1970).

5.2 *Pronouns*. Pronoun substitution can be looked at as a problem in the distribution of forms according to the rules of standard English, as in:

(1) _____ told _____ to give _____ the money which _____ took from _____ sisters.

And as in the active-passive arrangement:

(2) She gave him the book.

(3) _____ was given the book by _____ .

(4) The book was given _____ by _____ .

Pronouns typically have referents or antecedents for which they are substituted, a condition which introduces at least three considerations into any account of pronoun difficulty: the clarity of the reference, the amount of material which interferes with the ease of the reference, and the difficulty of the referent itself. For example, compare the difficulty of the pronouns *he* and *it* in the following:

(5) John was disturbed by the problem, and he was determined to do something about it.

(6) John was disturbed by the problem that the police were having with the children on the block, and he was determined to speak to the alderman in order to do something about it.

In (6) there is simply a good deal of information between *John* and *he* and between *problem* and *it*; there is no ambiguity but the information load interferes with the ease of reference.

In (7) there is potential ambiguity. Even if the context clarifies the reference, the possible confusion between antecedents makes the reading difficult.

> (7) The boys threw the stones in the river. Then they rested there all afternoon.

Examples (5) and (6) illustrate pronoun substitution within a single sentence, in which case the difficulty results from the amount of information between the pronoun and antecedent. But the antecedent is often in a previous sentence:

> (8) John was disturbed by the problem that the police were having with the children on the block. He called the sergeant about it.

In this example, the difficulty can be explained only by looking outside the sentence in which the pronoun occurs; therefore, to measure difficulty of this kind, we would need a device that can go beyond the boundary of a single sentence.

Here is another question about pronouns: Is the difficulty of a pronoun the same as the difficulty of its referent? Offhand it seems reasonable, and in (9) it seems to be the case because, to understand *it* in the second sentence, the reader must understand the nominal beginning with *that*, which is the referent of *it*:

> (9) It surprised no one that the Germans, in that dark night of the age, would tear at so fragile a peace. It angered Harold, though.

But it is an absurd notion if *it* refers to a theoretical and complex preceding chapter in a book. The reader can process the *it* by knowing what is referred to; it is not necessary to be able to explain the chapter itself.

The question of pronoun difficulty is a complex one. Because of the above problems, there is clearly no simple, let alone accurate, way to measure the various pronoun uses.

In the formation of relative clauses, relative pronouns are substituted for a noun phrase:

> (10) The girl ran home. She was afraid. ⟶
>   The girl who was afraid ran home.

The pronoun *who* is substituted for *she*, the subject of the second sentence; then, along with the rest of that sentence, it is attached to *the girl*. Since the relative pronoun is attached to its referent, the subject, its use causes no difficulty.

But if the relative attaches to an object, normal word order is disrupted since the object comes before the verb:

(11) The girl whom you frightened ran home.

(12) The girl to whom you spoke ran home.

Until evidence proves otherwise, we can hypothesize that (11) and (12) are more difficult than (10).

5.3 *Wh-Questions.* Notice the words that are substituted to ask for information about the italicized parts of the following sentences:

(13) *The boy* ran. ⟶ *Who* ran?

(14) *The boy* ran. ⟶ *Which* boy ran?

(15) The boy *ran.* ⟶ The boy did *what?*

(16) The boy hit *the ball.* ⟶ The boy hit *what?*

(17) The boy hit *the girl.* ⟶ The boy hit *whom?*

(18) The boy ran *yesterday.* ⟶ The boy ran *when?*

(19) The boy ran to *school.* ⟶ The boy ran *where?*

(2C) The boy ran *quickly.* ⟶ The boy ran *how?*

(21) The boy ran *because he wanted to.* ⟶ The boy ran *why?*

This does not exhaust the list (we have not questioned adjectives, nor have we questioned adverbial types such as *frequency* and *duration*), but it illustrates the fact that each meaning-bearing part of a sentence can be questioned by substituting for it the appropriate question word.

Notice that the rearrangement here is typically an additional process, as when (19) is rearranged to *Where did the boy run?* Theoretically this produces complexity but again, the frequency of the construction counteracts much of the theoretical complexity. (Indeed, *Where did the boy run?* is no doubt felt to be normal word order, not rearranged word order.)

5.4 *Noun Phrase Substitutions.* It was under addition (3.10-3.14) that we discussed changing a sentence into a noun phrase, then adding it to another sentence by substitution. We discussed it there because addition seems to be the more fundamental process. Nevertheless, it may be substitution that produces most of the difficulty. The reader must not only process two sentences within the bounds of one, but must process one sentence as a subject, object, or complement in relation to a verb. Compare these:

(22) Jerry could see the problem.

(23) Jerry could see that reading was a problem.

(24) Who(m)ever he met could see the problem.

In addition to structural complexity, lack of frequent exposure to noun phrase substitutions makes the sentences difficult for beginning readers.

5.5 *The Verb Do.* The verb *do* has some grammatical complexity in the rearrangements of question and negative sentences:

(25) The car stopped. ⟶ Did the car stop?

(26) The car stopped. ⟶ The car didn't stop.

But it has great frequency and almost no semantic value, so in these uses it creates no difficulty in reading.

Another function of *do*, however, is to stand for a verb phrase, somewhat as a pronoun stands for a noun phrase:

(27) I will go to Paris if you do.

(28) Alex likes to watch football with a bag of peanuts in one hand and a Pepsi in the other; so do I.

In such examples, *do* has all the semantic value of the preceding predicate. And in (28) it gives the three-word sentence, *so do I,* as much lexical content as the nineteen-word sentence. As with pronouns (see 5.2) there is no way to measure this in terms of a simple sentence. Should it be given the same measure as the preceding predicate? Should it be given an additional measure because of the memory load?

5.6 *Summary.* The process of substitution is a syntactic device that typically produces difficulty for the reader; synonym substitution, pronoun substitution, and noun phrase substitution all create varying amounts of complexity in sentence structure. This is partly because all but vocabulary involve at least one other syntactic process. Pronouns involve deletion and rearrangement; wh-questions involve rearrangement; noun phrases involve addition; and *do* involves deletion.

6.0 Agreement

Agreement, or concord, is the grammatical term for the process of adjusting one word to conform to another when the rules of the grammar require it.

6.1 *Grammatical Agreement.* Languages show agreement in different ways among different grammatical elements. Romance languages inflect to show gender agreement. In English, there is agreement between subject and verb in the present tense *(the boy runs – the boys run)* and between some determiners and nouns *(this apple – these apples).* There are no options in these rules, and since most printed material conforms to the rules of standard English, there are no variations to consider in sentence complexity.

6.2 Most modern grammarians analyze metaphor as a legitimate violation of one kind of agreement. Metaphor is an important consideration in readability because it is significant in good writing and because it increases complexity by violating the reader's expectations. Nouns and adjectives have attributes such as *human/nonhuman, animate/inanimate, abstract/concrete* and it can be seen that in normal English a human noun should be modified by a human adjective; that is, the words should be in agreement in their attributes. Phrase (1) is normal while (2) is not:

   (1) a religious man

   (2) a religious mouse

It is the mixture of features human and nonhuman that gives (2) its humorous or metaphorical character. The metaphor is carried further in (3):

   (3) a religious chair

Furthermore, in normal English, verbs require different features of either subjects or objects or both. For example, how do the features of *chair* in (4) violate the requirements of the verb?

   (4) I surprised the chair.

Unless the metaphor is a cliché ("whispering breeze") the mixture of attributes is by definition unpredictable. For example, what words would be predicted in the slot below?

   (5) Jill's actions puzzled her_____ .

The best prediction is human nouns; the next best is animate nouns; a noun that is neither of these is highly unlikely and therefore a reading difficulty. Some

metaphors are not only unpredictable but nearly impenetrable ("green sleep drowned the mustached river"). Beginning readers will not encounter such wild language, but any metaphor that is novel to them is a difficulty.

Of course, metaphor is common in everyday language (rivers "run" and clouds "race"), and such examples should not be called a difficulty. True metaphor, however, is indeed a difficulty—a difficulty that might well resist all attempts at accurate measurement.

7.0 Easy-to-Read Syntax

The extreme cases of easy-to-read syntax are familiar:

See the dog. The dog is big. The dog is Susan's.

Susan likes the dog. The dog likes Susan. They play.

We can be glad that such syntax rarely appears beyond preprimer level, if it appears at all in recently published reading materials. Syntax of this type fails to develop comprehension skills because it fails to give practice in normal discourse and in normal syntax. Addressing the reader is an unusual device in stories of this kind; besides, the device is not exploited elsewhere in the stories, so reader involvement is not really gained. As narrative style it is unnatural, and even the child reader is aware of it.

The syntax, moreover, separates elements that naturally go together. There are different ways to compose the elements in the first paragraph, depending upon where the writer wants to focus. One simple way to do it would be: "Susan has a big dog." If our notions about syntactical complexity (or any rules of measurement for it) indicate that "Susan has a big dog" is more difficult than the above first paragraph, then our notions and our measurements are wrong.

The second paragraph is faulty for a different reason. To achieve simplicity it has omitted connectives. There could be *and* between the first two sentences and *so* between the last two sentences. The meaning of the first two sentences would be even more explicit if written as "They liked each other." Similarly the last sentence would be clearer as "They play together."

Truly easy-to-read syntax will be clear, so it will not violate old rules of clarity as oversimplistic syntax clearly does. It will facilitate the reader's perceptions by keeping words together that should be together. For example, modifiers (like *big*) will not be separated from their head words (like *dog*). It will not separate or disguise related elements by omitting connectives like *so, when, because,* or *if.*

Because oversimplistic syntax violates basic principles of clear writing, it would be fair to conclude that it is actually difficult to process. (One might argue that it is not more difficult for children, but taking this position obliges one to prove it.)

Principles of syntactic simplicity must not overlook principles of clarity in writing. And a device for measuring syntactic complexity will fail insofar as it indicates that oversimplistic syntax is easier than a clear rewriting of it.

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Another way of looking at this is from the view of the reader's expectations. If, as Goodman, Smith, and others have argued, comprehension involves making predictions and confirming them or disconfirming and revising them as one reads, then clear writing will give the reader clues for predicting correctly (and produce surprises only when appropriate). Therefore, writing that violates conventions is hard to read because it interferes with prediction making. For examples, consider late Joyce or Faulkner or Cummings.

Related to the question of oversimplistic syntax is that of "bad" writing. It would be useful (in teaching composition, for example) if our studies of readability included writing that violated logical thought, orderly relationships, natural sequences, clear references, ordered perceptions, and so on. Such faults result in hard reading, and a consideration of them would improve our judgments of what is appropriate syntax for children.

8.0 Applications

Trying some application activities will make the discussion in these pages more meaningful. Two kinds suggest themselves. One might try to develop a formula that measures some aspect of syntactic complexity. Anyone who does this will learn something new and interesting about grammar, something about clear writing for young readers, and something about readability formulas. Or one might try to apply an existing formula to a variety of texts in order to 1) evaluate the formula itself and 2) learn more about readability.

8.1 *Using a Syntactic Complexity Formula.* A formula has appeared in several places (Botel and Granowsky, 1972; Botel, Dawkins, and Granowsky, 1973) which, though it oversimplifies problems to say so, was devised basically by identifying as many of the elements of syntax as possible and rating them on a hierarchical scale. One might check this formula by using it on a variety of selections and comparing the results with the results of traditional formulas. (The syntactic formula, it should be remembered, claims only to be able to rank selections in the order of difficulty.) While doing this, one can note these ratings that seem questionable and those that seem to need revision.

8.2 *Analyzing a Syntactic Complexity Formula.* One might also examine that formula in terms of the analysis on these pages. Where are the two inconsistent? What could cause the inconsistency? (While answering these questions, one must remember that a formula is made for use; it can't be too complex or too cumbersome or too tedious, which means that it will almost have to oversimplify if it is to avoid these pitfalls.) Here we will make several comparisons, using them as examples of what might be found.

Notice that the formula has only a four-point scale (0-3) on which to pin all the elements of syntax. It was decided that a scale having more than four points would indeed make finer distinctions but that the gain would be offset by the burdens of using a more cumbersome instrument. Remember this problem in your evaluations: A precise instrument is desirable, but a usable instrument is essential.

8.2.1 *Verb Expansion.* To handle verb expansion (see 1.2), the formula assigns a 0 count to forms of *be, do, have,* and also to the modals *will* and *can,*

giving a 1 count to all other modals (*could, may,* etc.). So sentences (1) and (2) score the same 1 count in spite of the difference:

> (1) Tom should do the dishes.
>
> (2) Tom should have been doing the dishes.

Sentence (2) is clearly more difficult, but if a formula is to register the difficulty by giving (1) a count of 1 and (2) a count of 2 it will probably lead to more than a 4-point scale. Increasing the scale by a point for a good reason may do no harm, but if we keep finding reasons to increase the scale it will soon become unwieldy.

8.2.2 *Rearranged Adverbials.* The formula gives some recognition to re-arranged adverbials under "Special Handling," where it adds a count for adver-bials of manner or place that open a sentence. Comparing that with the description in 2.3 here suggests that the formula has oversimplified, perhaps drastically. Sentences (18) and (19) in 2.3, which are not uncommon, are unquestionably more difficult than sentences, otherwise similar, that open with the adverbial. (For more on this, see 8.3.)

8.2.3 *Nominalizations.* The formula gives skimpy treatment to important kinds of nominalization. Clauses used as subjects are given a count of 3, and exemplified by "The fact that . . ." types:

> (3) The fact that he eats is important.
>
> (4) That he eats is important.

But as discussed in 2.6, 2.7, and 3.10-3.14, nominalizations take different forms, function as more than subjects, and vary significantly in difficulty. For example, there is good grammatical reason to hypothesize that the extraposition trans-formation (see 3.13) is more difficult than (3) or (4):

> (5) It is important that he eats.

No doubt the refocused sentences (2.6, 2.7) are also more difficult:

> (6) What paved the street was a concrete mixer.

8.3 *Developing a Formula.* It is not hard to find faults like those in 8.2. Linguists are far from knowing all that there is to know about linguistic structure; and research into performance with these structures (although com-mon), is far from exhaustive. So the task of rating on a scale the numerous small differences among many syntactic structures forces one to make arbitrary decisions. One must then test each decision by checking its effect on the formula.

But it has not been claimed that the formula is without fault. It is a "directional effort," offered tentatively in the hope that revisions and competing

efforts will be undertaken. The rest of this section offers a few suggestions along these lines.

8.3.1 *Measuring a New Structure.* It has been pointed out under several topics (2.3, 3.4, 4.5) that basic sentence meaning is expressed in the subject-finite verb relationship. In simple sentences these two elements appear together at the beginning:

(7) The girls play hockey.

Anything that interferes with this relationship is a probable difficulty. Three obvious interferences are:

1) Initial elements (word, phrase, or clause) that postpone the reader's identification of the subject.

2) A string of subject modifiers between subject and verb.

3) Clausal or phrasal inserts between subject and verb.

The suggestion here is that this possibly is one of the more important aspects of syntactic difficulty, a suggestion which could be tested by constructing passages comparing the three variables above with one another and with other controlled aspects of difficulty. To illustrate, compare A, B, and C:

A

Jerome nodded. His head fell forward, and a smile spread
across his face. The bell, when it finally rang, did not disturb
him. That afternoon he missed baseball practice again.

B

Jerome nodded. His head fell forward, and a smile spread
across his face. The bell did not disturb him when it finally
rang. That afternoon he missed baseball practice again.

C

Jerome nodded. His head fell forward, and a smile spread
across his face. The bell finally rang, but it did not disturb
him. That afternoon he missed baseball practice again.

If testing indicates that the difference is significant, we will want to measure it. Of the three obvious kinds of interference, the second is probably harder than the first, and the third harder than the second. To complicate the measuring, perhaps the first has a long string of words, making it particularly hard, and the third has a short string, making it particularly easy. Can our instrument register these facts? (If it can, it will be hard to use.) Or must it arbitrarily rate the third as harder than the first, even though that may not be true in particular cases? (If it does, it will give us only gross results.)

8.3.2 *A New Research Objective.* Because readability formulas are intended to be used by nonexperts, they are designed to be easy to use. This means that somewhere in the analysis of a text great simplification occurs. Perhaps the count includes only sentence length and a graded word list, or perhaps the scale for measurement is very gross. Some kind of oversimplification is necessary if the formula is to have wide use.

But perhaps researchers should forget their concern for practicality, at least during their initial investigations. If they aimed for a technique that exhaustively analyzed readability, no matter how complex, they might hope to identify the crucial aspects of readability. When this task has been accomplished, and perhaps only then, researchers should begin to simplify, attempting to derive an easy-to-use formula that correlates with the original complex device.

8.3.3 *More Exact Measurements.* To illustrate what has just been said, we can look at a small part of the syntax of an English sentence. For example, we might examine pre- and postnominal modifiers, first identifying and comparing all the prenominals, then identifying and comparing all the postnominals, and finally comparing the prenominals with the postnominals. Look at sentences (8-10):

(8) The gentle sheep were in the field.

(9) The counting sheep were in the circus.

(10) The counted sheep were in the dream.

The prenominals in (8) and (9) show the more predictable relationship with *sheep*; in (8) it is attribute and subject; and in (9) it is verb and subject. But in (10) the subject is the object of the participle *counted* and it has a deleted agent; in other words, the source of *counted* is:

(11) The sheep were counted by . . . .

Thus the prenominal in (10) involves both a less predictable relationship and a deleted agent.

So far, then, we have two grades of difficulty on the prenominal scale, let us say 0 for the more predictable relationships in (8) and (9) and 1 for the less predictable relationship in (10).*

Then we do the same thing with postnominals, identifying the various relative clauses, full and reduced, that produce sentences like (12-23). Notice that (17) is ungrammatical and requires one more step to yield a prenominal adjective.

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*At some time we will have to consider ambiguity, perhaps by allowing 1 extra point for potential ambiguity, as in "Boring aunts can be fun," and 2 extra points for actual ambiguity.

(12) The kids who are there threw the bean bags.

(13) The kids there threw the bean bags.

(14) The kids who are playing in the park threw the bean bags.

(15) The kids playing in the park threw the bean bags.

(16) The kids who are friendly threw the bean bags.

(17)*The kids friendly threw the bean bags.

(18) The kids, who are a catcher and a pitcher, threw the bean bags.

(19) The kids, a catcher and a pitcher, threw the bean bags.

(20) The kids who were stopped by the cops threw the bean bags.

(21) The kids stopped by the cops threw the bean bags.

(22) The kids whom Mr. Denham taught threw the bean bags.

(23) The kids Mr. Denham taught threw the bean bags.

Among these (20-23) are probably the more difficult because, less predictably, the subject receives the action and because there appears to be a chance of perceptual confusion in relating agents to verbs, as in (21) where cops do the stopping and kids the throwing, although the sentence is not laid out that way on the surface.

With these postnominals we will want to assign different measures to full and reduced forms (if, in fact, deletion does add difficulty, which is by no means certain) as well as different measures to (12-19) and (20-23). We will also want to assign more difficulty to postnominals than to prenominals, at least to the postnominals appearing between subject and finite verb that cause the difficulty discussed in 8.3.1. Postnominals appearing after the finite verb might be scored the same as prenominals.

Can a formula register these differences? It is probable that adding a count to each instance of a postnominal will be clumsy at best. As an alternative we might express a comparison between a writer's use of optional structures, such as prenominals and postnominals. For example, writing that has three prenominal lexical items for every one postnominal lexical item is, in this respect, less difficult than writing that has one prenominal for every three postnominals. A proportional measure such as this will indicate not only difficulty but characteristics of style. To illustrate, paragraph A yields a 1/5 nominal score as contrasted with paragraph B, which has a 5/1 score.

A

Mr. Horvath, older than the tree by the door, had not left
his airless room for a week. Then Martha, a delightful,
charming, penniless, frowzy bag of bones, moved next door
and changed everything. It was love at first sight.

B

Mr. Horvath, older than the tree by the door, had not left
his airless room for a week. Then Martha, delightful, charm-
ing, penniless, and frowzy, moved next door. She was a bag
of bones who changed everything. It was love at first sight.

8.3.4 *Context and Readability.* In 3.16 we saw that an instance of difficult
syntax was not difficult in a clarifying context. All elements of syntax reside in a
context which may clarify or confuse. Indeed, most students will agree that
context is one of the more significant factors in readability, yet we are unable
even to begin to measure its effect.

By context we mean at least the following:

1) Genre presuppositions (news story, fiction)
2) Grammatical presuppositions (referential relationships)
3) Stylistic presuppositions (point of view, rhetorical devices)
4) Organizational strategies (logical structure, introductions)
5) Linguistic redundancies (vocabulary, syntax)
6) Subject matter (conceptual load)
7) Illustrations
8) Media
9) Setting

Any readability factor will be embedded in these contextual elements, some of
which are crucially significant. How can we rely on measuring a denotation of a
word when so many unknowns are so much more important?

One might study some aspect of context, say subject matter, by composing
passages that control vocabulary and syntax in the hope that the only variable is
subject matter. It is a research project that graduate students can conduct, and it
need not be publishable in order to provide insight and knowledge to all who are
in a seminar, including the professor. For a recent survey of new work in this
area, see Hittleman, 1973.

9.0 Conclusion

First, something positive. It is true that any syntactic measuring instrument devised today will have serious imperfections, yet chances are that it will be more valid than existing measurements of readability. In addition, such a device can be an important aid to anyone working with educational materials, for it will reveal a great deal of specific information about what is, and what is not, hard for the young reader to process, suggesting sequences of activities that will increase facility with hard-to-read material.

At the same time, we will be wise to remind ourselves of the fact that we know very little about readability. Even in our area of syntax (an aspect of readability about which we do know something) we are uncertain about many analyses, lacking in empirical data, amazed by the complexity and variety of elements, clumsy in our methods, and doubtful of our oversimple results. Moreover, when we attempt to qualify these results by considering some aspect of context, we are simply overwhelmed.

But awareness of ignorance has its own rewards, as usual. First, it can make us skeptical of mere readability scores, skeptical enough to no longer accept leveling by readability formulas alone. We should expect more if a formula is to be credible—consideration of vocabulary, of syntax, of content, of organization, and more. Second, awareness of our ignorance can strengthen confidence in intuition. If intuition is based on experience and knowledge of literature and language, we can reasonably claim that it is *only* intuition that incorporates all or most of these complex elements into the processes of judgment. Thus, the judgment of a good librarian, writer, or teacher is more reliable than the score of an oversimplified formula.

To sum up, we should be careful about formulas. But we should also continue to research all aspects of readability, with the object of learning something about it, not producing a usable formula. Readability research, even if it never produces an easy-to-use formula, will benefit everyone involved in it, increasing knowledge, sharpening intuition, and improving skills.

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