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KNOW YOUR READER

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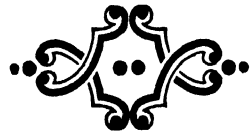
The audience fails to understand the writer because the writer has failed to understand the audience. —IRVING LORGE

KNOW YOUR READER

The Scientific Approach to Readability

GEORGE R. KLARE and BYRON BUCK



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To Judy and Justine

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KNOW YOUR READER

INTRODUCTION

THIS BOOK WAS REALLY WRITTEN long before we sat down to put it on paper. The two of us (the *we* you will often run into in this book) have long been interested in the statistical and psychological aspects of language. Out of our discussions came the realization of a rather unfortunate situation—this: that while the people who have spent time taking writing apart to study it in the laboratory have found much to report about it, they've done most of their reporting to each other and comparatively little has leaked out to those who work with the written word.

Hence, this book.

Writing is a large industry today, and, like any other activity widely pursued, it has a sizable literature of its own—writing *about* writing. To which *this* book, we modestly suggest, adds a new dimension, since much of it is writing about writing about writing.

Now there's one thing to be understood from the beginning. Reading this book won't make anyone a writer. All that's needed for that is a monk's self-discipline, a messiah's ability to accept criticism, a masochist's love of drudgery—and a little talent. Such things aren't acquired from books. This book *does* discuss research that has implications for every writer, however, and heeding these implications can help writers in two ways:

—To reach readers more effectively;

—To increase their operating efficiency.

There's another point we want to make here. It has to do with what we believe is the most basic and important quality needed in a competent writer. It could be said a dozen different ways, but it boils down to this:

SINCERITY

It's just the golden rule applied to the craft of writing. The writer begins by accepting the reader as his equal. The writer

doesn't look down on the reader, no matter how limited the reader's schooling. Naturally the writer knows more words and more patterns for arranging them than his reader does. The writer, after all, has spent much time working with words and patterns of words. His reader has spent this same time learning and plying some other trade and acquiring other knowledge which is just as important as the writer's verbal knowledge.

Even though a reader may not have highly developed word skills, though, he *can* tell when somebody is being patronizing toward him. Sincerity is easy to recognize, but insincerity is easier to describe. Here are some of the symptoms. Every reader is familiar with them although he may not have bothered to think up labels for them.

—Writing down to the reader.
—Hollywoodizing, or talking too loud to the reader.
—Talking to oneself rather than to the reader.
—Talking to nobody.

One more point that belongs in this introduction: most writing about writing is highly subjective. Its views are private ones offered to the public. Share them or reject them, as you like. That kind of writing about writing is plentiful. Any large newspaper carries a whole supplement filled with it each Sunday.

The writing about writing with which we're concerned is as objective as we can make it. It's the kind of information about writing that can be most helpful to all who work with the written word—writer, editor, or teacher.

1. WRITERS AND READERS

"Several weeks ago, in these pages, Stephen Spender, lamenting the decline of experimental writing, expressed a preference for the earlier work, among other writers, of Hemingway. It seemed to him that Hemingway, in his later books, had become too conscious of the public for whom he was writing. Spender's attitude is one with which I have no patience. A writer's business is to communicate, and the more people he can interest in what he has to say, the better, I think, he succeeds. I am very well aware that such an attitude exposes me, in some quarters, to the charge of philistinism, but that fact will not keep me awake at night. I can take some comfort, I think, from the realization that the books which have held their own through the centuries are those which have spoken to all men."

—J. Donald Adams
New York Times Book Review
October 5, 1952

With these words, Mr. Adams might well have been writing an introduction for this book. A writer's primary aim, he indicates, is to be understood. Stated another way, to communicate is primary; and to convince, educate, entertain, sway the emotions or provide artistic satisfaction can only be secondary. Not that these secondary purposes are unimportant, but people have been concerned with *them* for hundreds of years, whereas only in the last twenty-five years have any determined efforts been made to come to grips with the primary purpose of writing—communicating.

The purpose of this book is to provide writers with information that will help them to communicate. And here is where the reader comes in. Without the reader, of course, a writer *cannot*

communicate, but even when there *are* readers there is not always communication. And when there isn't, it's because the writer simply doesn't know his reader.

"Most writers think they have their audience in mind when they write," says Irving Lorge, one of the pioneers in readability research. "They claim that they think of the kind of people who read *True Story* or *The Saturday Evening Post* or *Harper's Magazine* or *The Scientific Monthly;* or that they think of miners, clerical workers, farmers. But the writers' concept of these audiences is vague." One example cited by Lorge is the materials published for farmers in twelve Central states by the Extension Service of the U.S. Department of Agriculture. A readability analysis of these materials showed that they ranged from easy fifth-grade reading to hard graduate school reading, and more than half of them would rate as *hard* reading for their audience. Many of the materials might as well not have been mailed for all the good they did their recipients.

It is not surprising that writers often fail to meet their potential readers, since the basis of their notions about "the typical reader," and about their *own* readers, is so shaky. The usual basis is hearsay, scattered opinions, or just simple guesswork. Consider, for example, how writers and critics disagree in their opinions of what makes a bestseller.

Arnold Bennett was among the first to attempt a description of the bestseller as we know it today. Bennett describes bestselling novels in such phrases as "grandeur of subject," "happy ending," "happiness rewards virtue," "emphasis on the colossal and gaudy," and "strong love interest."

Emanuel Haldeman-Julius, the little blue book publisher, is more concrete about what makes a bestseller: sex. Any reference to sex in the titles of his books almost always boosted sales, he claims. Johan Smertenko says the "herd instinct" among readers is the most important reason for bestsellers. He says readers accept the advice of popular reviewers in buying books. Publishers themselves don't generally feel that reviewers bring customers flocking to the bookstores. Many publishers feel that a thoroughly damning review is just as valuable for sales as a favorable one.

Granville Hicks believes the bestseller formula includes "a lively story, largely romantic in theme and setting, with conventional characters and plot; and some pretention to a message

or thesis, apparently profound, but really commonplace . . ." Thomas Uzzell says success depends on themes, with greatest success likely with the "Cinderella" theme of sentimental romance and the "Patient Griselda" confession story. Harvey Breit says sales vary directly with publicity, but also believes that sincerity and expertness in handling a story are important. This is a reasonable view, but the most valuable publicity of all, word of mouth, never can be measured.

So it goes. All defensible theses, but hardly sure-fire formulas for bestsellers. For a good overall view of the titles that *have* been bestsellers, the themes they've dealt with, and sales statistics, see Alice Payne Hackett's *50 Years of Best Sellers.*

We are not offering a best-seller formula. However, insofar as some of the opinions we've cited above lay stress on the reader they *are* touching on our subject. There is a great deal that writers can learn about readers; much more, we think, than writers realize.

For example, the more important characteristics (age, sex, educational level) that should be used in describing readers are known. So too are the reading interests of many specific groups of readers. The style of writing that readers find easy and the style that readers like (these two are very highly related) are fairly well established. Conversely, what makes writing difficult, and therefore not understood, is also known. Something has been uncovered, too, on the effect writing can be expected to have on readers.

All these things are important for writers to know. Not just future writers of best sellers, but all writers. The importance of effective communication can hardly be overemphasized. There is no exaggeration in the frequent statement that it is *vital* in a democracy. Perhaps no one other thing is so important to our way of life. Realization of this should serve to emphasize more than communication; it should give some notion of the value of writers who can most successfully achieve it.

This book is written chiefly for those who write for a living, i.e., professional writers. Chief emphasis is placed on information useful to the majority of professional writers. For that reason, we believe writers of nonfiction will find more of value here than writers of fiction, and writers for adults more than writers for children.

We don't have the *last* word on effective written communication, but we have tried to include the *latest* word. Much remains to be known.

Much of the material in this book is information based on what have come to be known as "readability formulas." Not all writers are even aware of the existence of such formulas. But among probably half the writers that are there is a suspicion of formulas that verges on hostility. This book is not an apology for formulas. It is, in part, an attempt to discuss them objectively, noting their advantages as well as their limitations.

We believe that formulas help a writer to meet his reader and that is the only reason we have included them. They are not, as one critic has pointed out, cookbook recipes for writing. They are for *rating* material, not writing it, and do not even measure *all* of the significant aspects of writing that should some day be rated. They *can* be overused, as many critics have said, but they certainly *need* not be. They measure only those aspects of writing that tend to make it difficult, not all those that are important in good writing.

Interestingly, though, most of the critics of readability formulas agree with the basic principle of formulas, that of achieving writing that the reader can readily understand. The fact that such critics have appeared is significant, for it shows how widely formulas have come to be used. "Who Cares?", Chapter 2 of this book, documents this wide range of application along with some of the results formulas have been found to give.

Chapters 3, 4, and 5 ("Beginning Concern for the Reader," "McGuffey vs. the Hornbook," and "The Reader Comes into His Own") tell the background for, and history of, readability research. As these chapters show, concern for the reader is not a new thing. Nor has interest in the matter been limited to the United States.

Certainly some of the more influential early books were not highly readable. Consider the writings of Chaucer, Spencer, and Milton. At least one critic has pointed to this as an indictment of the modern principles of readability. What this critic has done, however, has been to confuse *what* was said in these early books with *how* it was said. The great "plain style" writers had something equally valuable to say, and in fact were able to say it *directly* to readers rather than through the words of interpreters.

Even this critic declares his agreement with the purpose of read-

ability research, concern for the reader. In Chapters 6 and 7 ("Meet Your Reader" and "What Interests a Reader") we discuss the reader himself. This is a necessary step, for without some knowledge of the reader, the writer finds readability formulas of relatively little value. The reader cannot be met unless just who he is, and what he is like, is known. Nor can he be met if he is not interested. Just as writing should come before the use of formulas, so the reader should be considered before the writing. This does not imply bowing to him, it merely implies meeting him at least half way.

Out of concern for *our* reader, the professional writer, we have devoted Chapters 8, 9, and 10 ("Stix and Stones," "How to Make a Yardstick," and "Writing and Rating") to some technical background necessary to understanding formulas and their place in a writer's equipment. We believe many of the writers who are hostile to the idea of readability formulas actually have a prior dislike for numbers. "Stix and Stones" shows that statistics, which are used to build formulas, are only a kind of "everyday" numbers. "How to Build a Yardstick" shows how these numbers are used in actually developing a formula. It also tells what the many available formulas are like, which are best for particular material and where each can be found. "Writing and Rating" then suggests a method for their use.

Discussing rating before we discuss writing, as we have done in putting "Before You Write" and "Meeting Your Reader" (Chapters 11 and 12) after "Writing and Rating," was done so we could present the basic facts about readability all in one place. The material in these two chapters then comes from a number of sources, only one of which is readability work. "Before You Write" (Chapter 11) describes the preparation for writing. "Meeting Your Reader" (Chapter 12) follows with *some* of the aspects of style that make writing readable.

"Reader Effect" (Chapter 13) comes from miscellaneous sources, too. It discusses format and other matters in presentation as well as style. It is rather in the nature of a survey since not all writers need be concerned with such "editorial" matters.

Chapters 14 and 15 ("Formula Pitfalls" and "Art or Science?") take up formulas once more. "Formula Pitfalls" points out what can happen if the place of formulas is misunderstood and they are misused. "Art or Science" goes one step farther to show that, even when formulas are properly used, they leave unmeasured

many of the important aspects of readable writing and are therefore in no danger of making writing a science.

Chapter 16 ("The Future") takes a look at the trend of readability research today, and briefly surveys current research in branches of communication other than readability. It shows how communication has come to be regarded as an almost universal problem, in physical as well as social science study.

The appendices to the book contain supplementary data and demonstrations of readability measures applied to specific passages. The bibliography contains references to the published sources we used in writing this book. They are presented alphabetically by authors' last names, and are numbered consecutively. Whenever one of the sources is mentioned in the body of this book, it will be followed by its assigned number, in parentheses. This bibliographic method, while not quite as handy as footnote references for a first reading, is much handier for sourcebook use. Because we have included so many references, we felt the book might well serve in the latter way and thus justify this arrangement.

We have tried to document ideas that we felt our reader might want to explore further. Most of the rest of the material presented has come from unpublished studies, experiments, and surveys. The remainder, finally, has come from expert opinion and from our own experiences with writing.

A final word about our attitude toward writing is in order. We believe that writing well is an art. Because it is such a complex process, we believe it will always be an art. This book is not an attempt to make it a science, and we do not believe the use of readability formulas makes it a science, or should. We do feel, however, that holding this view should not prevent one from analyzing the elements of writing that can be meaningfully analyzed. We believe that such study can help to make writing better without making it mechanical or detracting from its artistic qualities.

The place for the writer to begin his study, as we have implied, is with the reader. Without knowing the reader and his interests the writer may well end up talking to himself—or to nobody. If he knows his reader, then he can write with some consideration for him. This does not mean throwing a sop to the reader. The writer who thinks of it in those terms plainly lacks the quality most important for good writing—sincerity. It means, rather,

differentiating between *what* he has to say and *how* he says it. The former may be complex and academic in nature, but the latter need not be.

We have tried to keep this distinction in mind in writing this book. Of course, for writers, few books can be expected to have more inherent interest-value than a book on writing. It is a general rule that material touching on a reader's occupation or profession stands near the top of his reading interests. Moreover, we have quite a bit of information about *our* likely readers, too.

First, we know that writers have a high level of education (some of them twelfth grade, but most of them college) compared to the general population, and therefore a high level of reading ability. The writer's professional preoccupation with words probably makes his reading ability even greater than that of non-writers of equivalent educational background. We know, too, that specialized information such as we shall present about statistics can be difficult to almost any reader unfamiliar with it, and have therefore tried to handle it with this in mind.

The second thing we know about our readers is that most of them are men. This has affected our choice of analogies and examples.

A third is that for our readers much of the material we have covered is controversial material. This is particularly true of readability formulas. We hope our handling of this material has been such that skeptics will give the whole matter a fair hearing.

Finally, we know something about the language of writers, and we have tried to use the appropriate idiom. All of these things are mentioned in Chapter 6 as important to a writer's knowledge of readers and we have tried to consider them in the way we have written.

To summarize, we have concentrated only on the kind of general information that can help a writer to meet his reader. We believe that every writer should be more concerned about whether he is communicating. That we have good reason to say this will be clear from our next chapter.

2. WHO CARES?

WHO DOES CARE whether writer and reader meet? Just a few writers here and there or a few readers, who are not very vocal anyway? A few professors, who if they weren't counting syllables would probably be doing something else just as unproductive? If there are some who care, do they care enough to do more than talk about it? If this business of readable writing, this emphasis on communication were just a fad, there would be little reason for most writers to give it more than passing attention. As we shall show, it is anything but.

Perhaps the best place to start is with educators and librarians. As we'll show in the next three historical chapters, concern actually existed long ago among a few writers. Present interest in the problem of readable writing, though, must be credited to the push given by educators and librarians and this is reasonable, since these groups are necessary middlemen between writers and readers. Then, too, they are large enough and vocal enough groups to effectively champion the reader's needs. And, finally, their efforts complement each other well, the educators speaking for children and the librarians for adults.

The task of the great army of school teachers in this country is in part directing the individual child to materials he can read and understand. Is this such a great problem? It doesn't sound as if it would be, but it is. It's no exaggeration to say that the questions that most concern educators today are questions that relate to the pupil's reading ability. Typical are such questions as how does literature influence the thinking of children, or how can you teach the same subject to all members of a class when their reading ability varies as it does in all classes. For instance, within one seventh-grade class the reading ability will often run from as low as second grade to as high as twelfth grade. These two ex-

tremes account for very few pupils, of course, but even so, the bulk of such a class will easily range over five grades in its reading ability—from pupils who can handle little more than the prose found in comic magazines to pupils who might voluntarily read an *Atlantic Monthly* article once in a while.

In fact, comic magazines, which run about fourth-grade in reading difficulty, constitute one-fourth of the total magazine reading of high-school seniors. Boys only, that is? No, girls as well—and there's practically no difference between sections of the country (189).

There are two reasons for this wide range of reading ability in any class. For one thing, the gradual democratizing of education over the years has made school classes less homogeneous than formerly. For another thing, the youngsters in most school classes are automatically passed each year—the quick and the slow. The statistical effect of this practice on the reading ability range of the whole class hardly needs comment here.

One approach to the problem of widely varying reading ability in the classroom has been to match reading material with reading ability. This aids the poor readers without penalizing the better readers.

Among the most important things educators have found is that children often dislike the classics because they are too difficult for the grade in which they are used (Allard, 1). Cutright, Halvorson and Brueckner (20) reported this for *Heidi* and Miller (126) for books awarded the John Newbery Prize for excellence. Readability formulas have encouraged educators to move such books to the grades where children *can* understand them. Children, as a result, take more kindly to the classics.

Educators have also found that books on various school subjects differ greatly in readability though used at the same grade level (Faison, 38; Mansour, 122; McClusky, 120). Even books on the same subject, history, and for the same grade differ considerably (Keboch, 90; Chase, 18; Robinson, 148). This has been noted even for beginning reading texts (Kearney, 89; Hayes, 80; Berger, 8), where it is particularly serious since such books must be neither so easy that they fail to challenge the reader nor so difficult they discourage him.

Related to this has been the feeling that books for leisure reading should be somewhat less difficult than textbooks for the same grade (Lewerenz, 107), and here again readability formulas

have been of much help in placing books. In the important area of international understanding, formulas have also pointed to the need for readable material. Michaelis and Tyler (124) found that UN publications were too difficult for high school students. As they say, this is unfortunate because such publications can be read by far fewer than half of our youth and adult population.

Educators have followed up this research and have used readability formulas to do something about the problem of reading difficulty. A large number of reports of formula ratings of books have appeared (nearly 150 by 1945, according to Painter and Franzen, 136), and many excellent "graded book lists" have been published. Among the more influential lists have been Washburne and Morphett's *The Right Book for the Right Child* (182), that included by Gray and Leary in *What Makes a Book Readable* (70), Rue's *Subject Index to Books for Intermediate Grades* (150), and Strang, Checkovitz, Gilbert and Soggin's *Gateways to Readable Books* (163).

These lists also illustrate the close alliance between educators and librarians, for educators Gray and Leary's list was actually for *adults* of limited reading ability, and librarian Rue's list was for *children*. Other evidence of collaboration was the formation in 1925 of the Sub-Committee on Readable Books of the Commission on the Library and Adult Education. Despite such joint work, however, librarians rather consistently emphasized adult work and educators children's work, as most reports show.

Among librarians most concerned with readability are readers' advisers (Flexner and Hopkins, 58, give an excellent account of their work). Their importance to writers should not be overlooked, since they are often asked to help potential readers choose among the many available books on a topic. Nor should their emphasis on readability scores as one of the important determiners of what the general adult reader can profitably read. A good basis for this point of view has been provided by a study of Waples (176).

Like the educators, librarians have gone ahead to use formulas to help them choose books. A good example, in addition to the joint work mentioned, is Fihe, Wallace and Schulz's book for adult beginners (44). We might say in summary that readability formulas have begun to play a large part in the selection of the books a child first reads as well as those he will read later as an adult.

This is becoming more and more true as use of formulas by textbook editors and publishers increases. Kerr (91) has presented a partial picture of such use, and we would like to amplify it.

As far as book publishing goes, measuring readability has concerned the textbook publisher more than the publisher of novels for several reasons. For one thing, the textbook publisher sells his books to teachers rather than the ultimate consumer. Teachers, being humans, often welcome the mathematical assurance that the books they're using should be easily readable by the children in their class. Teachers and school administrators have come to place considerable weight on the publishers' statements about the reading level of a particular book as indicated by readability formulas.

Any discussion of formulas and textbooks leads sooner or later to the boiled down classics. There have been many disparagements of them. It's an argument in which it's easy to be on the side of the angels because the angels make it clear to everybody which side they're on. The trend is away from using such adaptations, however, because, happily, educators and publishers today can offer the student any number of studies and books in place of simplified classics—stories and books written to the student's own interest level and background. Any librarian can give a teacher a list of reading material for classes that find *Julius Caesar* a complicated farce. *Julius Caesar* can then be used at a grade level where it will have more relation to the student's experience and background.

Magazine publishers, perhaps even more than book and newspaper publishers, have hit upon the principles of readability through intuition and experience. Anyone only indifferently familiar with publishing is aware of the phenomenal growth of the magazine in the last fifty years and its impact on the reading habits of the nation. If the front page of a newspaper is readable by only a few people, the funny papers at the back will still sell the paper to thousands of people. Magazines have no such sales insurance policy. Their readers are much more sensitive to the copy that's interspersed among the ads than are newspaper readers.

A few years ago, Flesch made a study of 10 years' editorial content of a number of magazines (121). His findings, interpreted in terms of the nation's reading ability, give a significant picture. He found that

—*The Saturday Evening Post* could be read comfortably by about 45% of the adult population.

—The women's service magazines (*McCall's, Ladies Home Journal,* and *Woman's Home Companion*) could be comfortably read by nearly 50% of the adult population.

—The *American Magazine* could be comfortably read by slightly over 50% of the adult population.

—*Modern Screen, Photoplay,* and three confession magazines could be read by 80% of the adult population.

Newspaper and magazine use of formulas has now become quite common, and many studies show the value of formulas. One investigation, this one by an advertising research consultant, Daniel Starch, brought to light some interesting information about the readability of ads. Using the first Flesch formula, he analyzed the copy of over 1000 ads 1/3 page or larger over a period of three years. He found that the three ads that got read most were, according to Flesch's formula, comfortable reading for nearly 80% of the population. The three that were read least, however, tested as comfortable reading for less than 35% of the adult population.

Again, Murphy (129,130), editor of *Wallace's Farmer,* found that increasing the readability of articles could increase their readership as much as 18 to 66 per cent. Feld (43) found a 20 to 70 per cent increase. Schramm (153) noted that a readable style might well contribute to depth of readership as well (i.e., how many paragraphs into a story a reader will go). Swanson (164) followed this with a demonstration that it can increase depth by as much as 80 per cent. A further study (not published) showed a magazine's circulation to be affected by its readability, with increased sales following the month after a more readable issue and decreased sales after a less readable.

Publishers of magazines and newspapers have been doing something about more readable writing, too (184,159), as have teachers of writing courses (51), and schools of journalism (3). Both the United Press (73) and the Associated Press (152) have hired readability consultants. And many newspapers and magazines have been rated for readability (159, Getzloe, 64), among the more interesting results being that the *Wall Street Journal* (14) is among New York's most readable papers and that the *New Yorker,* as pointed out by its editors (146), is written at grade level 7.7.

In related fields, too, formulas have been used. Two of these are newscasting (17) and public opinion polling (95,165). There is

no question: the agencies of mass communication care about readability, and enough to do something about it.

Industry cares, too. There have been a large number of studies of nearly all kinds of industrial communications. Paterson (138) and Paterson and Jenkins (139) have made readability analyses of information sheets given to job applicants at a factory. Industrial "house organs" (employee magazines) have been analyzed in this country (Paterson and Walker, 141) and in Australia (183); their close relatives, plant newspapers, have too (Raney, 145). Employee handbooks have been covered (Farr, 39; Davis and Hopkins, 26), and an interesting study made of readers' feelings about the readability revision of one of them (Knauft, 100). Even corporate annual reports (137) and financial reports (104) have been analyzed for readability, as have union-management agreements (171). The general tenor of these studies is that something *can* be done to improve too-often unreadable industrial communications. This applies even to contracts.

We could cite still other instances of industry's concern for readability, but need say no more than that almost no recent book in industrial psychology has failed to take some note of it. And psychologists, who have made many of the industrial applications of formulas just mentioned, in turn have cared enough to use the same formulas on their own productions. Stevens and Stone (162) analyzed psychology textbooks and published a critique of both the books and the Flesch formula they used. (Their study, incidentally, played a part in Flesch's subsequent revision of his formula; we'll mention more about this later.) Psychological tests, too, have been analyzed by Stefflre (160) and Johnson and Bond (86).

Johnson and Bond's study, since it was made to determine whether tests were sufficiently understandable for veterans, leads naturally into the concern the Armed Forces themselves have shown for readability. Most of this is actually a part of a greater concern, the most efficient use of "human resources." Chiefly as a result of World War II, experts began to realize again that manpower was perhaps even more important to an all-out effort than natural resources. The result has been sponsorship of human resources research both within the services and by contract with universities and other research groups. The Army, the Navy, and the Air Force now all have active programs designed to discover

ways people can work effectively, and it is plain here that a study of readability, and of communication generally, can be of value.

An example of Army interest in readability is an article by Stephenson (161) which advocates the substitution of "plain English" for needlessly difficult military lingo. The Navy has supported a number of studies in universities on language and verbal learning, including evaluative work on readability measurement (76).

The Air Force has gone farthest of the three into the problem of readability and communication. Several small manuals (*Gobble-de-gook or Plain Talk* (65) and *See the Light Before You Write* (155), for example) have appeared on the use of the Flesch formula and its value. A somewhat larger booklet, the *Guide for Air Force Writing* (72), presents information on the use of the McElroy "Fog Count" formula plus other tips on clear writing gathered from readability experts. An excellent comprehensive writers' manual is now also being prepared that devotes a rather large amount of space to several formulas and their proper use. Surveys and research studies on readability and related communication problems (34, 35, 143) have also appeared.

Yes, the Army, Navy and Air Force care. So, too, do other governmental departments. The Department of Agriculture (19) has made use of both the Lorge and the Flesch readability formulas in attempting to reach a maximum number of potential readers. The Civil Service Commission has used Flesch's formula on its reports (83), and Flesch himself (47, 49) has strongly advocated readability to other government writers, particularly those who develop government forms.

Clarity is vital to such forms, of course, since they *must* be understood by so large and varied a group of readers. Their technico-legal nature suggests that the law profession itself might well consider readability, too. Again a number of published reports show there is concern for the readability of legal language, both in the United States (6, 16, 37) and in Great Britain and the use of readability formulas has been advocated. Even now, several research programs are being considered in which formulas are expected to play a part. And since these programs will likely involve study of oral as well as written understandability, another area for application of formulas, the "listenability" of speech, suggests itself.

Formal speech (as compared to informal conversation) is very

similar to writing in style characteristics, similar enough so that readability formulas can legitimately be used to evaluate it. Chall and Dial (17) have shown this for newscasts, and Lorge (146) and Flesch for several famous speeches. Others (67, 78, 105) have shown it in a less direct way by comparisons of reading and listening comprehension of the same passages. Such comparisons have indicated, incidentally, that "easy" material is easier when heard than read, and difficult material more difficult.

We could mention still others, from hundreds of additional reports, who care about readability. Much more important, though, we feel, is to say that every writer should care. Many writers do; some of the reports we've mentioned in this chapter have been by professional writers. But many writers do not care, and we would like to point out what we know about why they don't, and why they *should.*

We believe there are about five reasons, each held by a certain group of writers, for the lack of concern about reaching readers. The first is simply failure to recognize the need for any concern. This holds for only a small group of writers; after all, a good writer is but an unusually perceptive "senser" and skillful recorder of people and things and their interactions. Yet too often a writer, particularly a beginning one, becomes infatuated with words to the point of losing his critical faculty. No one (certainly not a reader) can invade his private world. Or perhaps the writer fails to bear in mind that he is a master of words and most of his readers aren't. He tends to forget that for his readers he is as much of a specialist as a mechanic or doctor or physicist is to him.

Secondly, even writers who are concerned about reaching their readers don't always know how. They get bits of evidence here and there that their readers aren't satisfied, but readers can't tell them why or what to do about it. Perhaps a few say they don't understand, but most readers have no contact with writers and cannot even say this.

Thirdly, some writers are concerned for their readers and know how to reach them; but feel that to reach them they would have to stoop to them. This group of writers frequently uses such terms as "philistinism," "pandering," "self-expression," etc. They often have a sincere desire to educate their readers, but educate few because they reach so few.

Writers with no such ideal but sometimes related to this last group are those who find it too much trouble to try to meet their

readers. Writing to readers and yet avoiding stooping or writing down to them is a difficult job, as many writers have found. And without some knowledge of what their readers are like and what effect their writing has, it is an almost impossible job.

And, finally, some writers are concerned for their readers and willing to face the task of reaching them, but feel that to make use of what is known about how to reach them is to take the art out of writing. They may feel that readability formulas, for example, make writing a science, and a poor one at that. They usually dislike anything that looks mathematical, and they often see only what formulas overdo or cannot do at all. They feel that formulas are, and should be, alien to writers and writing.

That there are so many reasons characteristic of, by implication at least, so many writers suggests that maybe it is possible to be *too concerned* about readers. It is, but we hope that we shall have made clear by the end of this book that it isn't possible to get too much *information* about readers. We have tried to show in this book that ways of reaching readers can be taken to the extreme; this is particularly true of the use of readability formulas, our central topic. Most writers, though, may be found nearer the opposite, total unconcern. And this is why most of the book is devoted to what should be known about readers and some ways to use that knowledge in writing.

Curiously, even writers who have reached their readers often don't know why they have succeeded. As we showed in our first chapter, each critic seems to have a different reason or reasons why books become bestsellers. The only thing common to all is the lack of agreement. A careful study by Berreman (10) of the "economic" (non-style) factors that affect book sales puts them into an order of importance different from any one of the critics. He found that author prestige had by far the most importance, advertising somewhat less, and review wordage and favorability surprisingly little importance at all.

Of course, writers have very little control of these factors, so this knowledge is of relatively little use to them. What writers need to know is what it is about the style and content of a book that is important. Fortunately there has been an excellent study of this by Harvey (77). He took 44 of a large group of poor selling and best selling novels, arranged them in 22 matched pairs, and compared them. His technique of selection allowed him to keep theme, date of publication, and a large number of other factors

almost the same in each pair. In fact, his matching was such that one would have been forced to conclude, at time of publication, that each should sell about equally well.

Harvey then analyzed the pairs using as many major accepted style factors as he could, plus some he himself had devised. He found that he could pick the best seller out of about 77% of the pairs by noting that it was more readable (had a simpler style), had a more sentimental theme, had a hero who displayed strong emotion, and had a larger number of major characters toward whom the hero was affectionate. Perhaps the most important of these was readability, and it was among the easiest to discover and get a measure of.

What Harvey used to measure readability was the Flesch formula, one of those we shall mention later in this book. Such formulas are not magic, and are not complex. They can be used quickly and easily. But more important, they can give a fairly accurate picture of how many readers can understand a particular piece of writing. They do what a writer can do only with difficulty, and imperfectly. To put it another way, they do what a group of writers can often do together, but what very few can do alone.

We have a good illustration of this, a trial we made with a group of writers some time ago. We took five separate paragraphs whose difficulty had been determined by how many comprehension questions readers could answer after reading each. Thus we set up an order of easiest to hardest. We then mixed up the order and rated the paragraphs with two readability formulas. Both formulas put them into the same easiest to hardest order. Finally we mixed them up again and presented them to a group of about 20 writers to read and try to arrange in this order. We found that no writer put them into exactly this sequence by himself, but that all 20 writers did in consensus.

Readability formulas are, of course, a fairly recent development. Some writers have cared about readers and tried hard to reach them long before formulas were available. Just how long and what they have done makes, we think, an interesting chapter in the history of readability research generally. It is that story, carried to the point of how formulas came to be developed, that we will tell in the next three chapters.

3. EARLY CONCERN FOR THE READER

THE FLOOD OF BOOKS, magazines, newspapers, and other printed material that covers the world in this century tends to make all of us assume that everyone can read. That most of mankind is still illiterate, a fact brought to our attention from time to time, is simply a curious statistic that never fully sinks in. One forgets, too, that for thousands of years of our history reading and writing were cabalistic arts, whose practice was the prerogative of priests.

Limited as literacy is today, considering the entire globe, the spread of literacy in the western world in the last century has been precipitous. No longer the exclusive skill of high priests, the ability to read and write has become the foundation of Western Man's early years.

Even before the era of mass literacy, however, there were occasional efforts to increase the readability of written material. Perhaps the first instance of concern for the reader was in 900 A.D. when the Talmudists made word counts (114). They counted both words and individual ideas so that they could know how many times each appeared in their scrolls, and how frequently each appeared in an unusual sense (compared to the frequency of the usual sense). A scientific approach to readability, however, was to wait for many centuries.

During these centuries, our own language was going its way, its prose branching into a number of different styles, according to the author and the century. Some of the things that happened to it are important in connection with measuring readability today.

For nearly three centuries following the Battle of Hastings

(1066), English was confined to the kitchen. By the end of these centuries, most of its purely decorative linguistic paraphernalia, such as case endings of nouns, personal endings of verbs, and special pronoun forms to designate two people as opposed to three or more, had disappeared. Its word order had become fixed, so that if you wanted to say, for example, "Old Alfred saw young Ethelred in Ludlow and had dinner with him at the inn," you had to say your words in that order. Whereas in Latin, and to a considerable extent in earlier English you could have shifted them around a number of different ways without changing your meaning by more than a slight nuance. The endings you tacked on to different words would have indicated the way in which the words depended on each other, and hence have fixed the meaning of the whole sentence.

This dependence on word order to determine the function of a word and to fix its meaning, and the loss of the inflectional endings made English more flexible than any other European language in one respect, the way in which you can make many words in the language function variously as nouns, verbs, adjectives and even other parts of speech. You can *stone* someone, throw a *stone,* or live in a *stone* house. Mathematically, the possibilities for such flexibility are tremendous. Traditional usage and a native's feeling for words are another thing however, and impose limits. Even so, English far surpasses, say, French or German in this particular type of flexibility. What this means in terms of communication is that you can say more with fewer words.

English never had been much of a vehicle for cosmic thinking, and after three centuries in the kitchen, English wasn't quite up to the language tasks the great hall required of it, to say nothing of the demands that law, commerce, and the military made on it. So it began to borrow words, and continued to borrow words, and has been borrowing them ever since, from every language on the globe.

This borrowing cannot be judged as a good or a bad thing; it simply happened. Some borrowing had taken place even in early Anglo-Saxon times, particularly of religious terms, but the tendency then had been to translate a Latin word into native English elements rather than to take over the word bodily. In German, for the sake of comparison, the tendency to translate foreign words into native elements or to use native elements in coining new words has prevailed. English has taken over with only minor

spelling changes such Latin words as *influence, superfluous, suicide.* German, on the other hand, has translated these words literally into such homespun terms as *in-flowing, over-flow-y,* and *self-murder,* these representing the way the words break down in Latin (66). English has gone to the classical languages for elements to manufacture such words as *automobile* and *millipede.* The German language has managed with *power-wagon* and *thousand-footer.*

There's an interesting but uninvestigated implication to this. An English-speaking person, to break through the barrier that sets apart the world of scientific or professional specialization, must learn another language. A German can manage pretty well with his mother tongue. True, most of the international vocabulary of science occurs in German, but the proportion of Latin-Greek science terms to native terms will be much lower, generally, than in English scientific writings. While the matter has never been investigated, it seems safe to assume that whatever ease of readability German gains through a larger native-elements vocabulary it loses through inordinate sentence length.

In communication terms, this constant taking over of words means that there are more words to use, naturally. Our extensive borrowing from Norman, Latin, and Greek has resulted in many pairs of more or less synonymous terms composed of one word of Anglo-Saxon origin and the other of French or Latin. Gurth and Wamba's chat—remember *Ivanhoe?*—about *swine-pork, sheep-mutton, cow-beef* comes to mind in this connection. Other examples are *go-proceed, leave-depart, stream-river, child-infant, reckon-count, meal-repast, dog-canine, sweat-perspire, woods-forest, road-street, folk-people, town-city, corn-grain, body-corpse, ghost-spirit, death-demise, god-deity, break-rupture, feather-plume, bloody-sanguinary, wise-sapient, household-menage, womb-uterus.* The list could be extended for pages. Taken as a group, these borrowed words (the second in each of the foregoing pairs) are usually, but by no means always, less frequent than their Germanic counterparts. They came into English at different times and for different reasons. Some have expanded their area of meaning considerably since they came into the language. Others have become more limited and specialized. Most of them are less concrete than their Germanic counterparts, and, probably for that reason, have a more learned ring to most ears. The result, in any event, is a richer vocabulary.

Theoretically many synonyms mean that a writer can convey finer shades of meaning, be more precise. As everyone knows, it doesn't always turn out that way. The direct and common word is too often passed by in favor of a more elegant sounding synonym—elegant sounding to the writer that is; confusing and perhaps a bit precious to the reader.

This is not to say that French, German, Russian, or even Chinese have few synonyms. In every language there are words that sound a bit more high-brow than any of their synonyms, but English is by far the richest in this respect.

In the six centuries since English came out of the kitchen it has become the vehicle of the greatest body of poetry ever written and perhaps of the greatest prose, although some claim this for the French language. It has had a great diversity of literary styles, yet no style has ever become frozen, to serve for all times as *the* literary style, as happened in Chinese. In fact, the greatest divergence in style ever reached in written English was during the Elizabethan period.

John Lyly, playwright and novelist, developed a style famous for its intricacy and its concern with form at the expense of content. Stylistically it was a tour de force. By the same time—the second half of the 1500's—a straight reportorial style had developed among people whose *only* use of language was as a means of communication, a style free of embellishment.

Here's an example of each of these styles. The first is a passage from Lyly's *Euphues;* the spelling has been modernized.

> "There is an Isle lying in the *Ocean* Sea, directly against that part of *France,* which containeth *Picardy* and *Normandy,* called now *England,* heretofore named *Britain,* it hath *Ireland* upon the West side, on the North the main Sea, on the East side, the *German Ocean.* This Island is in circuit 1720 miles, in form like unto a triangle, being broadest in the South part, and gathering narrower and narrower till it come to the farthest point of *Caithness,* Northward, where it is narrowest, and there endeth in manner of a Promentory. To repeat the ancient manner of this Island, or what sundry nations have inhabited there, to set down the Giants, which in bigness of bone have passed the common size and almost common credit, to rehearse what diversities of Languages have been used, into how many kingdoms it hath been divided, what Religions have been followed before the coming

of Christ, although it would breed great delight to your ears, yet might it happily seem tedious: For that honnie taken excessively cloyeth the stomach though it be honey."

That's by no means an extreme example of Lyly's style, but it has most of his trademarks—the labored figures, word balanced against word, phrase against phrase and clause against clause. Contrast that with the way Captain Hawkins described one of his voyages. The passage is from Hakluyt's *Voyages.*

"The ships departed from Plymouth, the second day of October, Anno 1567, and had reasonable weather until the seventh day. At which time, forty leagues north from Cape Finisterre, there arose an extreme storm, which continued four days, in such sort, that the fleet was dispersed, and all our great boats lost; and the *Jesus,* our chief ship, in such case as not thought able to serve the voyage. Whereupon, in the same storm we set our course homeward, determining to give over the voyage. But the eleventh day of the same month, the wind changed, with fair weather; whereby we were animated to follow our enterprise, and so did, directing our course with the islands of the *Canaries,* where, according to an order before prescribed, all our ships before dispersed met at one of those islands, called *Gomera,* where we took water, and departed from thence the fourth day of November, towards the coast of Guinea, and arrived . . . etc."

A bit wooden, one might say, yet there's no room for confusion. The content is passed out in convenient bite sizes which can be digested on the spot. There's no holding in your cheek a phrase that can't be swallowed till you've chewed and swallowed several others. Of course there never *has* been a time in the history of English prose when ships' logs and belles lettres were written in the same idiom and in the same rhythm, but never again since the time of Lyly has the disparity been quite so great.

Graves and Hodge (68), writing about the style in Hakluyt's *Voyages,* have this to say: "This plain style was considered suitable for merchants, artisans, seamen, farmers; the florid and polished styles of rhetoric were reserved for the governing classes. This separation of styles by class distinctions did a great disservice to prose. The habit of making a rigamarole out of sentences that could and should be quite simple, or imposing an artificial pattern on them, is one of which educated writers have never for long broken themselves."

There was another factor that reinforced this distinction between the style of the educated and that of the uneducated, a factor that doesn't exist today. The university men were greatly influenced by the classical Roman writers, both in the original and in translation.

The style developed by John Lyly in his two Euphues novels, the Euphuistic style, was borrowed from a courtly Spanish romance that had been translated into English. In their day Lyly's two novels were extremely popular, and his style enjoyed a tremendous vogue and was much imitated. After a few years, however, Shakespeare as well as others, who had begun by imitating the style, were parodying it. It's not difficult to hear the echo of Lyly in the speeches of such characters as Dogberry, for instance, a sort of Keystone Cop in *Much Ado About Nothing,* who talks as he fancies people of loftier station than his must talk. "Write down that they *hope* they serve God (He's speaking as the judge at a summary trial); and write God first; for God defend but God should go before such villains! Masters, it is proved already that you are little better than false knaves, and it will go near to be thought so shortly." Taking off on people that use fancy language has been a stock comedy device ever since.

On the positive side, Lyly has been given credit for bringing structure to English prose. As a writer he exerted too great an influence on the language of his contemporaries during the creatively most fertile period of English not to have had some lasting influence.

A century before Hakluyt, Sir Thomas Malory wrote a very popular romance about King Arthur and the Round Table. Perhaps its popularity was due to the simple prose in which it was written. It shows a marked preference for short native words to the more elegant Norman loan words.

In the century following Hakluyt's sea captains, the plain style continued to gain ground. It suited the needs of Francis Bacon's scientific writing in English (a comparatively small quantity, actually; he used Latin for the most part). In its early days science dealt with fairly simple observations. A simple, narrative treatment served the scientist. The style we identify with the sciences today was a later development. In the same century, the 1600's, Thomas Hobbes wrote his *Leviathan* in a style that has been described as "naked, precise, mathematical." John Bunyan, in writing the second-best seller of all times, *Pilgrim's Progress,* used

as unadorned a style as any writer could. And in 1670, John Eachard, vice-chancellor of Cambridge University, wrote a book addressed to the clergy in which he decried the ostentation of pulpit vocabulary: "As if plain words, useful and intelligible instructions, were not as good for an esquire or one that is in commissions from the king, as for him that holds the plough or minds the hedges."

Following these people came Pepys, Swift, Berkeley ("I am willing to be understood by everyone"), Dryden, Southey, and Thackeray, to mention the outstanding writers in the plain style tradition.

We have discussed elsewhere the statistical approach of Sherman to the history of English prose style. For an interesting treatment of the same subject from a more subjective approach, see Graves and Hodge's book (68).

In the next chapter we'll discuss the pioneer readability research of the last half century in the U. S., but before we do we'd like to tell about the significant efforts in other countries to make language more readable by the masses.

Of course, exhortations against verbal cloudiness are as old as the Bible and the trick of being deliberately obscure is very likely much older. But when we speak of genuine concern for the reader we can't go back much farther than half a century. The scientific work on readability in the U. S. was actually anticipated elsewhere. In 1889 N. A. Rubakin, a Russian, made a comprehensive word-frequency study in over 10,000 manuscripts (letters, accounts of personal experiences, etc.) written by soldiers, artisans, and farmers. From these manuscripts he compiled a list of 1500 words which, he concluded, were understood by most people. Rubakin's main interest was to see what could be done to develop literature for the people. He decided that the chief hindrances to readability were 1) unfamiliar vocabulary and 2) excessive use of long sentences. He made no attempt to analyze this second element, however (114).

In 1925 the Red Army had finished a big literacy drive but a large portion of the army still couldn't read most adult materials. In consequence, the Russian government made an effort to provide simple readable materials based on adult interests.

Another effort outside the English language to make material readable for the masses was the work of James Yen (191). In 1918 there were some 200,000 Chinese laborers along the Western

Front. They had been brought in to do work ranging from digging trenches to working in factories. They were illiterate, and Mr. Yen, a Chinese from Yale, assigned to help these people, soon found that he was spending a great deal of his time writing letters for them. Then he hit upon a most unusual idea—teaching them to read. From the viewpoint of our own culture, this would seem like the obvious thing to do, but in attempting to teach peasants reading and writing, Yen had to combat the lethargy and conditioning of centuries as well as the deep-rooted suspicion of the peasants themselves. Remember that in terms of the entire personality the ability to read is actually one of the less significant differences between the literate and the illiterate. In their outlook on the world they are separated by thousands of years.

By analyzing the letters the coolies wrote, Yen compiled a list of about 1000 characters selected from the more than 40,000 characters in the language. This list provided a working vocabulary that would meet the correspondence needs of the coolies. He began with a small group, but the word spread, and by the time the war ended, there was a group of literate Chinese coolies in France with nothing to read. Yen started the *Chinese Laborer's Weekly* which was written in the 1000 characters. Through this newspaper he was able to keep the coolies informed about the peace conference.

From this simple beginning grew the most remarkable mass education movement of this century. When Yen returned to China he continued his task with great enthusiasm. He organized a well publicized campaign and established a number of schools for adults. By 1937 there were 80,000 graduates of his people's schools, and by 1943 there were 27 million Chinese who had been taught the 1000 characters.

This mass education movement was a project in which Chiang Kai-Shek himself became greatly interested. During the bombing of Chunking by the Japanese the general ordered that the building of Yen's National College for Training Administrative and Technical personnel must go on.

In developing his movement in China Yen ran into a difficulty he had never anticipated when he was teaching coolies back in France—getting Ph. D.'s to operate at the level of mass comprehension. Many times he had to remind them of Paul's "Except ye utter words that are easy to be understood, how shall it be known what is spoken?"

But there were other scholars who *were* willing to speak to the people. Even before Yen's movement a few scholars, among them former Ambassador to the U. S. Hu Shih, had defied the tradition of their class, which was to write only in classical Chinese. They began writing books in Pai-Hua, the language of the people.

In Japan, too, there have been some significant developments in recent years, developments that will have a far-reaching influence on the readability of materials written in Japanese (33). Japanese, incidentally, has actually three systems of writing. The oldest system consists of the Chinese characters that have been used for centuries. In addition to that, there are two different syllabaries, and in recent years there has been a movement to switch to the Roman alphabet, as Turkey did in recent decades. To be able to read and write his language well—forget the Roman alphabet for a moment—a Japanese pupil has to learn about 1500 Chinese characters plus two syllabaries. (A syllabary consists of a character to represent each different syllable, whereas an alphabet consists of a character to represent each different sound. To write the four syllables *pan, pen, sip, sup,* requires seven different characters in our alphabet. A syllabary constructed for our language would have one character to represent each of them. The phonetic structure of Japanese is simple, however, compared with English. A syllabary of fewer than a hundred characters takes care of the whole Japanese language. A syllabary constructed to accommodate English would run to many thousands of characters.)

Some of the changes brought about since World War II have affected only the characters used in writing. In 1949 the Japanese government approved a series of simplifications in writing the more complicated Chinese characters. Furthermore, new Japanese typewriters, much simpler than the older ones, have dropped many of the Chinese characters. They force the typist to improvise from the syllabary characters or the Roman letters, which are also on the typewriter. This simplification has been sponsored by the Tokyo Chamber of Commerce and Industry, which has set up a Typewriter Simplification Committee to standardize the simplifications. In addition to this, the use of the Roman alphabet is spreading. Millions of textbooks have been printed in the Roman alphabet and in 1950 nearly half the high schools and over four-fifths of the elementary schools gave instruction in Romaji, as it's called. Its advantages are, of course, that it makes

the pupil's and teacher's job much simpler and that it makes the tremendous international vocabulary of science immediately available to the Japanese language.

Concurrently with the simplification of writing came an even greater break with tradition—the adoption by official decree of colloquial style, which is understood throughout Japan, in preference to the stilted literary style used previously. The 1946 constitution was written in this colloquial style, and in 1949 the Japanese cabinet approved a report, *Improvement of Official Phraseology*. This report is now the standard for official documents. It was the basis for two subsequent publications of the Japanese Ministry of Education, *Improvement of the Language for Official Use* and *Form of Writing Official Language*. An interesting footnote: among the changes advocated by the report was writing horizontally from left to right, as we do, rather than the Chinese way. The advantage to be gained here isn't clear. Our horizontal left to right way of writing is simply a convention and no more psychologically right than any other way.

Democracy in language is much more than a fad. Not only are people being brought to the written word as literacy increases throughout the world, but the written word is being brought much nearer to the people.

4. McGUFFEY vs. THE HORNBOOK

In 1647 Massachusetts passed a school law that is now regarded as the parent of public-school education in America. It required every town of 50 to 100 families to appoint a teacher who should teach any children who came to him to read and write. This teacher's wages, the law provided, were to be paid either by the parents of the children or "by the inhabitants in general." Towns of a hundred families and up were to set up a grammar school (to prepare pupils for Harvard) on the same basis.

Between that small beginning and the millions of dollars spent annually for public education today is an interesting chapter of our nation's history, the story of the development of public education. During these three hundred years, arts that had been passed along to the privileged few of each generation became the birthright of the many.

In retrospect one thinks of this transition as inevitable and simply one aspect of a larger historical development. But to the people watching it happen it didn't always seem the most worthwhile trend.

The whole story is a long one. We're concerned in these few pages only with the part of it that anticipates present day readability research. For a much fuller account than that given here, see the industry report *Textbooks in Education* (166).

Saving Everyman's child from illiteracy was a different job from teaching the sons of merchants to read the Scriptures. It required different tools. The New England colonial child learned to read from the New England Primer, the psalter, and a hornbook. (This last was a crude paddle-shaped device with a piece of paper glued to it and a thin piece of transparent horn secured to the paddle to cover and protect the paper. On it were written the alphabet and the Lord's Prayer.)

The situation improved some, but not much, over the next two hundred years. The child struggled as best he could with the books available. Most of what he read was Scriptural or at least moralistic.

Probably the greatest concession made to the pupil before 1800 was Noah Webster's speller, the first spelling book ever published based on American rather than British usage. (The Webster spellers, incidentally, are still used in a current edition.) It wasn't till 1825 that a full series of readers, graded in reading difficulty, was produced (not by McGuffey, but by one of his antecedents—Lyman Cobb).

During the next several decades there was a phenomenal expansion in the writing and selling of textbooks. In 1836 the first two of the now famous McGuffey Eclectic Readers were published in Cincinnati. By now, Allah was very definitely going to the mountain, for these books were a departure from the traditional reading material offered pupils in two respects: (1) their content was secular and (2) they were "graded" in vocabulary and reading difficulty. The first factor, too, is significant. The schools of New England had been church schools. In the West they were nonsectarian.

The impact of the McGuffey Readers on American school children for over half a century is generally realized. As it turned out, any story or poem included in these readers became thereby a part of the cultural background of an entire generation. It's only because the McGuffey books were so outstandingly successful that their lesser, but still very successful, contemporaries have been obscured. Samuel G. Goodrich, for instance, wrote and published 84 textbooks covering the entire curriculum, many of them under the pseudonym by which he is best remembered—Peter Parley. William Swinton was another of the prolific writers of his day; likewise Jack Derman Steele.

In summary, to quote *Textbooks in Education,* "The first one hundred and fifty years of the story of the textbook in America is primarily the story of three publications: *The New England Primer,* Webster's *Speller,* and McGuffey's *Readers.*"

So much for the part public education played in the growing need for readable writing. The role of education, though an important one, was only one of many contributing roles. Adult education is also in the picture. But before we consider adult education further, we'd like to go into the early story of readability research itself.

A good deal of early literary criticism was devoted to comparisons of the "ornate" and "plain" styles among writers. In searching for the factors that made styles different, L. A. Sherman (157), Professor of English Literature at the University of Nebraska, chanced upon the study of sentence length. No writer before the time of present-day readability work has spoken so prophetically of it.

Sherman began about 1880 to teach English literature historically and found himself drawn to a study of the difference in form of early prosaists (More, Hooker, Lyly, etc.) and the approved stylists of his day (De Quincey, Macaulay, Channing, Emerson, etc.). He felt that an analytic description of style, insofar as possible, would help point up differences and aid him in his teaching.

Sherman first became interested in sentence study when he found that the punctuation of early writers was often false to both form and sense. Punctuation was relatively new because writing (as opposed to speaking) was itself new, and in the developmental stage. Perhaps we should say printing was new; printing is perhaps the more important here because with it came an increased desire to standardize punctuation in its most effective usage.

Punctuation itself was secondary in importance to Sherman, however, for he became more interested in sentences themselves. He had noticed what seemed a progressive shortening of sentences from the earliest writers down to his time, and it was this he wanted to analyze objectively. He began by counting average sentence length per 100 periods, taking samples from various authors.

He found an average sentence length for the early period (i.e., that down to Elizabethan times) of 50.14 words. This was based on study of the works of Chaucer, Fabian, Ascham, Spenser, Lyly and Joseph Hall. Then he analyzed samples of the works of De Quincey, Macaulay, Channing, Emerson, and Bartol, and found an average of 23.53. Sherman was thus able not only to confirm his impression that sentence length had decreased, but also to say how much. Analysis of a large number of other authors showed that arrangement in order of shortest average sentence length used put them in very nearly chronological order.

There were exceptions, of course. While Chaucer averaged 40.48, More and Lyly (*Euphues*) went up to 52.72 and 52.22

respectively, almost as high as Fabian (60.30) even though his works were written before 1512. Hooker (44), Bacon (28), and Bunyan (37.50) were low, but Milton (60.80) was very high. Generally though, the tendency was highly consistent.

Sherman felt that Macaulay was the real leader of the trend toward more readable sentences. His rule seemed to be "One mind-full at a time for an author, and the same embodied in each sentence for the reader." And as Sherman points out, the *History of England* was written "with the deliberate and conscious purpose of being immediately intelligible to the humblest reader."

Throughout Sherman's studies he equates shorter sentences and readability and he feels that this movement in English literature was toward a universally best style. We might point out here that recent work on readability is in substantial agreement. Almost every study points to the importance of sentence length in affecting how well writing can be understood. Almost every readability formula uses this as one of the measures to be calculated, and in fact it is used in more formulas than any other single measure.

Sherman's further work provided still other important background for today's studies. He found, for example, that writers as far back as Hooker are remarkably consistent in the sentence lengths they use. By taking a number of samples of each writer's works, he found, for example, that Macaulay was consistent at 23— words per sentence and Channing at 25—. He also found this to be true for an individual whose works cover a fairly broad range in time, and for such a person when *all* of a particular work was analyzed (e.g., Macaulay's *History of England*).

This consistency is important for the study of readability since it suggests the use of samples instead of an entire work. Readability formulas of today make use of this, since sampling is suggested for their use, too.

Another background point uncovered by Sherman was that sentence complexity has decreased in much the same way as length. Hooker, for example, used only 13 per cent simple sentences in his writing, while Macaulay used 41 and Emerson 46 per cent. Related was Sherman's finding that sentences began to be cast in direct, pictorial form rather than symbolic or abstract form. (Again, percentage of simple sentences and concrete rather than abstract writing have since been considered in readability formulas.)

Sherman pointed out still another trend in the development of readable sentences. He felt that the increased readability of the modern style is due largely to writing "as one speaks" (here again today's writers on readability are in agreement). He noted that the early poets from Chaucer on, with the exception of Milton, wrote thus. Oddly enough, these same poets, "when they lay verse forms aside, write almost unreadable prose." Today the situation is reversed, for prose writers have overtaken and perhaps passed the poets in readability. Certainly, according to Carl Sandburg, this is true in the case of the many modern poets who have gone in the direction of deliberate obscurity.

Sherman refers to such unnecessarily difficult writing as "heavy," and is careful to point out that "weighty" meaning need not be written in a heavy style. In fact, as he points out, heavy compositions very frequently do not contain meaning of much weight. Too often critics of readability try to equate heavy writing with weighty meaning. The two may go together, but that they need not is nowhere better illustrated than in the early and heavy compositions of high school and college students. Or, as Sherman points out, "Bacon was a contemporary thinker surely not less profound [than Hooker], though the *Essays* can be read by anybody. Emerson was as philosophical as Sir William Hamilton, but the plain people of his parishes understood him."

Sherman is careful to indicate, too, that his work is based on *average* sentence length. He notes that Emerson had many sentences three to ten words in length, but does not feel the trend is to sentences *averaging* three words. Too short sentences, he says, result in disjointed, staccato writing; variety in length is the best solution, using short sentences for emphasis. Again a point for critics of readability formulas (and enthusiasts, too): readability does not, and should not, imply the shorter the sentence the better. Variety, rather, should be retained, with a short *average* sentence length.

Perhaps most important of all the points made by Sherman, however, is that the reader must be recognized. He says, "The styles of those who, like Newman, address the educated exclusively, will not be heavy to their proper public, though unintelligible to common readers." Of "the universally best style," ". . . [it] is not a thing of form merely, but must regard the expectations of the reader as to the spirit and occasion of what is written. . . Avoiding book-words, it will use only the standard terms and ex-

pressions of common life . . . It will not run in long and involved sentences that cannot readily be understood. Correct in all respects, it will not be stiff; familiar, but safely beyond all associations of vulgarity." Readable writing could hardly be better defined.

Not many writers were able to indicate quite so clearly the direction readability work should take. But there was at least one other besides Sherman—H. D. Kitson, the psychologist. Kitson (93), unlike Sherman, was more interested in writing's effect than in writing as a study. But he shared with Sherman the feeling that the basic purpose of writing is to communicate *to the reader.*

Kitson's study of writing was incidental to his interest in showing how various groups of people, in this case readers of one magazine or newspaper versus another, differed from each other. There is no reason to believe he was aware of Sherman's work, yet he too chose sentence length as one measure of readability. As a second measure he chose word length, measured in syllables. What makes his study so interesting is that he had fixed upon the two measures used in one of the most recent and certainly the most successful of readability formulas, that of Flesch, though Flesch's formula did not appear till nearly thirty years later.

Kitson did not, it is true, actually develop a formula. He was interested merely in the descriptive, comparative use of his measures. What he did, to show that they worked, was analyze two newspapers, the *Chicago Evening Post* and the *Chicago American,* and two magazines, the *Century* and the *American.* He first studied 5000 consecutive words in the four publications, then 8000 consecutive sentences. Both average word length and average sentence length agreed in showing the *American* newspaper's style to be simpler than the *Post's,* and the *American* magazine's style simpler than the *Century's.* This, in turn, agreed with the fact that very different groups bought each, and fell in line with the differences between them.

Equally valuable, we believe, was Kitson's noting that style difficulty is not the only thing important to a reader. He points out the broader psychological differences of readers, such as tastes and interests, that must also be considered. As an example of differences in the interests of various reading publics he showed how two magazines (*Review of Reviews* and *World's Work*) devoted unequal proportions of their pages to such topics

as current events, politics, foreign comment, etc. This he did in pointing out that a magazine will, in the long run, reflect its readers' interests and draw to it other readers whose interests are similar.

Both Sherman and Kitson were, of course, interested primarily in writing intended for adults. One would have suspected that, with the start they made, adult readability formulas would have been developed before children's formulas. That they were not is due partly to their work having been unnoticed by those who, soon after, began developing formulas. But a more important reason for the first appearance of children's formulas was the influence of Edward L. Thorndike.

Thorndike was undoubtedly the most productive psychologist the world has known. During his college faculty years he wrote over 500 books and articles on psychological and educational topics, an average of over ten per year. Nor were all of these in a narrow field of interest. He was among the earliest of American psychologists and his writings opened many new fields to psychology.

Primarily, though, Thorndike was interested in how people learn, and particularly in their language development. It was natural, therefore, for him to apply psychology to education, and that he did from about 1930 on. It was one book in this vein by Thorndike, *The Teacher's Word Book,* that laid the foundation of most all the readability work to follow. It was his attempt to help teachers to know what words occur most frequently in the English language and thereby to teach the most important words. Based on counts of millions of words, the book gave the frequency of occurrence of the most common ten thousand. Because words could thus be rated for difficulty, the way was opened for the development of readability formulas for children's reading material.

Oddly enough, Thorndike himself never developed such a formula. This was probably because he was interested in so many things. He would write a book that would open up a new field and then push on to open still another. He continued his interest in language, however; his later years were given to his studies in semantics and to the dictionary-making that resulted from them. Barnhart, himself one of America's leading lexicographers, has called him "the father of the Twentieth Century dictionary." Just what Thorndike did in the way of dictionary-making is an

interesting story in itself; while we cannot tell it here, we have mentioned it briefly elsewhere in the book, as well as given references for those who wish to know more about it.

That Thorndike was the father of the readability formula becomes clear from the early history of formulas. Five of the first seven published methods of measuring readability made use of Thorndike's list of words, and ten of all those published to date have used either it or one of the two revisions of it. Notable too is the fact that the first thirteen readability methods published were for children's material, an indirect result of Thorndike's own early interests, as expressed in his wordbooks and learning studies.

The first method of measuring readability that can rightfully be called a formula was that of Lively and Pressey, published in 1923. It was for children's material, and relied completely on Thorndike's word list. At this early date books were sampled rather than completely analyzed, just as with modern formulas. Then too, the time necessary for analyzing a book with this early formula was almost as short as with today's methods.

Nevertheless it was not quite a formula in today's sense. The method that can most accurately be called the prototype of modern formulas was developed in 1928 by Vogel and Washburne. These authors had long been interested in children's reading interests, and based their formula on an analysis of the books a large number of children read and liked. This is a departure, since most formulas have been based only on how well readers *understand.* This method did, however, prove satisfactory, and their revised formula has proved to be one of the most used of children's formulas.

Washburne and Vogel's first study of readability stimulated the interest of another writer, Lewerenz, who produced several formulas over the period 1929-1939. In one of his first attempts to measure readability, Lewerenz discovered that words beginning with the letters "w," "h," and "b" were easier on the whole than those beginning with "i" and "e." Just why this should be is unknown, but it certainly qualifies as one of the more surprising facts about the English language. It did not prove very useful, however, and Lewerenz turned to the two measures of vocabulary difficulty and diversity, later adding vocabulary interest and percentage of polysyllabic words.

Soon after Lewerenz began his work, Patty and Painter de-

veloped a formula to measure the "vocabulary burden" of textbooks. Their formula is particularly notable because Patty and Painter also extended their method so that the school year of heaviest vocabulary burden could be determined. (Turned out to be the sophomore, among high school years, they said.)

These are but a few of the methods that were developed to measure the difficulty of children's material. We shall not try to mention them all here, but we have listed all of them in Table 1 in Chapter 9 with the references that describe them. Before we leave children's formulas, however, we should mention one more thing. Since so many of them were dependent on Thorndike's word list, any criticism of the list is serious. And there were criticisms, chiefly of the fact that the frequency of occurrence of a word is by no means perfectly correlated with its difficulty. Dolch, one of the first to point this out, was himself the developer of one of the early, as well as one of the most recently published, methods of measuring readability for children. He did not, of course, use the Thorndike list in his own work.

Actually, the Thorndike list has not done badly for work with children's material. It would be out of place in an adult formula, and has never been used in a formula developed only for adults. But that this word list should not be used does not imply that all word lists are bad; Dale has shown this by successfully using a list based on *familiarity* in his adult formula. But we are getting ahead of the story here, since in the next chapter we shall take up the development of adult formulas.

By way of transition, we should mention that the distinction between children's and adult formulas is not as clear as it might sound. Early children's formulas were not recommended for adult material, but some of the later ones came to be used with it. A good example is the formula of Lorge, whose work bridged this distinction to such an extent that we can best cover it in the next chapter. And we would like to mention also that many adult formulas of today are being used extensively with children's material.

The development of adult formulas was unquestionably based on the early work with children's formulas. But in a broader sense it found its beginnings in the newly recognized sociology of reading that soon began to appear. The growth of such a sociology is interesting because it was closely related to the adult education movement, the direct stimulus to the development of

adult formulas. Because it played this important role, we would like to give it deserved attention here before going on to the adult education movement, and adult formulas, in the next chapter.

The sociology of reading may be defined as the study of "who reads what and why over consecutive periods of time." It is concerned with the values and relationships of reading as one of the important means of mass communication. Perhaps no better indication of its importance can be given than Spengler's apt characterization of Western civilization as a "Book and Reading Culture."

The sociology of reading had its beginning in the needs attending the development of this culture. As long as scholars alone could read, there was of course no need for it. Greek and Roman reading, for example, was largely confined to the contemplation of philosophy or the practice of oratory. In the Middle Ages, as later in the early colonial days in the United States, religious reading was predominant. The sixteenth and seventeenth centuries saw the beginning of reading as a method of acquiring useful information. The nineteenth century, with the introduction of pleasure as a widespread reader motive, finally led to greatly increased reading. Today more persons read than ever before in history, and there are more and different motives.

The reason, of course, is that so many more *can* read, and that so many more publications are available. Even with the development of other popularly attractive means of mass communications, the amount of print published has continued to increase. Only a depression has seemed able to halt this trend (temporarily). Even then, reading has been found to decrease little because libraries become relatively more popular.

With this increased reading has come studies of the effect it may have on readers. It is known now that it may influence beliefs, attitudes and morale, public opinion, voting behavior, and crime and anti-social behavior. It can have an instrumental effect (all the way from helping with vocational difficulties to metaphysical problems), a prestige effect; can result in conversions (e.g., to communism), enriched aesthetic experience. It can serve as a unifying force or a disintegrating force, or for constructive or destructive ends. Undoubtedly many more effects not yet studied could be added to this list.

But of course reading can do none of these when it has not

successfully communicated to the reader. As librarians and experts in the sociology of reading have many times pointed out, "unreadable" reading, along with the unavailability of many kinds of books, have been at fault. Adults have not been unwilling to read on important and interesting topics when they can do so successfully and profitably. The adult education movement shows this. With such a vast potential of readers, and such a vast actual amount of publication as there is today, what is needed is writing that can successfully reach readers.

As we've shown, English writing has demonstrably tended in this direction. Children's education has been made more effective by attempts to achieve it. Now we would like to take up what has been done recently in such attempts to reach the adult reader.

5. THE READER COMES INTO HIS OWN

MUCH HAS BEEN WRITTEN about the sources and development of modern literary techniques. Many critical studies of current writers deal with the writers' debt to this or that earlier writer for some particular trick in portraying a character or setting a story's mood. The influence may be indirect, but it is still usually traceable.

Other influences are less easily demonstrated. Among these influences are (a) editors and (b) writers' manuals. Few people, even among literary scholars, could name half a dozen editors from the past century, yet these unnamed souls that intermediate between the writer and his public have had an influence on and made a direct contribution to the literature of that period that can never be measured. Unlike the high-pressure word-merchant stereotype that has caught this generation's fancy, these men were —and many still are—intellectually honest people who get as much satisfaction from helping an author find the best that's in him as they do in being part of a financially successful publishing venture. The sincerity that pervades the letters of Maxwell Perkins (144) was not unique among editors.

One of these people, Arthur Sullivant Hoffman, merits particular mention. Of his long career as an editor, some seventeen years were spent as editor of *Adventure*. This was during the era when magazines were becoming big business. Under his editorship the magazine became the leader in circulation and in quality in its class. Although physically a pulp, the magazine often rose above the pulp level in content. He was a strong advocate of the simple, readable style; "Be honest with your readers" was his frequent caution. An outstanding example of the prose he

brought to the reading public was a Conrad serial. He gave much time and help to his regular writers, with the result that many of them became highly successful. Harold Lamb is one of them. Interestingly, too, one of his contributors was also one of the pioneers in readability research, Lyman Bryson. Hoffman's manuals for writers, particularly his *Fundamentals of Fiction Writing* (81), remain among the very best for writers of fiction.

The late Harold Ross, moving spirit of the *New Yorker* since it was launched in the twenties, has had an even greater influence on contemporary writings (102). He was neither primarily a writer himself nor a literary editor in the tradition of Hoffman, yet the writers that he published, both staff and by-line writers, have been the most copied group of writers in our time. Columnists, house organ writers, and advertising copywriters have taken over the *New Yorker's* style, with varying degrees of success. The *New Yorker* started a trend when it permitted a style for its editorial section and its current events pieces with the rhythm and intonation of the spoken language.

While the *New Yorker* rates highly readable by readability formulas, its appeal to readers is in great part the result of style aspects that readability formulas don't get at. Aside from short average sentence length and the comparatively high proportion of one- and two-syllable words, the *New Yorker* style has several other reader-attracting features that distinguish it from other current journalistic writing. They are differences in degree, of course, but in a high degree.

—Adequate background essential to a particular explanation is provided.

—Unusual words essential to the understanding of the passage are always clarified, usually by using them in one or two clearly defining contexts.

—There seems to be no editorial tabu against using unusual words where their being understood by the reader is not necessary in order for him to understand the passage. The context in which they're used provides as much indication of their meaning as the reader needs to get the idea of the sentence.

While the literary greats may not have learned to write from writers' manuals, thousands of their contemporary word workers did. There have been manuals and books for writers for centuries. It's a rare publisher that doesn't have something on his

backlist for the writer. In their approach to writing, these books have ranged all the way from Elizabethan books of formulas for embellishing a simple statement to the point where nobody understands it to books printed today suggesting ways of converting embellished writing to simple writing. In our own day, apart from books based on actual readability research, there are two that have been significant in the trend toward concern for the reader.

The more important of these two, Fowler's *Modern English Usage* (61), despite its being based on British rather than American usage, is probably the most influential style and usage reference published today. Except for the dictionary, it is probably the most popular writers' elbow book of our time, to judge from its sales. It was the first important writer's manual to turn against the pedantry and concern with adornment that hung over from Victorian times. Its linguistic attitudes were also of this century; the authors—for all the much touted conservatism of the British in linguistic matters—felt in no way obliged to apologize for the fact that English is different from Latin. Of course every writer for writers labors this point today, but few did twenty-five years ago. Fowler emphasized reaching the reader. Where earlier works for writers had laid stress on things a writer shouldn't do, the Fowler book took the more positive view of what the writer *could* do.

H. W. Fowler began this book in collaboration with his brother in 1911. They worked on it throughout the years they were compiling the *Concise Oxford Dictionary*. It was first published in 1926 and has gone through many reprintings since.

There's another book for writers, mentioned some pages back, that should be included here. It's *Reader Over Your Shoulder,* by the British writers Robert Graves and Alan Hodge (68). Although this book has not achieved large sales in the ten years since it was first published, it has the high respect of many writers, particularly in academic circles. Its organization makes it less useful as an elbow reference book than the Fowler, but anyone who works with words will find the handbook part of it informative and helpful. This part takes up in detail the various bugs that creep into a passage to trip up the reader. There are faults that for one reason or another cloud communication, yet can be measured only qualitatively and intuitively. This is the part of the book that the practicing writer and editor will find

useful. "We suggest," the authors say, "that whenever anyone sits down to write, he should imagine a crowd of prospective readers (rather than a grammarian in cap and gown) looking over his shoulder. They will be asking such questions as: 'What does this sentence mean?' 'Why do you trouble to tell me that again?' 'Why have you chosen such a ridiculous metaphor?' 'Must I really read this long, limping sentence?' 'Haven't you got your ideas muddled there?' "

Yes, the reader has come into his own. Increased competition for the reader's time, a more democratic view toward the reading needs of people with limited backgrounds, and the ascendency of nonfiction over fiction in our time, to name a few of the reasons, have caused writers themselves to swing from self-expression, with its reader-be-damned attitude, to clear expression. They have learned the moral the Duchess preached to Alice: "Take care of the sense, and the sounds will take care of themselves."

With competition for the reader's time rapidly increasing in the past several decades, it was inevitable that methods of testing reader sensitivity should be developed. If an advertising campaign doesn't get the results formulas based on advertising experience had predicted, maybe the copy didn't reach the reader—and maybe the agency could use a different copywriter. Magazines know which stories and articles in its last issue were most widely read, and can be guided accordingly in future issues. Practically all colleges today have courses in the craft of writing. The emphasis is on writing as a craft as well as an art.

Just as the change in writers' attitudes from "reader be damned" to greater interest in readers gave impetus to the new movement for readable writing, so too did the new adult education movement. As in most cases, it is difficult to date the beginning of the movement accurately because it seemed to grow gradually from many apparently unrelated sources and studies. Mere formation of a commission (one existed in the 1920's) does not truly date it. The movement can probably most reasonably be called a product of the 1930's, since it was at that time that its effects began to be apparent.

Much of the impetus for the increased activity of this period can be laid, not illogically, to the Depression. Libraries gained in relative influence, since they served as a source of reading material that could not otherwise be easily afforded. They provided

vocational and avocational information, and the reading of fiction helped to replace lost methods of entertainment.

It is reasonable, therefore, that far-reaching studies of adult reading should begin to appear at this time. Certainly one of the most valuable of these was Douglas Waples and Ralph Tyler's *What People Want to Read About,* a comprehensive study of adult reading interests. Since interest is of central importance in reading, it is appropriate that this book should have come at the very beginning of adult readability work. And it is still of sufficient value that, rather than summarize it here, we have taken it up more completely in Chapter 7, "What Interests a Reader?"

Waples was a librarian long interested in the sociology of reading. Notable in his early work was his comparison of what people want to read and what they *do* read. He found that lack of accessability and lack of readability very nearly in themselves accounted for the wide discrepancies in the two. Waples' interest in the social effects of reading continued for many years, as evidenced by his later *People and Print* (reading in the Depression) and, with Berlson and Bradshaw, *What Reading Does to People.* Bernard Berlson has continued and extended this work in his studies of the effect of print on public opinion and other such studies that have continued until today. One of his continuing interests has been "content analysis," a frontier area of which we shall say more in our last chapter.

Tyler, the second author of *What People Want to Read About,* was an educator, evidence again for the previously mentioned close alliance of librarians and educators in the study of reading and readability. Tyler, soon after his work with Waples, became interested in the measurement of adult readability itself. He published, with Dale, one of the first true studies in this area in 1934 (Ojemann published the other in the same year). These two studies mark the beginning of the work on adult formula development that has continued unabated to the present.

The Dale-Tyler readability formula was designed specifically to evaluate materials for adults of limited reading ability. As such, it gave direction to other early formulas, since several others were soon developed for adults with little education. And, despite its early appearance in the history of adult formula development, it was remarkably well developed because it could draw on the work previously done on children's formulas.

Edgar Dale, the other of the two authors of the formula, had long been concerned with communication in its various forms. An expert in many of them (audio-visual education, motion pictures, newspapers), he is no less an expert in reading and readability. It was he who was one of the first critics of Thorndike's list, criticizing it for its failure to measure the familiarity of words accurately (and therefore its suitability for use in readability formulas). *Appear* and *among,* to cite two examples, are on Thorndike's list of the 500 most frequent words but not on Dale's list of the 769 easiest words.

Dale subsequently developed several lists based on the familiarity of words (i.e., how well readers can define them) which have proved very accurate in the determination of how readable writing is. Several formulas that have been developed use one or another of these.

One of these formulas was a recent (1948) one he himself developed with Jeanne Chall. It has now become probably the second most used adult formula (following that of Flesch) and is interesting for several reasons. First, it is highly accurate, yet it is one of the simplest available adult formulas to use since it has only two elements (one for words and one for sentences). Second, it represents perhaps the most satisfactory use of a vocabulary element in measuring readability that has yet appeared.

As Dale and Chall point out, the Dale list of words used in the formula is based on familiarity alone, and in no sense on judgments of these words' "importance." There is need for a list of "important familiar" words that will consider adult usage more carefully, and Dale and Chall have been experimenting with such a list. Many of Dale's plans for future readability research are contained in an excellent summary called *Readability* (21) which he edited in 1949.

To get back to the story of adult formula development, however, we must return to the 1930's. A year after the appearance of the Dale-Tyler formula, one of the most important of all books on readability was published. It was Gray and Leary's comprehensive *What Makes A Book Readable* (70). Besides presenting a formula itself, it presented sufficient other useful data to have greatly influenced almost all subsequent adult formulas published to date.

Over 200 elements that could possibly contribute to the ease or difficulty of books were studied singly and in relation to each

other. These elements themselves resulted from a thorough survey of persons who, one way or another, were concerned with preparing, publishing, or using books. Several alternative combinations of elements into formulas were presented, and 350 books were rated with the most satisfactory of these formulas. Finally the literature on readability was carefully reviewed, and a number of separate studies by the authors themselves were reported.

We shall discuss this book in Chapter 9 ("How to Make a Yardstick"). Here we are concerned only with its senior author as an individual who has helped the reader come into his own. Gray has long been a recognized expert in reading (both children's and adults'), and one of the two or three most prolific writers on the subject in this country. Another of his areas of interest has been adult education. These two interests have given his studies of readability both an academic and a practical impetus.

It was largely because of the work of such men as Gray and Waples that Lyman Bryson, the adult educator, first became interested in readability. Bryson, like Thorndike, never developed a readability formula himself but his influence was nevertheless considerable. It stemmed most obviously from his directorship (with Charles Beard and M. A. Cartwright) of the Columbia University Readability Laboratory, and his writings about it. But his real influence was deeper.

Bryson first became interested in the problem of adult communication when he served as a forum leader in adult education meetings. He discovered that average adults were interested in reading about serious subjects, and that their avoidance of such topics did not stem primarily from lack of intelligence, "thinking power," or political responsibility. Rather it stemmed from lack of reading skill, a direct result of limited schooling. As he points out, there is a tendency to judge adults by the amount of education their children are getting, and to pretend that the great bulk of the American people have been through high school. In actual fact, about 40 to 50 million Americans have only seventh to ninth grade education and reading experience. Much writing has been too difficult because writers have failed to realize this. We might add, too, that writers often tacitly assume readers have an education equal to theirs, or at least as great facility in understanding words and writing. And writers are not alone in being at fault. Highly educated persons often fail to realize just how much easier most reading is to them than to an average person. Many even

find it difficult to distinguish between easy and difficult reading material, since they can read even the difficult so well. And consequently, some writers and skilled readers alike think the whole business of readability is a false answer to a pseudo-problem.

Bryson gives a good illustration of how one such doubter was convinced. He tells of a philanthropist and educator who challenged a psychologist to give him a piece of prose he could not understand if allowed to read it as often as he liked. The psychologist produced a few hundred words of grammatically perfect and quite sound prose which was, by the educator's own admission, in his own vocabulary range. Yet he could not understand it.

Substantially the same thing happens when a reader whose skills are equivalent to seventh or ninth grade attempts to read what a writer might think is "every-day" writing for him. Bryson notes that unclear points in forum discussions can be cleared up through questions or watching the audience for signs of lack of understanding. He emphasizes that you cannot do this in print —when you put a thing down in print, it is down. Therefore the writing *must* be clear to the reader.

As Bryson goes on to say, the business of the world has always required a good deal of prose writing that conveys *ideas* in a direct and lucid way. Yet prose that succeeds is not easily written nor is it jargon nor "business English" nor vulgarization. That such writing is rare is due, he says, largely to the fact that it requires "a discipline and artistry which few people who have ideas will take the trouble to achieve. . . . If simple writing were easy, many of our problems would have been solved long ago."

The Columbia Readability Laboratory was established to carry on work on the problem of "readable books on serious subjects for the average American Citizen." Bryson was careful to explain that the Laboratory was not concerned with rewriting the classics, but rather with an attempt to write contemporary books. In distinction to long-standing attempts to help *beginning* adult readers, the plan was to produce books for average American adults. Bryson goes along with the wish that readers might read difficult books to stretch their powers, but experience had showed that this simply didn't happen much, whether due to lack of desire or time.

For that matter, Bryson points out that there's nothing condescending about readability: ". . . most well-educated people would appreciate having most of the books they read made more

simple and clear." He notes that work on readable books follows in the footsteps of the "plain style" writers of English literature —Swift, Berkeley, Dryden, Southey, and Thackeray. Their writing is sufficient indication that serious and complex themes need not require a writing style that is difficult to read. Further, "It is sheer snobbishness to pretend that any expository writing is better because it is obscure."

Bryson's influence through his writings was no greater than his direct influence on the developers of two modern readability formulas, Irving Lorge and Rudolf Flesch. Lorge, the first of the two, was an associate of Thorndike and a collaborator in many published language studies. He was co-author of the last of Thorndike's word books (*The Teacher's Word Book of 30,000 Words*) (170) and himself the author of *The Semantic Count of the 570 Commonest English Words* (117). This latter is a frequency count of the meanings of words rather than just of the words themselves.

Two of Lorge's chief interests have been psychological studies of language and of human learning. These led rather naturally into the problem of readability, and he published a formula in 1939. Though specifically developed for children's reading material, it was suitable to, and soon widely used for, adult material as well. It began the trend back to simpler and easier-to-use adult formulas that has since been characteristic of readability work. Whereas Gray and Leary's formula had five elements, Lorge's had but three, and those fairly easy to measure.

For the future of readability measurement, Lorge himself was as influential as his formula. It was he who showed that readability principles could be successfully taken out of the laboratory by serving as consultant to the Extension Bureau of the Department of Agriculture. Lorge's work also was very useful because of its time of appearance. The problem of communicating information accurately to large masses of people was vital to the pre-World War II preparedness effort and the subsequent war effort. The government bureaus set up to provide information needed some indication of their probable success in reaching readers. Lorge's formula was available and easy to apply, and it began to be used.

Today readability formulas and principles are widely known and have been used in almost every important field of communication, as our second chapter shows. The person responsible for

thus popularizing formulas was Rudolf Flesch, a colleague of Lorge's. His books, *The Art of Plain Talk, The Art of Readable Writing, How to Test Readability* and *The Art of Clear Thinking,* have sold many thousands of copies. Even his doctoral dissertation, as he notes, became something of a bestseller. And he has served additionally as readability consultant, lecturer, and teacher of writing.

Flesch's own life history added to this makes his a most remarkable, almost fictional, American success story. Paradoxically enough for an expert on the writing of English, Flesch was not an American by birth but an Austrian. He got a doctorate of law degree from the University of Vienna in 1933, and practiced law there till 1938. Then he came to the United States, where, like many former Europeans, he found his law degree was not recognized. So he had to start from scratch. During his first year in the U.S. he held several jobs, one of them in the packing department of a large New York book manufacturer. Then in 1939 he was awarded a refugee scholarship to Columbia University and in 1940 he got a bachelor of science degree, with honors, in library science.

One might think that Flesch's interest in readability stemmed from his own troubles in having to learn English so fast. After all, he was thrown into competition for a college degree within a year after his arrival in America. Actually, he says, it was simply a result of his becoming, in 1940, an assistant in the Columbia University Readability Laboratory. More directly, it might be laid to the influence of Bryson, of whom Flesch has said, "He helped me tremendously in my career, not only practically but in the development of my thinking. I have learned more from him than from anyone else except my father."

During the period of his work in the Laboratory, Flesch went ahead to a master of arts degree in adult education (1942). He went then to the Columbia Broadcasting System's educational department, but continued his education and in 1943 received a doctor of philosophy degree in educational research. And it was his dissertation "Marks of Readable Style," that set his and, in a sense, readability's career. For, noting its surprising sale, he decided to write his first book. It was this book, *The Art of Plain Talk* that made readability principles so widely known. Sales of this book to date are crowding 100,000, which is rather elegant talk for book publishing.

In his dissertation Flesch published his first readability formula. It was for the measurement of adult rather than children's reading material, and was notable for two things. First, it made use of affixes (prefixes and suffixes) as one of its elements. Second, it used an element that had not been very much studied before, "personal references." It became extremely popular, and soon was being used in numerous studies and numberless direct applications to written material, in many fields of communication. When it was discovered that writing rated "readable" by it could bring greatly increased readership of mass communications (130), its use mushroomed.

Flesch continued his research and in 1948 published a second formula, with two parts. The first part, designed to measure "reading ease," had but two elements and was much easier to use than his earlier formula. The second, designed to measure "human interest," provided the only available formula for measuring how "interesting" writing is to the reader.

Flesch's revised formula is now the most widely used of all readability formulas (the second most widely used, as we've mentioned, is Dale and Chall's). Just how popular it is, is shown by the fact that of the three readability formulas published since, two—Farr, Jenkins, and Paterson's (41) and Gunning's (74)—are blood relatives of it.

On the basis of further research Flesch has presented still another formula, this one for measuring the "level of abstraction." It is not yet widely used but offers much of value to writers.

As this chapter indicates, influential writers have now begun to speak out for the reader and ways of measuring the readability of writing are available. In the remainder of this book we shall try to show how a writer can use all this to reach his reader. Because of the often forgotten importance of the reader, we'll take up *his* characteristics first. Then we'll go on to writing, and take up formulas, how they are built, and how they can be used. And since, up to this point, we have not covered all the formulas developed to date, we have listed them in Table 2 of Chapter 9.

6. MEET YOUR READER

THE READER HAS ONLY RECENTLY BEGUN to play a major role in determining what gets written and how it is written. It is true, of course, that writing has always been for some reader, but relatively little attention has been paid to who he is and what he is like.

When we speak of "the reader," we are referring to the potential reader. He's there, and he's waiting to read. And usually he's there in quite large numbers, no matter how small his specific group may seem to the writer before inspection. The writer is waiting, too, and he's usually eager to meet this reader (*particularly* if the reader is there in large numbers).

Unfortunately, writers and readers haven't met in large numbers until quite recently. Writers were once known to say they did not care; not so many say that any more. But many of those writers who admit they want very much to meet their reader (and most do) still fail.

No writer writes for everybody. Even the most successful novelist or short story writer reaches but a small handful of the total reading public. Most writers reach only what appears to be a minute fraction of the total possible public.

Nevertheless, we can say something about the "general" adult reader or the "average" adult reader in this country. In the first place, we know at about what level he reads (the reading grade level he has attained). Several studies have shown that the reading level of an adult corresponds closely to the last school grade he reached, at least up to about the twelfth grade. (This general statement tends to break down somewhat for college students because, beyond the first two years of college particularly, the materials read become more and more specialized.)

The reading level of the average adult in the United States today is roughly ninth grade. This may seem surprising, but the

latest U.S. census figures find that the average adult completed nine grades of schooling. The average is higher for 1950 than it was for 1940; it is rising slowly year by year. It is hazardous to call this gain typical, but the mentioned decade saw a rise of about one grade in the schooling of the average adult. Undoubtedly the next ten years will see a slightly smaller gain, and certainly it will be much later than 1980 before the average grade of twelve is reached. Even today, with such great emphasis on education, many students do not complete high school training.

Remember, too, that to say the average reading ability of the nation is ninth grade means that the reading ability of around half the country is under that. What does this actually mean in the way of measurement? It means that about half our population *could* answer correctly at least 75% of, say, ten questions covering the content of a passage several hundred words long and written in a style averaging (these are Flesch's criteria) 20-21 words per sentence and about 155 syllables per hundred words. This is only what about half the population *could* read. The portion of the population that has gone only up through the ninth or maybe tenth grade would prefer something simpler for their leisure reading.

Ninth grade reading ability in an adult does not necessarily mean a ninth grade *student's* reasoning ability, however. None can deny the advantage an adult has in experience, in attitudes and in emotional adjustment. Hence, to equate ninth-grade reading ability with ninth-grade mental ability is erroneous. To assume that they are the same thing can only lead the writer into a mental set in which his writing tends to be patronizing.

Ninth grade *reading* ability means merely that. One may have several questions, though: "Doesn't the adult's experience count for something in the improvement of his reading ability?" "Doesn't the accumulated reading of his years, at least?" "Doesn't the ability to meet adult social and business and family situations and experiences mean also the ability to meet adult reading situations?"

Not necessarily. Most readers conserve their energy (you can call them lazy if you wish). They don't go out to meet difficult reading tasks to improve their reading ability. Reading difficult writing is hard work. And even worse, it is usually unrewarding work. A reader who fails to get much of the meaning of what he is reading is not inclined to read very long, or very happily. In fact,

the average adult, when reading for pleasure at least, doesn't even read at the level at which he *can* read, as we've mentioned above. He reads about two grades lower.

Other more general evidence that humans take the easy way out comes from linguistic studies. There is an unmistakable tendency, over the years, for words to become shorter. We can even see this normally long-range trend in a few short years. Several examples, though not the best perhaps, are horseless carriage—automobile—auto—car and television—video—TV. Such changes occur more quickly in spoken language than in written, because education, habit and the formality of the written word tend to preserve the older forms. The trend even in writing, though, is clear and seemingly irreversible.

But some writers prefer to keep their writing slightly difficult. The reader, they claim, should *expect* to exert himself and *should* want to. Aside from the fact that numerous experiments have exploded this old "mental discipline" theory of learning, the more important point is that readers simply have other ideas. If they don't want to read, they needn't, in most cases.

As we have indicated, if the *average* reader has ninth-grade reading ability, roughly half the readers have better than ninth-grade ability. There are a few qualifications. As we mentioned briefly before, the most highly educated person today is a specialist. He can read highly abstruse material—in his special field. Give him merely "difficult" material in another field and he may get lost. The realization comes no more clearly, probably, than to the newly trained scientist who picks up an issue of *Science*. Unless he finds an article or two in his field, he will quickly lay it down again. The same scientist, though, might well read all the way through *Scientific Monthly* or the *Scientific American*.

We've been talking about college graduates and postgraduates, the better-than-average half. Roughly half of all readers are poorer than average, too. Unless it is clear and simple, they find writing in *most* areas difficult. Even presuming an interest in reading on their part, they will not read far. Yet it is largely this group that could make the group of readers that is now a minute fraction into a considerable number. And it is this group that *should* be reached with new ideas, and new things to think about. Reading is difficult enough if it requires a lot of thinking, without the added burden of a difficult-to-comprehend style. We believe a reader gets much more from new, interesting ideas than he does

from the mental exertion required in following a difficult style. Furthermore, we believe that new ideas, even difficult ones, need not imply writing incomprehensible to the reader.

So far we've talked only about the general reader, and only about his reading ability. Much more important than knowing about the general reader is knowing about a specific reader. In other words, the reader who actually constitutes the writer's public or who at least sees the writer's work and wants to, or must, read it. This reader and others like him make up the writer's special audience.

What should the writer know about this specific reader? The first and most important point is the reader's age. Naturally it is impossible to distinguish readers of nearly identical ages, but rough age groupings are valuable. The 20-year-old reader is different from the 30-year-old, and much different from the 70, especially in activities. Magazine publishers have long recognized this, and a good family magazine has something different for each age groups.

The next point, and one closely related to age is sex. The influence of the reader's sex in what he chooses to read is of relative unimportance up to adolescence. During adolescence and into the early twenties, men and women are most different in what they like to read about. Then, as they grow older, men and women tend to read more and more the same things again.

The next three points the writer should know about his readers are their occupation, income, and education. These points are again closely related. There are exceptions, of course; college professors and public school teachers are only the most widely cited, but not the only ones.

By education, here, we do not mean education as it relates to reading level. That is vitally important, but what we mean here is how it affects what a reader is like, his attitudes, his experiences, etc. The importance of occupation can be easily seen when one remembers one's own situation. Almost every reader likes to read about himself, or, lacking that, to read about other persons like himself. As groups differ in occupation, subjects that interest one group tend more and more to fail to interest other groups. This is particularly true, of course, if the groups differ in income as well. To a certain extent, of course, lower- and middle-income people like to see themselves for the moment in the place of the rich, especially in their leisure-time reading or when reading purely

for entertainment. This is something the advertising industry learned long ago.

These points are the most important to consider. Once they are known for a particular group, the group is quite well defined. One might ask how this affects the "mass-media" writer. If we assume that all potential readers in the mass audience read any particular bit of writing, we can ignore the matter. But of course this is not the case. Even within a mass audience there are fairly well-defined reading publics.

For example, the topic of "health" is invariably of interest to a mass audience. An article on a new "miracle" drug *might* attract most of this mass audience. An article on health problems of the aged would attract few younger readers; one on childhood diseases, few elderly readers; one on a new method of childbirth, few men and relatively few older women. But an article describing a new drug and its applications to old-age disabilities, childhood diseases, and childbirth would probably come closest of all to reaching a truly "mass" audience.

We need not go on; besides, this latter article has what we shall describe more fully in the next chapter as analogic interest. We do want to say that, once the writer knows the characteristics of the small groups that make up a mass audience, he can direct his material specifically to one or several groups or more generally to many groups. Large circulation magazines (e.g., the *Saturday Evening Post*) reach a mass audience by having one of several types of articles, each aimed at such a group, in each issue.

This is something you can easily check yourself. Take a copy of any large circulation magazine and go through it article by article. From the title and opening paragraphs of each article you can tell which particular reader group the article is for.

There are many more points that it is well to know about the reader. They are not so general as those already mentioned, and therefore their importance will vary with particular situations. The first is the reader's attitudes and personal feelings. If a topic is highly controversial, the perceptive writer will write very differently for a reader who is pro, one who is con, and one who just doesn't know. But the importance of this point goes much deeper, for it applies to many situations that do not seem to be emotionally charged. Readers have been known to stop reading an article without realizing why, only to discover after some thought that the implied attitudes in the article ran counter to their own.

This is perhaps most clearly shown in situations involving religious beliefs. Implications counter to the reader's beliefs may cause him to lose interest in an article. The individual's whole social environment may act as a censor as well. Taboos are very common in our culture, but we fail to recognize them as such. Taboos of smaller social groups become so ingrained that they are often even harder to see. Perhaps the best way the writer can avoid such problems is to know something about his reader's group memberships (his societies, his clubs, etc.). He can then quite easily sketch his reader's probable taboos and handle them more effectively when he touches on them.

Getting back to somewhat more personal points, the writer must consider the type of reader he is writing to. Here we refer not so much to his ability as to how he reads, how much time he devotes (or can devote) to reading, and such. Pocket-size magazines, particularly the digests, fill a need of the rushed reader very well. Just *how* well, their recent growth and circulation figures tell.

Of crucial importance is another point, knowing the reader's way of speaking and way of using language. The importance of this point may seem obvious, but it is often overlooked. Few things lead as quickly to a reader's failure to accept writing as unfamiliar language or a "foreign" style. This is, of course, particularly true when the writer is trying to be convincing, trying to sell a point of view, or is anxious to win readers to his argument. In fact, it is nearly impossible for most writers to write well for a social level other than the one they belong to. Outside their own idiom they too easily become either precious or patronizing.

Ideally, the writer should live among his readers, hear them speak, know their problems and beliefs. He can learn what they want to read, and how they want it written. Some writing organizations have separate research staffs whose job it is to get this information. One such organization writing Air Force manuals and other publications has had difficulty in selecting satisfactory writers. Those in charge have hired and tried all sorts of professional and non-professional writers. They have usually settled on one group as their best source—Air Force or former Air Force men themselves. The reason is that such writers know what other Air Force men are like, how they talk, what will catch their attention. Such writers must sometimes be amateurs by most writing standards, but they write more effectively than professional writers who do not know their readers. They often get help from scientists

on technical problems, and other professional writers and editors on preparing final copy, but they themselves are necessary for their knowledge of their readers.

A college English teacher, Margaret Snyder, working with the University of Virginia's Adult Education Extension division, had the job of putting scientific agricultural information into a form that would be readily understandable to people of low-reading ability (158). Her approach to the problem of knowing her reader shows the extent to which a conscientious writer will go. Her immediate responsibility was a bulletin on soil conservation, *The Soil Saver*. She read up on the subject, yes, but she also did a lot of footwork, or "non-verbal learning."

By talking with the farmers she "began to 'know,' " as she put it, "the objects and processes for which soil-conservation terms were the labels." She'd return from an outing with pages of notes including the exact phrasing of the farmers' talk, write a draft, and submit it to the bulletin committee. The committee included soil technicians, naturally, but it also included at least one dirt farmer, sometimes two or three. It was these latter whose suggestions she found most helpful. The results of her efforts were issues that averaged a low sixth grade level in reading difficulty. According to population and education data, this meant that 65% of the farmers receiving the bulletin should be able to read it. A readership sampling showed that three-fourths of them had read from 6 to 12 of the first 16 issues.

The rules elaborated by Miss Snyder for presenting technical material to low-level readers include one that even some experienced copywriters lose sight of: don't overemphasize linguistic crudities. People's sensibility to *speech* and to *print* are not the same. For instance, the actual words of one farmer, "I don't do no plantin' no more," came out in print as "I don't do any planting any more."

Of course most writers today cannot pick up and move in with their readers. Many writers, though, have access to information about their readers but just do not realize its importance. In a recent seminar for industrial writers and editors, we were struck by the *apparent* lack of knowledge about important reader characteristics. When, however, some of the important points that should be known were mentioned, it was equally striking to see how much they could, and did, know of their readers. These writers were, of course, in a better position than most to know their

readers because of contact and company records. They merely did not realize the relevance of the information available to them.

We still have, though, the majority who can get but a limited amount of reader information. One way they can tell very crudely if they've met their reader is by how popular their writings are —by letters, circulation figures and sales. A more refined way, but one not always available, is the readership survey. Some popular magazines (e.g., *Collier's*) have a research staff, one of whose main jobs is to make continuing surveys. Newspapers make them often, and so do schools of journalism (we've mentioned several examples in Chapter 2). Sometimes it is possible for writers to get survey data concerning readers of the magazines to which they intend to send articles or stories. Such data are often compiled for prospective advertisers. Where possible, this is certainly a more refined and accurate way than the common practice of trying to get such information through reading several back issues of the magazine.

In our next chapter we'll go into the interests various kinds of readers have and suggest sources of further information on interests. When a writer knows him and can thereby discover his interests, a potential reader can be turned into an actual one.

7. WHAT INTERESTS A READER?

IF THERE IS ONE POINT that writers and reading experts agree on, it is the importance of getting the reader interested. But how? Much of what we have to say in this chapter is by way of answering this question.

The first concern of the writer, naturally, is to get people to look at his writing. This is the purpose of an interesting title, and any writer's instinct will make him work hard for the right title. There have actually been surveys that back up the assumed value of interesting titles in inducing the reader to buy and to begin reading.

How far the reader reads is the writer's second concern. Interest value is not the only contributor to depth of reading, but it is an important one. And this is true, to a greater or lesser extent, no matter what motive the reader has for reading.

A number of studies have shown that the motives of readers range all the way from "reading to learn" to "reading to forget." There is even some evidence, interesting but not too surprising, that more readers read to forget than read to learn. These studies also show, though, that reading to learn and reading to forget are not two distinct types. This becomes clear if they are both thought of as potential ways of satisfying the desire to "escape" an unpleasant situation. One reader tries to learn *how* to escape it, the other reads so that he can imagine he *has* escaped it by identifying himself with a fictional hero who has. And many a popular psychology and self-improvement book addict reads more for the latter than for the former reason. Where the reader is trying to learn, the value of interest is rarely discounted. It should not be where the reader is trying to forget, either.

But the importance of interest does not stop when the reader finishes his book or article. The third concern of the writer is to

maintain the reader's interest after he has finished. Only if the reader's interest is maintained can the writer expect him to seek more of his writing. No writer needs a study (although there have been some) to convince him of the importance of "liking for the author" when a reader seeks out further reading. And no writer needs further reasons for the importance of interest in reading, though he may possibly have some.

The most useful way to define "interest" here is to divide it into three types or classes. This breakdown is somewhat arbitrary since the types overlap, but we can defend it from the standpoint of usefulness, if not logic.

The first type of interest is what we call "content interest." As the name implies, it is the interest value inherent in a particular subject or topic for a particular group of readers. It is the most important of the three types of interest, and the one we'll devote the most time to. Use of it necessitates one thing, of course: the writer must be able to choose his subject freely. It would be fine if the writer could always choose a subject his particular group of readers is interested in (and which he, as a writer, is interested in). Realistically, the majority of professional writers do not have this freedom of choice. What then? Our second type of interest.

Closely related to content interest is what we call "analogic interest." It makes use of the interest value inherent in a topic, but in an indirect way. Though the subject of a piece of writing may in itself be low in interest value, it is often possible to insert analogies, examples, references, etc., which make use of a subject of high interest value. Type two is not as effective as type one, but two can nearly always be used while one can't be.

Our third type of interest is "human interest." It is the interest which derives from the use of personal words and personal sentences. It is *not* the "human interest" of journalists, i.e., the traffic-judge-fined-for-parking-near-hydrant sort of story. To call both human interest may be slightly confusing, and some have suggested "personal interest" for the personal sort of style. We agree that the change in terminology might be useful, but since Flesch, the only person to attempt to measure the personal quality of style, has called it human interest, we shall do so too.

We don't mean to underestimate the importance of human interest, but we must say here that it is secondary to, and dependent upon the existence of, content interest. Should a piece of writing have no content or analogic interest value, human interest alone

would seldom induce the reader to read it. On the other hand, a piece with high content interest value can be improved through the judicious addition of human interest. Type three is therefore not too useful without one and/or two, but is definitely worthwhile along with one and two.

Perhaps an example will help to clinch the distinction between the three types of interest. Consider an article that is primarily on fishing for trout in Rocky Mountain streams, but that gives frequent examples of the scenic beauty of the better fishing-camping areas, too. It would be attractive to Father (the fisherman) because of its content interest. If a trip were being planned, Mother might be attracted by its analogic interest (and of course Father might be, too). Then, depending on how it was written, it could have human interest that might make it more likely to be attractive to both and to their friends.

Because of the primary position of content interest we'll take it up first, and to get a better understanding of interests themselves, some general points. Although the study of interests has occupied an important place in psychology, relatively little time has been spent on the mature adult's interests. The chief reason seems to be that the importance of adolescent and early adult interests in determining a vocation was clearly recognized. Another reason is that interests at the early ages are less stable and harder to measure, and are often not even apparent to a person, which provides a definite need for such study.

All of this does *not* mean, of course, that adult interests are unimportant, particularly in reading. To be sure, much of value for a knowledge of adult interests can come from studies of young adults. This, combined with studies made of mature adults, makes the picture quite clear. One thing we know, for example, is that interests *stabilize* with age, but that interests usually do not *decrease* with age (except for interests in physical activities). This is true for old-age as well as middle-age adults.

Interests can be modified, and reading is one way they are modified. We know, too, that practically all of the varied groups that have been studied like to read both fiction and nonfiction. Why bother, then, with trying to write on topics that readers like? Aside from the increased readers which interesting topics draw, it is clear that interests are not *easily* modified, especially in adults. It is wise to touch on interests already present before trying to build new interests, or change them. This is, of course, more

apparent for nonfiction than fiction, where the lure of narrative is not present. It is also most true for the reader who reads to learn, since the lack of intrinsic interest, during learning, is a handicap.

Everybody does not read to learn or read to forget, however. Some read for prestige, as when reading "class" magazines or classical authors, others to reinforce their beliefs or attitudes, as when reading any sort of "special pleading" materials, and still others for aesthetic reasons, as when reading belles-lettres. Subject-matter interest is important in all of these reasons, but it is somewhat more important when one is reading nonfiction than when one is reading fiction.

If we look at the reading interests of children, we find about what would be expected. Both boys and girls start with fairy tales, get more interested in realistic writing, and by the time they reach adolescence read about the same kinds of things as adults. We know, too, that the reading done by adults often tends to be on subjects related to their occupation.

The most detailed information on this subject is to be found in Douglas Waples and Ralph W. Tyler's *What People Want to Read About* (179). Although the book was published in 1931, there has been nothing published since that supersedes it. At the time the study was made, interest in reading about "the next war" was nearly universal among adults in all classes of society. This was in *1931,* not *1953.* Recent use of the Waples-Tyler reading survey checklist, on which the book was based, shows still further the remarkable stability of the results found in 1931.

The findings in the book should, even so, be considered suggestive rather than final, and it should be remembered that the book covered only nonfiction prose. Though many reading interests can be reached through both fiction and nonfiction writing, the same subject handled as, say, nonfiction may have greater interest for some readers than if it were handled as fiction.

Waples and Tyler also excluded humor and history. These, like poetry, are actually ways of handling a topic rather than being topics themselves.

A third area not covered comprised articles of a technical how-to-do-it nature (i.e., articles addressed to a particular vocational or special interest group). This final exclusion was made because the concern of the book was the general reader rather than the specialist. The importance of special interest articles should not

be underestimated, of course. People like to read about themselves; the next best thing is getting the vicarious satisfactions of reading about someone else like themselves. If their identification with their group is strong enough, they seem to be reading *about themselves* this way. The writer who really knows his reader can help this illusion along. Waples and Tyler point out how important this is when they note that a topic related to the vocational interests of a group, unless it has been overdone, almost always tops the list of that group's interests. As an example, consider the large number of special interest group magazines and journals (trade, technical, and professional) that are published today.

Waples and Tyler list topics of interest to the large number of special groups they studied. We can't begin to list all the topics here, but we can say that the writer who consults the book is almost certain to profit.

It isn't always possible, though, to write to a special group. How about readers in general, not readers as members of special groups? There *are* a number of topics that are of great interest to almost all groups. High among these are the two age-old human problems of how to keep well and how to keep happy. Probably a great change in our way of living would have to take place before these would lose any of their urgency.

Put a little more specifically, and in the actual terms used in the book, here is a quick summary of topics interesting to the general (average) reader. For fuller details, see Waples and Tyler's book itself.

1. International attitudes and problems
2. Personal hygiene
3. Self-improvement and happy living
4. Laws and legislation
5. The nature of human nature
6. Getting along with people

As Waples and Tyler point out, the number would probably have been greater except that the topics themselves were so specifically worded.

Equally if not more useful than a knowledge of the general reader's interests is a knowledge of the interests of men versus women. Sex is the most important determiner of differences in interests within the group of general readers. Studies of newspaper readership agree that men are greater readers of news and

women of the human-interest stories that accompany the major news stories. The same general trend can be seen in nonfiction book interests.

Perhaps a list of topics preferred and avoided by men and women will help to point out sex differences. For men:

Preferred Topics	*Avoided Topics*
1. Laws and legislation	1. Artists and musicians
2. International attitudes and problems	2. Actors and actresses
3. The next war	3. Modern styles, manners and customs
4. Preparedness	4. Social welfare problems
5. Personal hygiene	5. Art and art crafts

For women:

Preferred Topics	*Avoided Topics*
1. International attitudes and problems	1. Problems of state and city government
2. Personal hygiene	2. Foreign governments and politics
3. Nature of human nature and intelligence	3. Organization and administration of big business
4. Personal qualities analyzed	4. Foreign trade
5. Self-improvement and happy living	5. Insurance
6. The changing status of women	6. Marketing
7. Interesting places abroad	7. Business ventures
8. Interesting peoples	8. Mechanical inventions
9. College and higher education	9. Developments in the auto industry
10. Successful marriage	10. Developments in farming
	11. Mining and metal industries
	12. Trades and manufacturing
	13. Organizations—political, social, and fraternal
	14. The family car

Other factors also contribute to major differences in reading interests, but they are minor compared to sex. The further breakdown listings in Waples and Tyler's book should be very useful to the writer for special groups. This is most true for the writer who knows his readers well, for he can likely find them among the many kinds of readers (or rather, groups of readers) that Waples and Tyler studied. Certainly he can at least find closely parallel groups and their preferred and avoided topics.

Not so much is known about fiction interests. This is at least partly because fiction is harder to classify than nonfiction. Perhaps the best study of fiction interests, that made by Jeanette Foster (60), bears this out: the only feasible breakdown found was in terms of author. In reporting this study, we'd like to emphasize that it, too, should be taken as suggestive rather than definitive.

No information about the general fiction reader comparable to that for the general nonfiction reader is available. But the greatest factor in general reading differences is again sex. Men prefer physical action stories, adventure, external clash of personalities, detective stories, historical novels, and romance novels (this latter is liked least of those listed). When men read about general social problems, they usually do so in nonfiction.

Women like social problem novels, fiction of the philosophical sort that deals with individual adjustment, novels of family life (the outstanding preference of the entire study), and love stories. Women also seem to prefer subtle irony rather than the more direct laugh which men prefer.

More recently (1950) the American Institute of Public Opinion (184A) questioned a group of adults about their reading interests. "Which of these plot situations would you prefer if you were going to read a book tonight?" In answering this, more men than women picked

—A detective plot
—A historical novel plot
—A comedy situation

More women than men picked

—An ugly duckling plot
—An Oedipus-complex plot
—A love story
—A heavy drama

Once again, factors other than sex seem to play a relatively minor role in determining group interests. Level of occupation (professional versus trade, for example) seems less important than expected, and some common conceptions of occupational group interests are not supported. One such, that professional men are particularly heavy readers of mysteries, was not found to be true. Fiction interests, in general, seem to follow the author, publicity and reviews, etc., much more than do nonfiction interests.

So much, then, for content reading interests. There is little question of the value of touching upon the reader's interests where

possible. But how about when this is not possible? Certainly many subjects of very low interest value must be written about. Many important but seemingly uninteresting topics must be handled by most writers.

This situation is not a hopeless one—several things can be done to attract and hold readers. The first of these is for the writer to give his material an interesting turn (that is, to utilize the analogic interest mentioned earlier). The second is to utilize "human interest." Both can be adapted to the uninteresting material problem, though with perhaps less certain results than when using inherently interesting material.

Analogic interest value can be built into material best by utilizing what is known about content interest and the special interests of the group written to. All that has been said about this in Chapter 6 and earlier in this chapter should prove useful. It is easy to see that, if the reader cannot read about himself or his special group, he will not lose interest if he can see how material applies to him or relates to his interests. Of use here, besides analogies, are references, applications, examples, comparisons, paradigms, and illustrations, all in terms of the known content interests of the reader.

Human interest is the term applied by Rudolf Flesch (50) to the interest value which derives from the use of "personal words" and "personal sentences." Personal words are considered to be first-, second-, and third-person pronouns (except where they refer to things rather than people), words with masculine or feminine gender, and words that indicate groups ("people" and "folks"). Personal sentences are quotes, questions, commands, requests, exclamations, and grammatically incomplete sentences whose full meaning must be inferred from their context.

As you can see, there is a close relationship to analogic interest, since human interest makes writing appear to be put directly to the reader. Fiction, of course, is high in human interest, which may be at least part of the reason it is chosen over nonfiction for leisure reading. Human interest tends to make writing sound much like speaking, whether formal or informal. Even in the most formal speech, personal words and sentences are common and make the speech sound "natural"; informal talking has even more of them and would sound even more stilted without them.

Of course, writing and speaking are two *different* ways of communicating. This sounds all too obvious, but it should be kept

particularly in mind when using human interest in writing. Speech can carry a heavier load of personal references than can writing. There is a little evidence that too much human interest in unexpected places tends to repel the reader. Too much personalism may make writing appear maudlin or "sweet." The most satisfactory solution is to be careful not to inject very much human interest into writing that normally would not have it (technical pieces, for example). Be free to use it, though, in writing where the reader would expect to find it (fiction and the sort of informal nonfiction of which the *New Yorker's* "Talk of the Town" is a good example).

Human interest as we've defined it is not the easiest thing to measure well. Flesch, as we've mentioned, is the only person to attempt to measure it. The chief problem is that it is difficult to find out just exactly what effect it has on readers. One thing seems fairly definite: it contributes little if anything to the comprehensibility of reading matter.

One other related human interest approach should be mentioned. It is to gain such interest through the vocabulary used. Colorful words, that is, picture or image-bearing words, seem to entice the reader's interest. Apparently when a reader can form a mental picture of what is described he can often see himself in the picture; poetry, of course, is especially rich in the use of colorful words. Such words are less well defined than human interest, however, and since there is less evidence on their effect, we cannot say more of them here.

Before we leave the subject of reader interests and go on to the next chapter, we should point out that what a reader *wants* to read does not agree perfectly with what he *actually* reads. All readers are, at some time, in the position of having to read something they were not interested in. But apart from this, a number of conditions keep them from reading what they prefer even when they have free choice. Among such are lack of time, lack of reading matter on appropriate topics, difficult style, highly specialized or abstruse vocabulary, and many others. With the large number of books, magazines, and newspapers available today, the greatest deterrent to fulfilled reading desires is difficult style and vocabulary, that is, writing that is unreadable to a prospective reader.

The need for a writer to be able to know whether he's meeting his reader is indeed important. When a reader of low or average

reading ability picks up material of great interest to him, he will probably try to read it even if the style is difficult. He may not get far into the material, and he may not understand what he does read. If, though, the material is of only enough interest value to encourage a casual glance, he will not even make much of an attempt to get through it.

These remarks needn't be confined to readers of low or average ability, either. Our present highly advanced technology, with its specialization and unfamiliar vocabulary, presents a problem even for the highly skilled reader. Such a reader may have a good general background, but yet be stymied by accounts of frontier achievements in science.

Whatever the reading ability of the reader, highly readable writing has merits. For the less able, who must struggle to understand if, indeed, they read at all, it is necessary. What about superior readers who read the same writing—will they be insulted? If the writing is done skillfully, no. Capable readers, for example, who got an easy version of a newspaper were found to have read more of it than equally capable readers who got a hard version of the same newspaper. Maybe readers are lazy—or maybe they're just trying to be efficient. If the writing is skillful as well as simple, at least they're not bored.

There is one situation where readers may be unhappy reading an easy style: when they are experts in the field about which they are reading. Criticism has arisen many times when experts have read what seems to them unduly easy writing. Perhaps the scientist's objection to the popularizer has come largely from this. Flesch, speaking of his own doctoral dissertation, noted that though it was on readable writing, it was highly unreadable. He would not have wished it, but had he not written it that way his doctoral committee might not have accepted it.

Elias Lieberman, Associate Superintendent of Schools for New York City, (111A) tells of a woman connected with one of our important colleges who defended a vague and overworded article very bluntly: "If I wrote simply, I'd lose status at the college."

This is not to decry complexity and scientific terminology when they are unavoidable, but when they serve no purpose, the fact should be recognized and they should be avoided. The reader will be thankful. Or, perhaps more accurately, the writer will be thankful for the greatly increased number of readers.

We have mentioned readable writing here because it is so

closely tied to what is known about what the reader is like and what can interest him. In succeeding chapters we shall bring up what is known about writing that is clear and understandable to the reader. Much of this has come from the use of, and research on, readability formulas, and formulas in turn grew out of a knowledge of readers. What follows, therefore, should be interpreted wherever possible with this chapter and the preceding one in mind.

In Chapter 8 we shall take up the statistical background for formulas as a base from which to describe their development. After some information on the number there are and what they are like (Chapter 9), we shall indicate ways they can be used (Chapter 10). Following this, then, we shall present several chapters on what we know about how to write in an understandable style and the effect this has in helping the writer to meet his reader.

8. STIX AND STONES

"Stix," as the statistician sometimes calls the numerical data he works with, or "statistics," as they are known to ordinary people (such as writers), have made possible a new approach to many fields. Compiling and interpreting statistics have enabled students to translate into more easily handled mathematical terms knowledge which, without statistics, can be only a sort of generally accepted hunch about something. The physical sciences (chemistry, physics, etc.) have long used numbers; the social sciences (sociology, psychology, etc.), though they've come to use them only relatively recently in the form of statistics, also make considerable use of them.

And now even writing is being statistically studied. *Some* writers, a bit alarmed at the thought of this, start hurling stones. "Trying to take the art out of writing!" "Trying to make us write baby talk!" "Think every reader's a moron!"

Psychologists would say that writers are primarily "verbal" in interests and aptitudes, not "numerical." Engineers, on the other hand, often distrust words and handle them poorly. But there's another reason, too, for the writers' resentment. It stems from a distorted picture of what statistics are. One often hears, for instance, "You can use statistics to prove anything," or "Applying statistics to writing will result in mechanized writing."

Actually, statistics play a greater role in the life of every individual today than he realizes. The reason for their wide use is their service to clear thinking and concise presentation of information. Points which in writing would be unclear, if understood at all, often yield to statistical summarization. The English language is very complex; its desirable richness is what makes complexity inevitable, and it is this complexity that makes numbers inevitable, too. As a very simple example, "a large

number" might mean 15 units in one situation; in another "a small number" might mean 15 units. A reader without much knowledge of the particular situation could hardly know what was meant by the words large or small; the same reader might know very well, however, if "15 units" is specified. This simple usage of numbers needs no generalization. One would not be likely to call such a usage statistical, but yet statistics are merely a more elaborate way of meeting this same need for clarity.

Closer to what people commonly think of as statistics are baseball players' batting averages. It is one thing to say a man "is a good hitter," but another, and to a baseball fan a much more descriptive thing, to say he "is batting .300." This use of statistics has become commonplace and has lost the obscurity it once had. Sports statistics have, in fact, heightened interest in the sports themselves and helped to create new fans. Each year sees more figures, and special statistical bureaus have been or are being set up for many sports to meet the expressed demand. The appeal of such statistics is that they permit descriptive evaluations and comparisons of favorite players in a way that words can do only very generally.

A more complex kind of statistics is used by such groups as insurance companies. Information on life and death rates, on occurrence of fires or other natural damage, etc., serves a descriptive purpose here, but serves for prediction as well. Statistical prediction, as used in determining policy rates and collection payments, forms the base of the worldwide insurance empire. And business and commerce are greatly influenced by such daily, weekly, monthly, and annual statistical indications of prosperity as number of carloadings, Federal Reserve Board Index, and unemployment figures.

We could give more instances of the use of statistics than the two simple ones we've mentioned, but they are too prevalent to mention many. Our point is that they are accepted, even expected, in life today.

The reason they can be used so widely is that they are so well fitted to a study of human nature. Humans are so variable that they cannot easily be treated in the absolute manner of mathematics. As a group, though, humans can be well described by the approximations of statistics; humans are variable, but they are variable in an orderly way, in other words.

The best way to consider this orderliness is the way it would

appear in a graph. Most human characteristics, when measured and plotted in a graph, make a "normal curve." A normal curve is of bell-shaped appearance, with a high, rounded middle and with ends gradually tapering to a point. What it represents is the usual relation of individuals to each other; there are many in the middle, or average, position, but as one goes to either the high or low end of the scale the number decreases rapidly. One example is the distribution of intelligence in the population. Most of us are "good average Americans" here; a few are geniuses or near it and about the same number, mostly hospitalized, are equally sub-par. Those around the average are often hard to distinguish, while those at the extremes are very different.

We hasten to mention, because the example is the touchy one of intelligence, that the average group does not imply mediocre *individuals.* A man in the average range often has a special skill or ability that sets him out above the genius in that respect. And again, this particular skill or ability is probably distributed in the general population in much the same way as intelligence. Most human characteristics, from weight to cranial capacity, can be described in this way. Of course, not all can be, but even the ones that can't, such as age at death, usually follow an orderly plan of some kind with the normal curve merely the most common. To be emphasized here is *orderliness,* and statistics are the most useful way to deal with it accurately.

Going one step further now to human actions, we find that what people do tends to be orderly, too. Most human behavior is as orderly as human characteristics. Specifically, writers tend to be orderly and consistent in their use of language even though each writer may have a different emphasis in his orderliness. One investigator, G. U. Yule (193), was even able to show quite convincingly that à Kempis, rather than Gerson, was the author of *De imitatione Christi* on the basis of the average sentence lengths in à Kempis's known writings. Writers tend to write in about the same way from book to book, if you measure their work statistically. These same statistics also show that two authors whose styles may seem *very* much alike can be differentiated. Yet few writers expend a lot of conscious effort in retaining a certain style, and even fewer attempt to make their style different from all other authors' styles.

Why are writers distrustful of statistics? We think there are three reasons. The first is that statistics are often too little known

by writers. An incomplete—or false—picture of what statistics can and can't do is too common. We hope to say more about this point in this chapter. A second reason, probably the most commonly given, is the feeling that statistics, a scientific method, can't be validly applied to writing, an art. We agree that statistics can't cover every aspect of the art (Chapter 15 should help show this very clearly); we do believe, however, that they can be used to analyze certain aspects of it. Readability formulas, for example, attempt to cover only certain very limited aspects, not all. Which brings us to the third reason for distrust, the feeling that statistics, if applied, will destroy the art of writing. Chapter 14 recognizes the misuses of formulas which *can* lead to such destruction, but points out that they need not occur.

But, getting back to a first and most important question of what statistics can and can't do, statistics are usually used in one of three general ways: to describe, to sample, or to predict. Our examples earlier in this chapter show chiefly how statistics can describe. The actuarial tables of the life insurance companies are a description of our nation's pattern of dying. Similarly the statistics compiled by the Bureau of the Census are a detailed description of us as a people such as could never be expressed in words.

Statistics permit concise, yet accurate, presentation of complex occurrences and are a rather universally understood sort of shorthand. They are used more in this descriptive way than in any other, but they are not always most useful this way. Certainly this usage is very limited in its application.

The second way statistics are used is to sample complex occurrences such as what in the soil, or the sea, or the rainfall, makes for a good corn crop; or what goes to make up intelligence (use of words, or use of numbers, or ability to manipulate ideas). Such sampling is an attempt to get a clear picture of an entire group or class of occurrences with a minimum of labor and a maximum of accuracy. With simple occurrences of a small number, of course, there is little point in sampling since the entire (called the "universe" by statisticians) can be measured. And measuring an entire group or class avoids the errors in estimation that sampling statistics can lead to. The case for statistics rests on the fact that human behavior is so complex (e.g., writing), or the group to be measured so large (e.g., readers), that complete measurement is impossible. Therefore, sampling.

There are two basic kinds of sampling. The first is "random" sampling where, as the term indicates, cases for study are chosen freely, with no plan to choose any one case over any other. The rationale, as one may guess, is that chance will tend to even things out in an orderly way. Most experimental use of statistics involves random sampling.

Sometimes, though, a random sample is inefficient, either because too many cases are necessary, or because there is good reason to believe free choice would lead to a false picture of the group. Perhaps an example will help. If a public opinion pollster wants to try to discover how people will vote in a state or national election, he can't ask all voters his set of questions. Nor can he ask enough, randomly, to give a stable indication. If he stands on street corners in various cities and asks his questions, he won't ask as many men as he should, as many poor, or as many older voters, etc.; in short, he cannot trust his results.

What the pollster therefore does is determine (from the U.S. census) what percentage of voters are men and what percentage women, under and over 40, with high and with low economic standing, etc., in all kinds of combinations. Then he goes out and finds the right numbers and kinds of people to fit the bill. He is doing "stratified" sampling.

Before anyone says it, we'll say freely that polls can be wrong. The *Literary Digest* erred in 1936 primarily because its poll was based only on its subscribers, a wealthier-than-average group. Its subscribers simply voted differently enough from all U.S. voters to give a poor estimate. All the reasons why the pollsters were wrong in 1948 and rather non-predictive in 1952 are not known, but carelessness and overconfidence on the one hand, and overcautiousness on the other, are among the major ones.

Now when sampling goes wrong, the third general use of statistics, predicting or generalizing, goes wrong too. Basically, statistical prediction is merely inductive reasoning, but expressed in number symbols rather than word symbols. When sampling (the premise) is wrong, prediction (the conclusion) must also be. The chances of wrong prediction are related to several things, of which the most important are the adequacy of the sampling (which, in turn, is related to the number of samples taken) and the complexity of the thing being measured. Certainly one of the very most complex is voting behavior, involving as it does personal whims, rumor, changing mood, and all the other variables

that make up human capriciousness. That it can be predicted at all is surprising; yet, today, many such predictions are accurate.

The most common way of getting at prediction is by the use of a statistical measure called correlation. It shows how closely things vary in relation to each other; that is, the way one will increase when the other increases, or decrease when it decreases. Correlation is not *necessarily* a measure of cause and effect, although it may be in some cases. Certainly there is cause-effect in the relationship of heart failure to death. There is a high relationship between the number of churches and number of saloons in cities. Is it cause and effect? It might seem so, yet mere number of people in cities is a more reasonable answer. The greater the number of humans, the greater (in general) the number of saloons and also the number of churches. Correlation is important here because it has been useful in many studies of writing and language. Some small indication of how many and how useful will be clear in our next chapter. But to get back to our example.

We chose presidential polling as an example of applied statistics for a special reason. It shows clearly how "relative" statistical prediction can be. Mathematics is usually thought of as dealing in absolutes; statistics, though resembling this conception of mathematics superficially, clearly deals in approximates. Yet today even the so-called exact sciences are making more and more use of statistics. A good example is physics, where quantum mechanics, essential to the conception and development of atom-splitting, is statistically based. All of which indicates again that when one studies natural phenomena he must use approximates and not absolutes.

How does all this concern writing? In many ways, since even the learning of language is based on a crude statistical approach. A small child, once having got to the word learning stage, begins to use such an approach. At first, of course, children learn specific words for specific situations. As they grow older, however, they begin to hear the same words in different contexts or with different meanings; it is then that the statistical point of view enters. On the basis of the sampling heard, children can go ahead to determine just what the range of appropriate contexts of a word is. Use of a word in a particular situation, based on previous knowledge, is therefore a kind of "prediction."

Thorndike, in his wordbooks (167, 168, 170), has attempted to make language learning easier for children by carrying out some

of these steps. Through a very large sampling of all kinds of literature, Thorndike was able to present a list of words based on their frequency of occurrence. A child, learning the more frequent words, is able to supply the needs of various language contexts.

Adults use much the same method as children in learning new words for new situations, or new meanings. Much more complex, and more subtle, though, is the related method of judging style, realism, etc. Yet, basically, statistical reasoning is involved. The judge's feelings are based on his sampling experience of many pieces of writing. So, too, the writer uses statistical method. The good writer is the one whose knowledge of words and meanings and contexts is most adequate. And this adequacy must be based on his sampling of how words have been used by other writers. It might seem that little room is left for originality. This is not the case; writers may be consistent in their writing and yet differ from other writers. Yule's study showed that statistical research itself can be used to point out this orderly originality. There need be no fear for originality for another reason—statistical prediction is never perfect. It is certainly better than a guess, even than the most educated guess, but never quite perfect.

Those who might think a more formal statistical approach to language is rare, or fruitless, might well glance at G. A. Miller's *Language and Communication* (125). In recent years the study of communication has come to be formalized, and the relationship between the essential elements of communication has been worked out. Miller's book is essentially a summary of what has been discovered about language through these formalized studies. In an age that has become so specialized that a scientist usually has no idea what his colleagues down the hall are trying to do, it's a very valuable kind of book, one that brings together in a readable form the significant findings from a number of related fields. Writers will find its summary of research on speaking, listening, writing, and reading particularly interesting, not only for its general interest to them, but for its specific relevance to their work. The four language activities are so closely interrelated that information about one of them has either a counterpart or related information in one of the others. What linguists sometimes call the prosodic pattern of spoken language (e.g., loudness, pitch, pauses, etc., used for stress) is simply spoken punctuation, italics, and boldface.

Miller's book shows the extent to which statistics have been applied to language. Statistical studies have been made of phenomena ranging from the relative frequencies of various sounds to the number of times people in a community speak to each of the other members. The statistical change in the use of various punctuation marks through the years, in itself, constitutes an informative study.

When writers read, they are like any other readers in that they enjoy reading about their particular field of work. For that reason Miller's book should be interesting leisure reading for writers. Though written as a text, much of it is not highly technical in nature. It presents relatively simple descriptive material, but it also presents the work of theorists at the frontier of language study. An example of the latter is G. K. Zipf, who has, for example, pointed out that as a word gets older, it gets shorter, and that as it gets shorter it acquires more meanings.

Being merely a survey, the book does not go deeply into all fields. This is true of readability studies, which we shall take up in our next chapter, where we indicate the wide range of the aspects of writing style that have been analyzed statistically. This range is from the early, and much used, sentence length, through measures of word frequency and familiarity, to attempts to handle the difficult problem of what makes a word abstract.

To summarize here before going on, though, we'd like to say again we believe writers should treat statistics as more a friend than a foe. Potentially, statistics can be of value in three ways: in helping writers to write, in helping writers evaluate writing, and in helping writers learn to know their readers. We've already mentioned the importance of knowing readers, and what it is important to know, so in following chapters we'll go on to writing and its evaluation. Basic to what we have to say must be an acceptance of stix, not as an unpleasant parallel to stones, but rather as a worthy companion to words.

9. HOW TO MAKE A YARDSTICK

BY YARDSTICK WE MEAN any technique for predicting some of the many different effects a given piece of writing will have on its readers. The effects that people have been most anxious to find ways of predicting are (1) whether readers will be able to read and understand the writing, (2) whether they will enjoy reading it, and (3) what course of action readers will take after reading it. This last effect is a rather if-y one. Probably the nearest there is to a quantitative technique for measuring it are probable-response formulas on which much of the mail order business operates.

The first two, and primarily number 1, however, have been the effects that readability research has been chiefly concerned with. Many techniques, based on the statistical approach discussed in the last chapter, have been developed for measuring these. Some, but not all, of these techniques, or yardsticks, are the readability formulas.

We are not suggesting that writers make their own yardsticks. This would be inefficient; the making of a scientifically sound style yardstick is a long and complex process. Besides which, of course, there are a number of good ones available. We are, however, suggesting that writers should know how yardsticks are made if they plan to use them. Knowing this should help determine when and where to use one, what one to use, and how to avoid the errors use of them can lead to.

The making of readability yardsticks, as we indicated earlier, is relatively recent. The problem of writing so the reader could fully understand was recognized early, but how best to go about solving the problem wasn't. Two developments were necessary to the solution: the construction of statistical techniques and the uncovering of style elements which made for difficult or easy

reading. In the Twenties both were brought to the point where "readability formulas" could be presented.

As we've noted, the first readability formulas were for use with children's reading materials. There was but little work on formulas for adults till Gray and Leary published *What Makes a Book Readable* (70) in 1935. The formula these authors presented has since been superseded by better; new and different indicators of difficulty have been introduced; formulas have become popular though few users even know of Gray and Leary's work. Yet the book remains a classic today, since no subsequent studies have covered the field of readability so thoroughly, or investigated so many style relationships.

What Makes a Book Readable presents one of the clearest published examples of how to make a readability yardstick. Its authors knew well the reader for whom their formula was developed. They tried, also, to get a picture of as many factors as could possibly affect reading difficulty. In all, they listed 228 elements they thought might be related to reading difficulty. These elements ranged from "general appearance of page" to "number of asides." Many of the factors, they found, were important but could not be measured accurately or reliably. Those that could be satisfactorily measured they studied extensively.

Gray and Leary first found that four characteristics were important in determining a reader's acceptability of a book: format, general features of organization, style of expression and presentation, and content. Most important, by a slight margin over style, was content; third in importance was format, and almost equal to it, organization. As Gray and Leary use the term, *organization* refers to the way the material is broken into chapters, sections, and paragraphs, and to the use of reference guides and running heads. It means this rather than how the writer organized his ideas.

The authors found, however, that content could not be broken into usable measuring factors, nor could format and organization. They did not minimize the importance of these other three factors; nor do any people doing readability research today. They simply could not use them in developing their yardstick.

Style, therefore, remained the one area from which important and reliable yardstick elements could come, and it was this that Gray and Leary studied most carefully. Before we say more about this area, though, we'd like to mention briefly at least some of the important points in the other areas. While the practicing writer

can only *estimate* their importance, he should, however, at least be acquainted with them.

Content, Gray and Leary found, could most easily be divided into three categories.

1. Theme—adventure, people and personalities, etc.
2. Nature of subject matter—timeliness, interest value, etc.
3. Unity of content—single phase or idea, without requiring background knowledge of the reader.

They are presented in estimated order of importance, and constitute the meat of a book. Without attention to them, as they affect the reader, few blandishments of style can be important. Without reader interest in content, naturally, there will likely be no reader.

Format needs less emphasis, perhaps, for writers than for those who are primarily editors or publishers. Since, however, many professional writers also edit or publish, or at least have a large stake in their excellence, here are the elements Gray and Leary found important. The list is in estimated order of importance, but differences in degree are small throughout: (1) kind and type of printing, (2) illustrations, (3) general appearance of book, (4) size of book, (5) quality of paper, (6) binding, (7) number of pages, (8) margins, and (9) length of line. There have been many studies of format-related elements since Gray and Leary's book, with perhaps the most interesting prospect the relation of typography to book content. These will be summarized in terms of their effect on the reader in Chapter 13.

Organization is of considerable importance in effective writing. It certainly is one of the more formal aspects of fiction writing to which a good deal of attention has been paid. Since our next chapter is devoted largely to problems of organization, however, we shall not do more here than note briefly Gray and Leary's findings regarding general (format or page) features of organization. In order of importance, they mention reference guides and title of book (about equal), and paragraph divisions and chapter divisions (again of about equal, but of lesser, importance).

So much for all save style. Here, Gray and Leary listed 80 elements, 64 of which could be counted reliably. The next question then was, "Are any of these 64 elements actually related to reading difficulty, and if so, which are most closely related?"

To answer this question, Gray and Leary constructed a reading test for adults which they could use as a criterion or base for

their studies. For each of the passages in the test there was a set of questions to indicate how well it was understood. The next step was to give the test to about one thousand people, and determine the difficulty of each passage, based on how many questions could be answered. Following this came the analysis of each passage to see if certain style elements occurred more or less frequently as passages got harder. This step required the use of our statistical technique, correlation, which gives a measure of relationship. In this case, the difficulty of each passage was correlated with the number of times each element occurred in it.

No element yet uncovered can be used by itself as a perfect measure of reading ease or difficulty. It is extremely unlikely that any ever will, because of the complex nature of both writing and reading. Reading, like many another human activity involves many factors, and man himself is not only complex but variable (from one time to the next). In the case of human communication, the problem is heightened by the fact that two humans are involved, the writer and the reader. These two usually differ greatly in background, in special abilities, and even in personality, all of which makes them very different persons and contributes, in some complex way, to the problem of measuring readability accurately.

Of course, if readability *could* be measured by using only one element, writing itself would almost have to be a kind of unskilled labor rather than the art it is. To show further that it is an art, no known *combination* of elements will correlate perfectly with reading ease or difficulty. Again, no such combination is likely ever to be found. *But,* some elements are better than others, and when they are combined in the best possible way a satisfactory measure is afforded. So the final step taken by Gray and Leary was that of putting the best elements into the best combination.

Before we consider this last step, however, a further word about correlation in addition to what we said about it in the last chapter. Correlation is always expressed as a number (called a coefficient). This number, the correlation coefficient, can vary from plus one (+1.00) to minus one (—1.00). A *perfect* correlation is either of these numbers; no correlation at all is indicated by zero (.00). In other words, either of the two extreme limits of the scale can signify perfect relationship. This may seem a bit confusing, but here's a simple made-up example to show you how it can be.

Let's say that a small imported car of 50 horsepower would go

50 miles per hour, an average American car of 100 horsepower would go 100 miles per hour, and an expensive sport model of 150 horsepower can travel at 150 miles per hour. If all intermediate cars also had corresponding horsepower and speed, there would be a perfect positive correlation (+1.00) between horsepower and speed for all cars. This would be expressed as +1.00.

The correlation is *perfect* because each added horsepower brings a *proportional change* in speed, and it is *positive* because the change is always in the *same direction. Add* one horsepower, and one mile-per-hour of speed is *added; subtract* one horsepower, and one mile-per-hour is *subtracted.* If a person knew the car's horsepower, he would automatically know its maximum speed.

Now let's suppose that the small imported car of 50 horsepower would travel 50 miles on a gallon of gas, the average American car of 100 horsepower would travel 30 miles, and the sports car of 150 horsepower would travel only 10 miles on a gallon of gas. Presuming that the horsepower and miles-per-gallon for all other cars corresponded in this same way, there would be a perfect negative relationship between horsepower and miles-per-gallon. It's expressed as −1.00.

Again the correlation is *perfect* because each added horsepower brings a proportional change in miles per gallon. The correlation is *negative* because when horsepower goes up, miles-per-gallon go down, and vice versa. For every horsepower you add, you lose 4/10 of a mile per gallon, and vice versa. (If the 1 to 4/10 part is confusing, you could even create your own unit for measuring distance. Call it a pointfourmile and say that one pointfourmile is 4/10 of a mile. Then for every change, up or down, of *one* horsepower, you would have a change in the opposite direction of *one* pointfourmile per gallon. The only advantage of this is that it puts the correlation on a one-for-one basis and gets rid of the fractions.)

So if a person knew a car's horsepower, he would also know how far it would go on a gallon of gas.

These relationships *do* hold in a general way for cars, except that in reality they are by no means perfect relationships, because of many other factors. Automobiles differ somewhat erratically in such factors as weight and amount of streamlining. These differences would upset any theoretically perfect correlation between horsepower and speed or between horsepower and mileage.

In human activities, the relationships would be even farther from perfect, because of the even greater complex of factors

operating. Nevertheless, in the behavior of humans as well as of automobiles, relationships between different factors can be observed statistically and described by a correlation coefficient, which may be positive or negative.

Now let's see how this ties in with readability. Turning ahead a few paragraphs for a moment to the partial list of factors that Gray and Leary studied, we find for their particular sampling of the reading population (1000 adults) and with their particular test passages that

—The longer the average sentence length (in words) of a passage, the less the readers got out of it. The minus sign of the correlation coefficient (—.52) tells us this.

—The greater the percentage of "easy" words (as defined by Gray and Leary) in a passage, the more the readers got out of it. The plus sign of the correlation coefficient (+.52) tells us this.

This correlation coefficient of —.52 describes the relationship, then, between two phenomena that Gray and Leary observed. Does it mean anything more? Insofar as Gray and Leary's 1000 people were typical of the entire reading population, it can serve as a basis for predicting whether material of a particular average sentence length will be readable to a particular individual. This is provided the individual's grade level of reading ability is known, *grade level* being determined by the showing that individual would make if he took a graded reading test. But with what accuracy can one predict with the aid of this —.52?

It does *not* mean, as one might suspect, with 52% accuracy. We needn't go into the mathematics of it here, but a correlation coefficient of about plus or minus .71 is necessary before you have 50% prediction accuracy. A correlation of .52 *is,* however, usually better than even the most "educated" guess. Roughly, then, one may think of the correlation coefficients of the various readability elements as indicators of the elements' comparative value as readability determinants.

Although none of the elements studied by Gray and Leary had a higher correlation coefficient than .52, single style elements can be combined statistically for more accurate prediction. Combinations are almost always better than any single element. Readability formulas will predict to the extent of a correlation of about .71 even though no one of their elements will do nearly so well alone.

We've gone into all this for two reasons: (1) The writer who understands the rationale of formulas can make more intelligent use of them. And (2) it repeats the statistical shortcomings of these various elements as readability predictors for the benefit of critics who still talk as though formulas pretended to complete accuracy. These shortcomings have been acknowledged by most all readability people, but an idea that's as much sport to flog as the infallibility of readability formulas never seems to die. People enjoy reviving it just to beat it some more.

We'd like to point out, too, that the predicting power of formulas is high by research standards. Few predictors of so complex a thing as human behavior are higher.

Back once more to the readability elements themselves. Of the 64 elements that Gray and Leary found were (a) related to reading difficulty and (b) could be counted reliably, here are the 17 that correlated the highest. These all have correlations of .35 or above.

1. Average sentence length (in words), —.52 (i.e., the longer the average sentence, the less easy the material)
2. Percentage of "easy" words, .52 (i.e., the larger the number of easy words, the easier the material)
3. Number of words not known to 90% of sixth grade pupils, —.51
4. Number of "easy" words, .51
5. Number of different "hard" words, —.50
6. Minimum syllabic sentence length, —.49
7. Number of explicit sentences, .48
8. Number of first, second, and third person pronouns, .48
9. Maximum syllabic sentence length, —.47
10. Average sentence length in syllables, —.47
11. Percentage of monosyllables, .43
12. Number of sentences per paragraph, .43
13. Percentage of different words not known to 90% of sixth grade pupils, —.40
14. Number of simple sentences, .39
15. Percentage of different words, —.38
16. Percentage of polysyllables, —.38
17. Number of prepositional phrases, —.35

Other elements to a total of 44 are listed, down to percentage of compound and compound-complex sentences, which has the

lowest correlation, —.01. Included in this middle range are such elements as number of figures of speech, number of infinitive phrases, number of asides, etc. Almost all of these, while related to readability, are of relatively little value in prediction.

Looking back at the seventeen most highly predictive elements, one may well wonder if any two whose correlations total 1.00 give perfect prediction. They do not, partly because they themselves are correlated. We have talked about correlations as reducing the error in prediction. Therefore, if two elements reduce nearly the same kind of error, one will do almost as well as two. What we need are elements which are highly predictive of readability but not very highly related to each other.

The next step taken by Gray and Leary was to find just what elements fit the above description. The first formula they developed used the elements we have numbered 1, 4, 5, 8, 14, 15, 16, and 17. Notice that only eight of the seventeen listed elements were used and, too, that in these eight are the four lowest. The reason, of course, is that the other elements were too highly related to each other to add any predictive value. This formula was able to predict scores on the Gray-Leary Reading Test to the extent of a correlation of .645.

This first attempt produced a satisfactory formula if prediction alone is considered. Application of it was such a big job, however, that further work was aimed at a simpler, more efficient formula. The final formula developed by Gray and Leary consisted of only five of the eight elements, numbers 1, 5, 8, 15, and 17. This greatly reduced the time and effort of application, yet kept the predictive value of the formula up as shown by its correlation of .644. The difference between this value and the value for the longer formula (.001) is near zero; for practical use, it *is* zero.

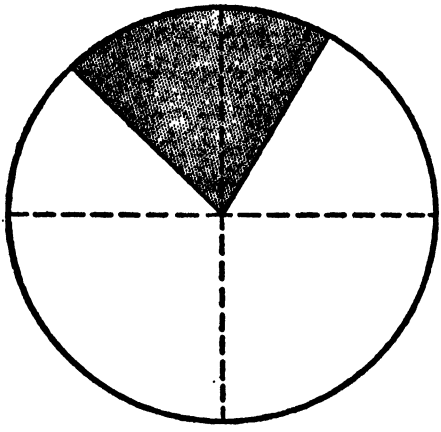
This ability of a few elements to predict almost as well as many is something that critics of formulas are unaware of or else constantly forget. Many feel that short, easy-to-use formulas are suspect because they *are* short and easy to use. "Why, this formula," they'll say, "completely ignores the number of subordinate clauses, or the number of participial phrases." Actually, a formula that measured all such factors would be only minutely more valid than the formula that measured only a few elements.

Perhaps the best way to show this is by means of illustrations. Let's suppose that the difficulty of a piece of writing is represented by the area inside a circle. If a formula element could

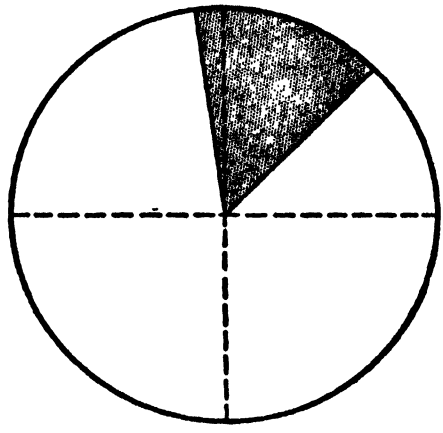
predict perfectly, it would take account of the entire area inside the circle. No element can predict perfectly, but each element can take account of certain parts of the circle.

FIGURE I

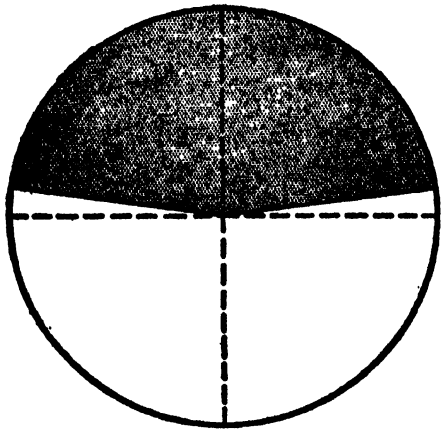
Predictive Value of Different Numbers of Readability Elements



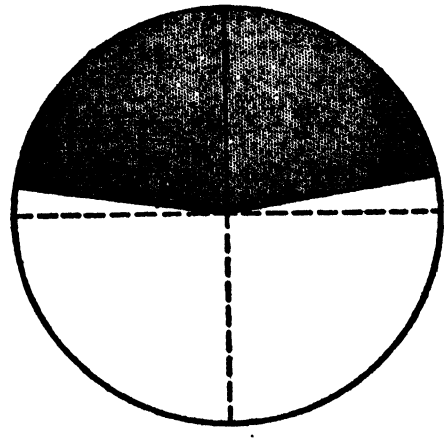
Circle 1
Element A



Circle 2
Element B



Circle 3
Best Combination of 8 Elements



Circle 4
Best Combination of 5 Elements

Circle 1 shows the amount of the area that hypothetical element A will account for, and circle 2 shows the amount that element B can handle. Note that, first of all, B is a poorer predictor (lower correlation) because it covers less of the area than A. Furthermore, B covers largely the same area that A did (high intercorrelation). The only virtue in adding B to A is that it covers a small section of the area that A did not cover. Now look at circle 3, which shows the effect of using eight elements. A greater amount is covered than in either one or two. But then, after all, about eight times as much labor is involved in the use of eight elements in a formula.

Is so much extra work justified by a corresponding increase in accuracy? The question is difficult to answer. It looks as if the answer should be "No," yet accuracy is often more important than labor.

Circle 4 shows how elements can be disregarded without compromising accuracy. This circle shows the effect of using five elements. For all practical purposes, the same area is covered as in circle three, and with a great saving in labor. Here, then, is the situation as Gray and Leary saw it—eight elements did no more real work than five.

One more point to finish the mathematical part of this story. Before these elements that are added together can be used to measure readability, they have to be expressed as a formula. The particular type of formula used for readability measurement is called a multiple regression formula. Take Flesch's reading ease formula, for instance:

$$\text{Reading Ease} = 206.84 - 0.85W - 1.02S$$

W represents the number of syllables per 100 words; *S* represents the average sentence length. As it turns out, number of syllables per hundred words is not quite as important a factor, when combined with average sentence length, as its numerical expression indicates. This is particularly true at the upper possibilities for W (around 200). It turns out mathematically that .85 is the factor to multiply it by to give it its relative weight. Similarly, to give average sentence length its relative weight, one has to multiply it by 1.02.

Flesch *could* have set up the formula like this:

$$\text{Reading Ease} = 0.85W + 1.02S.$$

In that case, however, scores would generally have ranged from about +100 (easy reading) up to about +200 (hard reading). The 206.84 is really just a sort of mathematical convenience. It per-

mits us to translate readability scores into the scale ranging from about 100 (easy) to about 0 (hard). We say *about,* because reading material *could* be found that would rate below 0 or above 100, but it would be rare.

The trend, following Gray and Leary's work, was definitely to shorter, easier-to-apply adult formulas. Lorge used only three elements; Flesch first used three and then two, the number Dale and Chall, Farr, Jenkins and Paterson, and Gunning used; McElroy used what appears to be one, but which, because of a difference in his way of counting elements, actually turns out to be the equivalent of two. There is a serious question of the advisability of using only one element; two elements, however, are now generally considered sufficient if they are "good" ones. Before going on to the acceptable elements, we're going to present a run-down of available formulas to provide a chance for comparison of them.

It would be impossible, here, to present enough information about each formula to enable a reader to go right ahead and apply it. For each formula there is a rather lengthy set of do's and dont's in application. We would like to present some descriptive information about all of them, though, because we feel a writer should have some choice in the formula he applies, and because some formulas may be better for certain situations than others. Besides, it is often wise to use several formulas, one as a check on the other or one for first draft rating and one for final draft rating.

In Tables 1 and 2, we have summarized the published formulas and indicated by bibliographical reference numbers just where instructions for using each of them can be found. Then, in addition, we've presented several formulas in Appendix I in complete enough form so that they can be applied. We chose these particular formulas because they were the ones that could be presented most conveniently.

Tables 1 and 2 require a few words of explanation. In the first place, we've referred to the formulas as "methods" of measuring readability. We've done this because some readability measures, especially the earlier ones, are not true formulas. We've included them to give some notion of the history of readability measurement; we want to make clear, though, that the more recent formulas should be emphasized. Second, we've divided the 38 listed methods into those for children (Table 1) and those for adults (Table 2). This is only one possible method of division, and, while

it is not perfect, it is perhaps more useful than any other. Some methods do overlap, and we've tried to recognize this in our comments on them. Finally, we've described the better known formulas more completely than the others, which are merely listed with date developed and a reference on where to find out more about each. (In the remainder of the chapter we've gone on to compare and contrast the more important formulas, since the Tables do not permit this.)

TABLE 1

PUBLISHED METHODS OF MEASURING THE READABILITY OF CHILDREN'S MATERIALS

Name of Author(s)	*Reference Number*	*Date Developed*	*Elements*	*Comments*
1. Lively-Pressey	(112)	1923	(1) Vocabulary range (no. of different words per 1000 words) (2) Zero-value words (words not on Thorndike List of 10,000)	This is the first children's formula developed.
2. Vogel-Washburne	(173)	1928	(1) No. of different words per 1000 (2) No. of prepositions in a 1000 word sample (3) No. of words in 1000-word sample not on Thorndike List of 10,000 (4) No. of simple sentences in 75 sample sentences	This formula is the prototype of modern readability formulas.
3. Johnson	(85)	1930	(1) Percentage of polysyllabic words in thirty 100-word samples	Interesting in that only one element is used.
4. Washburne-Morphett	(181)	1938	(1) No. of different words per 1000 (2) No. of different common words in 1000; i.e., those not on the Winnetka	This is one of the most used children's formulas.

Name of Author(s)	*Reference Number*	*Date Developed*	*Elements*	*Comments*
			Chart of 1500 (3) No. of simple sentences in 75 sample sentences	
5. Lorge	(113, 115)	1939	(1) Av. sentence length in words (2) Av. no. of prepositional phrases (3) No. of different hard words; i.e., words not on Dale List of 769 easy words	Formula used for both children's and adult work. One of the best known formulas.
6. Dolch	(30)	1948	(1) Av. sentence length in words (2) "Long sentence" length (upper tenth of sentence lengths) (3) Percentage of words not in Dolch's "First 1000 Words for Children's Reading"	This is one of the newest of children's formulas.
			Other Methods	
7. Ward-Stevenson	(180)	1925		
8. Kyte	(103)	1925		
9. Mathews	(123)	1926		
10. Keboch	(90)	1927		
11. Dolch	(29)	1928		
12. Lewerenz	(106)	1929		
13. Witty-LaBrant	(190)	1930		
14. Lewerenz	(108)	1930		
15. Brown	(13)	1931		
16. Patty-Painter	(142)	1931		
17. Holland	(82)	1933		
18. Lewerenz	(109)	1935		
19. Bergman	(9)	1936		
20. DeLong	(28)	1938		
21. Morriss-Halversen	(128)	1938		
22. Lewerenz	(110)	1939		
23. Yoakam	(192)	1939		
24. Kessler	(92)	1941		
25. Edgerton	(32)	1945		

TABLE 2

PUBLISHED METHODS OF MEASURING THE READABILITY OF ADULT MATERIALS

Name of Author(s)	*Reference Number*	*Date Developed*	*Elements*	*Comments*
1. Kitson	(93)	1921	(1) Syllables per word (2) Sentence length in words	This is a comparison method rather than a true formula; it is interesting, however, because at the early date of 1921 the same elements were used as in Flesch's recent "reading ease" formula.
2. Dale-Tyler	(25)	1934	(1) No. of different technical words (2) No. of different, hard, nontechnical words (3) No. of indeterminate clauses	Interesting in that it is one of first true formulas for adults though actually for low-ability readers.
3. Gray-Leary	(70)	1935	(1) No. of different hard words; i.e., not on Dale List of 769 (2) No. of personal pronouns (3) Av. sentence length in words (4) Percentage of different words (5) No. of prepositional phrases	Because of its completeness, Gray and Leary's work has been one of the landmarks in the study of readability.
4. Flesch	(45, 115)	1943	(1) Av. sentence length in words (2) Number of affixes (3) Number of personal references	The first Flesch formula, since superseded.
5. Dale-Chall	(22, 23)	1948	(1) Dale score; i.e., words not on Dale List of 3000 (2) Av. sentence length in words	Second most widely used adult formula; applied to both children's and adult work.

Name of Author(s)	*Reference Number*	*Date Developed*	*Elements*	*Comments*
6. Flesch	(50)	1948	(1) Av. sentence length in words (2) Av. word length in syllables	This is the most widely used of all readability formulas, and is used in both children's and adult work.
7. Flesch	(54)	1950	(1) Counts of 16 categories of "definite" words (2) Av. word length in syllables	Interesting because it attempts to get at abstractness of writing.
8. McElroy	(72)	1951	(1) Give each "easy" element in sentence a value of 1 (2) Give each word that is left a value of 3	This formula has been licensed to agencies of the U.S. Gov't., and is not publicly available.
9. Farr, Jenkins & Paterson	(41)	1951	(1) No. of one syllable words per 100 words (2) Av. sentence length in words	This formula has been found to be somewhat faster in application than the Flesch formula on which it was based.
10. Gunning	(74)	1952	(1) No. of words of 3 or more syllables in 100 words (2) Av. sentence length in words	This formula probably gives results closely related to Flesch's 1948 formula.
		Other Methods		
11. Ojemann	(134)	1934		
12. McClusky	(120)	1934		
13. Gunning	(73)	1945		
14. Forbes-Cottle	(59)	1953		

For those interested in analyzing a piece of children's material, probably the Washburne-Morphett and Lorge formulas are among the best choices. Though the Dolch formula is newer, it has been used somewhat less and there is less evaluative information about it. The Edgerton formula is a shortened version of

the Washburne-Morphett, and may take slightly less time to apply, but it is not as completely presented. Both the Flesch reading ease and the Dale-Chall formulas are used for analyzing children's material, but have been applied more to adult material.

For analyzing adult material, the Flesch reading ease formula is by far the most popular. The Dale-Chall formula, the next most popular, gives rather similar results but does take slightly longer for most persons to apply. The more recent simplified version of the Flesch reading ease formula developed by Farr, Jenkins and Paterson will probably soon reach a high level of popularity also. Recent studies have shown that, despite early questions about it (56, 97), it can be applied somewhat faster than the Flesch reading ease formula (31, 42) with no loss in accuracy or reliability (31, 36).

Little is published about development of the McElroy and Gunning formulas, and how accurate their ratings of readability are. It appears that the McElroy formula cannot be as accurately applied by most persons as the Flesch, Dale-Chall, and Farr-Jenkins-Paterson formulas, since the way to count elements is not as well defined. Since the formula has been licensed to U. S. Government agencies, it is not easily available, anyway. The Gunning formula has not been accompanied by any information on its development and accuracy, though it appears related to Flesch's reading ease formula. The Gray-Leary formula, while once widely used, has been used less of recent date. The original Flesch formula has also declined in use since it was superseded by the more recent Flesch reading ease formula. The newest formula, that of Forbes and Cottle, is not of as general value as those above because it was designed only for the analysis of standardized psychological tests.

Flesch's attempt to measure the level of abstraction is an interesting attempt to show how readability is affected by "abstract" writing. At present little is known of its value because it is so new. It looks much more difficult to apply than it actually is, though it is, at best, slightly more difficult than most of the other formulas. It appears more satisfactory, on the other hand, in showing a writer why his writing is difficult than most of the simple formulas of today. In other words, most formulas will point out unreadable writing with little effort on the user's part, but with, consequently, relatively little information about why it is unreadable. The shorter the formula, the less information of

this sort it gives. The level of abstraction formula will also pick out unreadable writing, with somewhat more effort in application but with a consequent greater likelihood of telling the author why it is unreadable.

So much for available readability formulas and how they are made. We do not feel any writer need attempt to make his own formula. We *do* feel every writer should know *how* they are made in at least a general way, and that he should be able to choose from available formulas when he needs one. It might have seemed desirable for us to have said more specifically which formula is best and when to use it. We've not done this because no one formula is far superior to another. All formulas are imperfect predictors of readability; usually the newer ones are as accurate as the older and easier to use. More important than *what* formula to use is how to make good use of whatever formula is chosen.

10. WRITING AND RATING

THE ORDER OF THE WORDS in this chapter title is deliberate, and significant. Writing must always take precedence over rating since formulas are only checking methods, not guarantors of a good style. Of course, rating can hardly precede writing, yet it is possible at least to put the *emphasis* on rating. Formulas become so attractive to some writers after a time that they actually begin to do this. If rating is uppermost, the result may well be trite, choppy material that is offensive to a reader rather than readable.

Here is a useful seven-step procedure for fitting rating into the process of writing without giving it too much emphasis. First, begin with as clear a picture of the reader as possible. Without this, formulas are of questionable use in most cases. The chief virtue of formulas is the aid they give in helping a writer reach his reader. If nothing is known about him, a writer can still write simply. This is usually a wise idea, but if it is not skillfully done, if the reader has a good enough background so that the writing seems slightly insulting, etc., it has failed.

The second step should then be to write a first draft completely without regard to formulas. This unhindered writing has two advantages. It allows a writer to organize and cover all his points and, equally important, allows him to write in his own personal style. A good first draft is important because most writing (re-writing) which follows it alters it little in *basic* structure. If organization is poor, logic is faulty, and the writing generally lacks consistency, further drafts seldom completely remedy these errors. Because a good first draft *is* so important, the writing of it should be as free from unnecessary restrictions as possible.

For step three, use a readability formula to evaluate (rate) the first draft. Draft manuscript is excellent for such analysis, since it can be marked up as much as necessary to apply a formula

efficiently. What is marked depends somewhat on the elements the formula uses in measurement. For most formulas, however, 100-word units are analyzed and it is usually convenient to mark them conspicuously. If the Flesch "level of abstraction" formula is being used, definite words can be underlined; if the Dale-Chall, unfamiliar words. And so on.

Step four is to use the formula evaluation just made as a check on whether the writing is going to reach the probable reader. A formula will indicate how difficult it is to read; whether or not a *particular* reader can read it depends on his reading ability. As we have mentioned, the average American reader has about ninth-grade reading ability. While it is of some value to know this, even more valuable is such collateral information about specific probable readers as we suggested getting in Chapters 6 and 7.

Step five, revision, then follows. If the formula evaluation indicates that the first draft is at a level the reader can understand, revision needs involve only correction of grammatical errors and polishing. If, on the other hand, the evaluation indicates the writing is at too high a level, revision should concern this as well. Actually, the "reading for sense" that usually precedes a revision permits a writer to note possibly difficult ideas, sentences, or paragraphs as well as to find grammatical errors. It is usually best to use formulas to indicate general reading difficulty (i.e., average difficulty of an entire piece of writing or at least a fairly large section of it), and reading for sense to determine what to revise. The writer rather than the formula should be the determiner of specific changes, amplifications, etc. This is particularly true when the writing is long, for then usually a number of 100-word samples, rather than the entire piece of writing, is rated. Even when difficult sections are noted through rating, a formula cannot consider their context in the way a writer can and should.

Furthermore, a formula is not accurate enough or refined enough to pick up many of the fine points that cause difficulty. A formula indicates difficulty, but in itself says little about how to correct the difficulty. Most writers are quite able to discover alternate methods of presentation. For further help in this, we have gathered together in Chapter 12 available information on what helps to make writing clear to readers.

Following revision of the first draft, another readability evaluation (step six) may be in order. *May* be, because if the first draft was not much too difficult it may easily be that revision has

brought it to the desired level of difficulty. In almost all instances, however, a second evaluation is worth while. Since the acceptability (or popularity) of writing depends heavily on its readability, the time will be well repaid. If time is severely limited, it is possible to analyze the same samples as previously, and with the same formula. There is danger in this, however, since there is a natural tendency to want to revise only the samples (or corresponding paragraphs) that proved difficult. What happens then, of course, is that the bulk of the writing will have changed little in difficulty. Only if the entire piece of writing is carefully scanned for areas of difficulty, and revised, is this legitimate. Then the appropriate analyzed samples will have been revised along with other necessary areas.

Analyzing new samples is definitely preferable to merely rerating the old. This has the advantage of greater certainty of the over-all judgment of difficulty because any inaccuracies in the first sampling will tend to be cancelled by the second. Analyzing selected samples can and will usually give nearly as accurate results as analyzing an entire piece of material. If a number of changes have been made in the writing, though, a new sample should be taken to maintain accuracy.

Another possible procedure for step six is to use different formulas for the first and second analyses. No two formulas use exactly the same style elements, so a double-check on difficulty is afforded. Here it is legitimate to use the same samples as in the first rating. The chief value of this method is that it often helps to indicate undesirable "writing to formula," that is, writing to get a more desirable formula rating without too much concern for clarity, logic, and organization. Remember, though, that formulas disagree somewhat among themselves. Also, be sure to choose formulas that give ratings in comparable terms.

If, now, revision has resulted in a lowered difficulty level, a second analysis should show this. If it hasn't, *further* revision may be in order. But the final test of the readability of writing, however much revision has been made, is that described in step seven.

This step, the final one, should be to get readers' reactions to the writing. It is not always possible (or, at least, easy) to do this, but it is helpful when it can be done. Readers can turn up unclear points, can tell whether writing is simple-minded instead of simple, and more. If possible, show some of them a difficult first draft and an easier second, and let them compare. Ask them

questions and see whether they think the difficult or the easy version provides the clearest answers. Even though writers can't usually make the more scientific and accurate "split-run" tests used by research men (two comparable groups, one getting one version and one another), they can still get valuable clues. Where this final step can be taken, it often provides even more useful information than a formula. Because it cannot always be, we have tried in Chapter 13 to point out some considerations that have grown out of observed effects of various kinds of writing on readers. They are general, however, and are not a substitute for the more specific comments of readers where they can be had.

Many writers' reaction to this set of steps probably is something like "Why spend so much time using formulas? Why not just use that time in revising and polishing—the results would probably be better!" This quite natural feeling obscures two facts. First, formulas are quick and easy to apply. After having analyzed about ten or so 100-word samples, the next one takes only about three to six or seven minutes, depending on the difficulty of the material concerned. This is true for any of the newer formulas we've mentioned. "What about the computation?" may be the next question. "Working out the level of difficulty would take as long as counting the occurrences of the elements of difficulty."

This could be true, except that devices have been prepared that take care of most of the computations. Flesch, on the inside cover of his *The Art of Readable Writing* (52), has a set of scales for use with his revised formula that permits a direct reading of readability score when sentence length and word length are known. In addition, Science Research Associates, 225 South Wabash Avenue, Chicago, sells a $2.00 computer that does the same thing, and Farr and Jenkins have published tables (40) that do a comparable job. Twedt has developed a table (172) for use with Flesch's level of abstraction formula; Farr, Jenkins, and Paterson a table (41) for their formula; and Klare a table (98) for the Dale-Chall formula. There is no comparable device for the Gunning formula, but readability scores are determined in a way that makes one less necessary. Although these devices may be helpful to the writer or editor who does a lot of rating, they are not necessary. The determination of readability scores, using recent formulas, is neither difficult nor time-consuming.

More important than these considerations is a second point. It is that the more familiar a writer becomes with formulas, the less

he needs to use them. A "feeling" for easy and difficult writing grows, and he soon comes to know quite accurately just where a particular piece of writing fits in. It is surprising how many writers have reported this, though we should say that most of them have been ones who write for approximately the same general audience day after day (e.g., newspaper reporters and magazine writers). Where the audience differs greatly from previous ones, a writer can easily make a few checks with a formula to help adjust himself.

A long-range value of familiarity with formulas is the indication of whether or not the writer is reaching his reader. As the writer's sense of writing difficulty sharpens, it may be actually desirable to use formulas less and less to avoid any tendency to write to formula.

But here we would like to mention some helpful hints general to the use of most formulas. The first concerns the problem of how best to sample writing for the purposes of analysis. If a piece of writing is short, it should be analyzed in its entirety. By "short" we mean under about five pages. Though most formulas appear to be applicable only to 100-word samples, they are easily adjusted to handle any size of sample. The reason they are calibrated for the sampling of 100-word units is that the use of samples of long pieces of writing saves the analyst time (without sacrificing much accuracy), and the use of 100-word units is convenient.

The only serious concern in sampling is that it represent well the entire piece of material. The best way to achieve this representation is by using a systematic scheme for choosing samples. One of the best such schemes for the average book is to take a 100-word sample every tenth page. Thus one might, for example, select pages 5, 15, 25, etc., or 2, 12, 22, . . . The page used for the first sample can be any one of the first ten. This is not important, but systematic spacing of samples *is* because it overcomes any inclination on the part of the analyst to pick only "likely" samples.

If a piece of writing contains over about 50 pages, a tenth-page sample is generally adequate. If it contains from about 10 to 40 pages, a sample every three to six pages is better.

Whatever the analysis scheme, it is wise to take at least one sample from the introduction, one from the middle (or body), and one from the summary section of the writing. The introduction is particularly important since it is the reader's first glimpse of the content. If he doesn't like what he sees, he will go no

further. The number of books begun and discarded is known to be large, and may be as large as the number completed. Yet, despite its importance, we have found in analyzing a good deal of writing that the introduction is frequently the most difficult part. This seems primarily due to the desire of the writer to abstract his article or book to help orient the reader. The idea is good, but it too often results in "abstract" writing that is *dis*orienting. Words and phrases defined only later in the body of the text stand uncomfortably out of context in the introduction. Sentences become rambling and illogical because too many ideas are packed into each one. Lazy or not, readers do not like to tackle difficult material. This is true even of well-educated readers.

The summary section of a piece of writing may also be difficult, but in our experience it is less often. This important section usually summarizes conclusions reached in the body of the text, and therefore serves primarily to impress them on the reader's mind. Since the reasoning and the vocabulary that go into a summary usually have been directly or contextually explained earlier in the writing, there is less likelihood of difficulty here than in an introduction. This section should be watched carefully, however, since a reader's over-all reaction to an article or book is disproportionately influenced by his feeling as he closes it. If the summary is clearly and simply written, the effect the writing can have is greatly increased.

So much for the beginning and the end of books—how about the middle? There is little we can say except keep it as readable as the other sections, if possible. Since it allows more room for expansion than the introduction or summary, difficult areas can be clarified whenever necessary. Finally, be sure that at least one sample really does come from the body of the writing—the introduction and the summary aren't *that* much more important.

One more general comment on sampling: be particularly careful in analyzing writing to which several authors have contributed parts or chapters. Editors must more often face this situation than writers, so to them we say take at least one sample from each author's contribution, no matter how small.

To both editors and writers, but again particularly to editors, we add do not let revision and re-writing alter intended content unless slight changes aren't important. Remember that unintentional alteration is most likely to occur where the material is unclear, and it is just such spots that are revised first.

Though we may have talked more about rating than about writing in this chapter, writing must always receive prime consideration. The first use made of formulas may leave the impression that more attention has been given to rating; with a little greater familiarity rating will clearly assume its secondary role and, as we've noted, may even become unnecessary. Emphasizing further the dominant position of writing in the writing-rating relationship are the next two chapters. The first contains a summary of things to be considered before, and the second during, the process of writing.

11. BEFORE YOU WRITE

HERE'S A PIECE OF ADVICE most authors have heard and many have ignored: before you begin writing, define your purpose—not vaguely, somewhere in the back of your mind, but out in the open in words. Write it in a few clear sentences.

This is the secret of much good writing, and the fact that Joyce didn't write *Ulysses* that way doesn't invalidate it. Unless the writer can make his purpose clear to himself, he can be sure he won't get it across to anyone else.

It should be put as concretely as possible: "My purpose in writing this brochure (flyer, article, etc.) is to—." Then look out. Don't muster a series of abstract and self-evident reasons. Keep the statements concrete and specific. For instance, consider a mail order copywriter. For him to define his purpose in handling a routine assignment as being "to sell *How to Be a More Successful Bird Watcher*" or "to get more subscriptions to *Double Time*" just carries him sideways, not forward. Now suppose instead of that he writes something like this:

"My purpose is to single out three salable ideas about this article, and to express them as clearly as I can in language easily understood by the people to whom this mailing piece will be sent."

Now he knows where he's going and can tell when he gets there. Defining his purpose is something the writer should do before he begins any piece of writing. In the case of an article or book, he'll need to define his purpose for each chapter or smaller unit.

Let's say it another way: The advantages of defining one's purpose before beginning to write are these:

—The purpose is out where it can be looked at objectively, almost as if someone else had written it.

—It's a device against which the writer can measure ideas as they occur to him. He can tell more quickly whether an idea is usable than he could if his purpose were still floating about at the subvocal level. As a result his first draft will contain less border-line material of the sort he would cut out in revising.

—His statement of purpose should make some mention of his audience. He can then examine ideas from *their* point of view.

Chances are the copywriter we mentioned above *doesn't* define his purpose in a few clear sentences before every assignment. Well, he's probably been at his job a long time and handles every assignment the same way. The words we've imputed to him are ones he has heard frequently enough that they're foremost in his mind whenever he's creating anyway. For the less experienced writer, though, this statement of purpose is a must.

Once the writer has defined his purpose—once he knows where he wants to go, the next step is to work out the best route to take there. This means outlining. It doesn't have to be the Roman-one-capital-A-Arabic-one type of outline he learned in the seventh grade; a list of the chief points he wants to include will do. As with stating one's purpose clearly, a little effort spent on the outline will save time and prevent confusion later. There are two important things to remember in putting together an outline:

—Keep the particular audience in mind. Information about the department store in front of which the spies met may strike the writer as an artistic element, sure to enhance the reader's interest by holding him aside for a bit. But the reader has very little time for the article in the first place, so that the suspense created may manifest itself as page flipping on his part.

—Give a lot of thought to the best way to tie the material together. The same facts and ideas can be put together in many different ways. Half the art of writing is in deciding which is the best order for presenting what is to be said.

Being concrete in the outline is as important as it is in defining one's purpose. The more one-syllable words used in the outline, the easier the writing will be later. We've said the statement of purpose is a gauge for deciding whether to keep an idea. The outline is a repository for the ones worth keeping. Jot down the

ideas that are relevant enough to keep. Jot them down after the point they seem most nearly related to in the outline.

The outline serves another purpose. Since the length of practically every piece of writing today is predetermined, the writer can decide on the basis of his outline approximately how much space each point will require. This permits him to do some of the cutting right in the outline that he'd otherwise have to do in first draft.

We said a few lines back that half the art of writing is in deciding which is the best order for saying what needs to be said. Just what different arrangements of material *are* possible? Quite a few if one thinks of the various combinations that have been used. Here are the most common arrangements. We'll lean on belles-lettres for examples.

Chronological: This needs no definition. Examples of it range from the book of Genesis to magazine stories published this morning. It's the easiest way—the natural way—to tell a story, to report something, or to explain how to do something. Chronological order is not the only way to deal with biographical material, though. Lytton Strachey departed from it, as does every *New Yorker* profile, which makes use of the

Flashback: About the only way one *can* relate narrative material other than chronologically is by using the flashback. One can either use one long flashback, as did James Hilton in *We Are Not Alone,* or more frequent flashbacks, as Mailer did in *The Naked and the Dead.* There, you remember, they were subordinate to the main story and showed why the different characters were what they were. Mailer's flashbacks also served as occasional rests from the main narrative. Of a piece with the flash-back is the

Story within a story: Remember Chaucer? A curious thing about readers (and all other human beings) is this: they find second-hand information more credible than first-hand. Hence the it-*must*-be-true quality the story within a story imparts.

Ideas grouped around a central theme: In fiction, *Winesburg, Ohio,* and more recently, John Horne-Burnes' *The Gallery;* In nonfiction, Rachel Carson's *The Sea Around Us.* This form gives the stories, anecdotes, or scientific data it strings together a cosmic significance they wouldn't enjoy if you were to read them individually, without the central thread. There's probably relatively little in Carson's book that one couldn't find in the *Encyclopædia*

Britannica. The difference, to a great extent, is in the arrangement.

Simple to complex ideas: A good popularizer or textbook writer begins with ideas and facts he knows the reader already has, rearranges them, adds no more new facts than he has to, and leaves the reader with a new concept. This is the most fundamental of pedagogical principles. Naturally you teach the sums before you teach the multiplication tables, but developing material from simple to complex ideas isn't as easy as that. Scholars and specialists are often so steeped in their subject that they have no idea of how much or how little their readers know about it. The result frequently is that points far too difficult for the reader are hurriedly glossed over and words and ideas well within the reader's experience are needlessly spelled out.

There's something else to be considered before writing—point of view, or the role played by the writer himself. This may decide itself as the outline grows, or it may be determined by the material. *Or,* it may simply require serious thought.

Fundamentally there are two points of view—personal and impersonal. The impersonal point of view is the traditional point of view of the story teller and journalist. For most types of writing it is the safest. It imposes fewer restrictions on the writer than the personal point of view. If he's writing fiction—whether narrative or advertising—it gives him a universal eye to see through.

The personal point of view, on the other hand, limits the writer to things he experiences himself. This is the *I* of fiction and its editorial euphemism *we. We* is best avoided because of the possibilities for fuzzy wording it introduces. It *can* mean, as it does every time it's used in this book, the authors only. It can mean the authors and the reader. It can mean people in general.

The question of personal *vs.* impersonal point of view is very close to another question one has to consider before he writes—how *much* human interest? We've discussed human interest in an earlier chapter, but would like to go into the mechanics of it here. To show how human beings do get into one's writing, let's say the same thing several different ways.

1. "$H_2O + SO_3 \longrightarrow H_2SO_4$" Some information can be highly condensed and passed along in symbols. There's nothing here but pure statement of scientific fact. You can't get *much* more impersonal.
2. "Sulfur trioxide reacts very rapidly with water, yielding

sulfuric acid." A fact, still impersonal, although stated in words rather than in scientific shorthand.

3. "If you put sulfur trioxide in water, you get sulfuric acid." This is the direct and natural way. It's the way one might explain something orally to someone he regards as his equal. As long as the you's are natural, it's all right. When they get out of hand, the reader feels that the writer is talking too loud.
4. Now there's still another way, but it's easy to run afoul on: "Bill was making sulfur trioxide in the chemistry laboratory. Just for kicks he threw some of it into a glass of water. Curious, he tested the water with litmus paper. 'Well,' he decided, 'that must be sulfuric acid.' Sure enough, it was." Even if the writer can do this so skillfully that it doesn't offend the reader, it's still risky. Bill and his paraphernalia can too easily get in the way of what the writer wants to say.

The first two are the language of the textbook. They're free of all human beings, hence free presumably of all error. It's the language of scientists borrowed by the textbook so that it too may have all the dignity of a communication between scientists. The third way, skillfully done, is the golden mean as far as human interest goes. The fourth way—well, be careful. Because we have aimed to be as objective as possible we've tried to keep somewhere between two and three.

What we've said in this chapter boils down to this: outline before writing. The before-writing stage is the most creative part. That's when it's most important for the writer to put himself in the place of his reader. That's when he must ask himself the questions his reader, if there, would ask.

There's another point with regard to the outline that's important: don't spend forever polishing it. Every writer, as he writes, gets ideas he wants to incorporate in his writing. He should incorporate them.

By outlining first, the writer helps his reader in one obvious way. His writing will be easier to read because it's better organized. In addition, he'll find that as he jots down ideas in his outline he'll be determining much of the vocabulary in which he'll write. He'll be thinking in fairly concrete terms at that stage; the vocabulary will be more concrete than if he were to lose himself in the material and start writing.

For the writer, outlining has this further advantage. Once developed as a regular habit, it increases his operating efficiency. Having thought a piece of writing through, he will begin the actual writing with far more confidence than if he plunged right into the writing hoping that something would take shape. This extra confidence goes far toward helping one to make his writing clearer and more readable.

12. MEETING YOUR READER

WE BELIEVE THAT A WRITER will be most likely to meet his reader when his writing is:

1) On a subject of interest to his reader,
2) Clearly and interestingly written, and
3) Distinctively written.

About 1 we've said a good deal already. We cannot cover 3. To write distinctively is, in essence, to have an individual style. Each writer, to achieve this, must do it for himself. The true art in writing lies here. But we *can* talk about 2, and in fact have made it the topic for this chapter.

A style cannot be forcibly attained. Too often attempts at "unique" styles are apparent only by their clumsiness and lack of taste. Equally, attempts to conform to a pattern too often result in humdrum writing. Truly unique styles and patterns can be exceptions.

All this is important because writers frequently see attempts to write readably as following a forced pattern. The charge is sometimes even raised to the more serious one of *forcing* a dull, stupid pattern. That this *can* be we've acknowledged. That it *must* be we cannot concede. If the English language had but one-hundredth the words it has and one-millionth the combinations, or if there were a far, far smaller number of ideas to express than there are, we would have to concede. Within the limitation of writing to communicate, to meet the reader, there is almost infinite opportunity for variety of style and expression.

To help writers to achieve their goal of meeting the reader, we have some fairly specific and some rather general observations to make. The majority are based on published research and the remainder have grown out of our experience in trying to com-

municate better and in helping others to do so. Not all will be useful to all writers. Each writer should look on them as suggestions and use such as fit his particular writing job.

Most research in communication seems to agree that readable writing has at least three characteristics—understandable words, clear sentences, and concrete (rather than abstract) conceptual expression. Of these, the first two are more easily described and have received more attention. We shall take each one up independently and try to define it in terms of the research done on it.

Understandable words are the smallest easily definable units that go to make up readable writing. To be *certain* that any word is understandable to a reader would require him to define it or use it meaningfully. This is not practical for most writers because they do not have the opportunity or the inclination to try it. Even when possible, as in some formal educational or professional situations, it is only rarely practical because of the large number of English words and the even larger number of meanings they can have.

Lacking this sort of personalized information should not stop the writer; studies have disclosed a number of the qualities of understandable words. Not every word has all of these qualities, and some few may even have none. Once again, the writer must be the judge and he must base his judgment on knowledge of his reader.

These words are usually learned early in life. Such words can be further defined as short words, with length measured in a number of ways: letters, syllables, lack of affixes (prefixes or suffixes). They are words of Anglo-Saxon origin rather than their equivalents of Greek and Roman derivation. We discussed this in an earlier chapter.

This word-frequency approach to vocabulary has been a very important one for the last several decades. Any number of different lists (see bibliography) have been compiled—"easy" words, words understood by 80% of fourth graders, words used in the speech of kindergarten children, words used in the writing of primary grade children, and many others. Textbooks for primary grades are often carefully constructed around such lists.

Some of the research in compiling word-frequency lists has been aided by the U. S. Government, at least indirectly. Lorge, in making the tremendous word frequency survey mentioned some chapters back, had the assistance of a WPA-sponsored staff.

Foreign language textbooks for the schools have for the past twenty or more years been generally written to some particular word-frequency list, usually one recognized by the teachers of the particular language. An extensive study of word frequency in spoken French is being currently conducted; it's backed by an appropriation made by the French Government.

Like the findings of much of the rest of readability research, the concept of word lists has been abused. Neither Dale, Dolch, nor any of the others who compiled lists suggested that anyone try to stay within a particular list; yet every detractor of readability research, once he's called attention to the fact that writing in short sentences produces baby talk, will point out that you can't keep within any list and write sensible English. (For a full discussion of the philosophy of word counts and the objections to them raised by a linguistics expert, see William E. Bull's article [14A]).

But let's get back to the reader. The most understandable words to the general reader are non-technical, except where technical words are defined in use or are aimed at a reader who has a technical background appropriate to them. They are words used in the vernacular, colloquial but not vulgar. Note here that not all colloquial words (or slang) are familiar in writing. Some words may be comfortably used in speech but in print they slow down many readers (e.g., "pshaw," "etc."), so that care must be taken in using them. In somewhat similar fashion, abbreviations may be useful at times, but only when familiar. This is particularly true of words that are pronounced *as* words but commonly abbreviated in print (revolutions per minute and r.p.m., or madame and Mme.).

Understandable words are, then, familiar words. But they are more in that they should be used in familiar senses. Familiar words are, generally, the more frequently used words in the language, and the greater the frequency of occurrence, the more meanings a word is likely to have. It is vitally important, therefore, that the intended meaning of a word that is used be clear to the reader. Here the writer must exercise his judgment and not merely assume the attitude of Humpty Dumpty in Lewis Carroll's *Alice in Wonderland,* who said that when he used a word it meant exactly what he intended it to mean. Only too often words do not convey a writer's intended meaning, and familiar words can be guilty just as unfamiliar words can. Fortunately for the

writer, however, the most familiar meaning is nearly always *much* more frequent than the next most familiar meaning, so this happens less with familiar words. The *American College Dictionary* can aid the writer since it presents the more common meaning of a word first in the list of the word's definitions.

We might say a few words about several other books of use to writers. Perhaps best known for synonyms is Roget's *Thesaurus.* Peter Mark Roget, an English physician, was born shortly after our Revolutionary War ended and died shortly after our Civil War ended. Although his name has survived only because it has become linked to the word *thesaurus* in the public's mind, he was a physiologist of note in his day, and also helped found the University of London. The *Thesaurus* became tremendously popular in his lifetime, and has continued to be just as popular in the years since his death. In the hands of someone with a reliable feeling for language, the *Thesaurus* can be a help, but it can be a hazard to the amateur. The temptation to dip into all those elegant, rare words and scatter them through a piece of writing is more than many people can stand.

Webster's *Dictionary of Synonyms* (131) contains fewer words than the *Thesaurus,* but distinguishes between synonymous and merely analogous words, presenting examples to make correct usage easier in doubtful situations. In addition, antonyms and the less closely related "contrasted" words are differentiated. There are many other books of value in determining correct usage of words, with Fowler's *A Dictionary of Modern English Usage* (61) among the more important. Writers with an academic interest in the frequency of occurrence of words and their meanings might enjoy looking into the Thorndike-Lorge *Teacher's Wordbook of 30,000 Words* (170) and the Lorge-Thorndike semantic counts (117, 118).

One more comment on words. Readable writing has a number of fairly specific elements, of which understandable words is one. These various elements have different relative importance for different classes of readers. Understandable words are slightly more important for poorer (adult) readers and children than for average (or better) adult readers. With the next readability element, clear sentences, the reverse is true. *Both* understandable words and clear sentences are, of course, very important no matter who the reader, but they do differ somewhat in relative importance.

Clear sentences can be described in a number of ways, most of which overlap somewhat. Naturally they are usually simple in structure; they convey but one or maybe two ideas. They have a small number of prepositional and infinitive phrases. These are all factors that make for brevity. It is this quality, easily measured in general by number of words, that most simply defines a clear sentence.

Prepositional phrases, while they complicate readability by increasing the number of words in a sentence, also constitute a separate readability element themselves. (See Gray and Leary's partial list in the last chapter.) Hence they enter the picture twice.

There are other characteristics of clear sentences, but they cannot be defined quite so objectively. The more important of these are that sentences be emphatic and have adequate conjunction and transition for smooth reading. They should be logical enough, contextually, to allow the reader to derive the meaning of difficult words wherever possible.

It is this business of sentence length that most critics of readability formulas seize upon. They feel that short sentences can lead to choppy, immature prose. Unless there is a pleasant mixture of shorter and longer sentences, they can. *Average* sentence length can be kept low, however, and that is the crucial thing for most readers.

In the popular mind, long sentences have been considered the mark of the scholar. Traditionally, education in English composition has placed emphasis on the well-structured sentence. In so doing it has assumed that as long as the grammatical elements fit together according to the rules the sentence *has* to mean something. It's only recently that educators have discovered that grammar and intelligibility are not as closely related as they had always assumed. As a result, they are still teaching grammar—and likely always will be—but they're also beginning to stress another point; that a sentence should mean something in relation to the other sentences around it.

While the well-educated individual does often lean toward long sentences, this is even more true for unskilled or poorly-trained writers. These latter tend to use rambling, uncoordinated, poorly punctuated sentences that have been known to reach a length of 100 words or more.

As Sherman found (see Chapter 4), writers tend to show a great

deal of consistency in the length of the average sentences they use. Yet not all use the same length throughout life, and Gerwig (63) presents an interesting case for the fact that some of the better writers changed, as they grew older, in the direction of shorter, or at least simpler, sentences. Channing, for example, showed an increasing percentage of simple sentences through the years. Macaulay, though his sentences were among the more consistent in length, actually used the greatest percentage of simple sentences in his *Milton* and *Machiavelli* essays. Gerwig points out that it was these writings of Macaulay that "took the world by storm" and established his place in the world of letters early in his career.

The same general trend to shorter sentence length can be seen historically. Sherman's studies of the works of well-known writers make this clearer than anything we can say about it. Once more, therefore, we would like to refer the reader to Sherman's work (157) or at least to our Chapter 4 where we have reported it more fully.

The relationships of understandable words and clear sentences to readable writing have been better documented by research than the effects of any other elements. However, the rest of them *have* been studied. While space limits our detail in the remainder of this chapter, the factors we shall mention are still of known value.

Next in consideration are the two style-related suggestions of being concrete rather than abstract and active rather than passive. The first, concreteness, is effective because it tends to hold down the conceptual difficulty of writing. The more that the words used represent basic life experiences, the more concrete they are. The farther that words used are removed from the naming of objects or *observable* behavior, the more abstract they are. Where abstract concepts must be described, concrete analogies and examples, contrast and comparison, are useful. Rephrasings and that even simpler form of redundancy, repetition, are also useful. Flesch (54) has attempted to define the level of abstraction of writing more specifically in terms of the proportion of "definite" words in a passage. Flesch considers definite words as: nouns a) with natural gender, b) specifying time or possession, or c) modified by certain limiting adjectives; certain limiting adjectives; finite verbs; present participles forming the progressive tense; pronouns that are a) personal, b) reflexive, c) relative, d) interrogative, or e)

formed of limiting adjectives; certain adverbs; interjections; and, the words *yes* and *no*. All other words in a piece of writing are, by exclusion, more abstract.

As an example of the way definite words can be selected with these categories we'd like to reprint a paragraph by Jerome Frank (62) which Flesch uses as an example. Definite words are italicized.

> "In a contested law suit, therefore, with *the witnesses* in disagreement, usually no one *can* adequately criticize the trial *judge's fact-finding*. If, at the end of *the trial*, the trial judge *says* that *Jones hit Smith*, or that *Mrs. Moriarity called Mrs. Flannagan* a liar, or that old *widow Robinson* was insane *when she made her will*, or that *Wriggle used* fraud in inducing *Simple* to sign a contract—the *judge's word goes*. And the *same* would be true if, in most of *those instances*, the trial judge *had* found exactly the opposite to be *the facts*."

This paragraph falls about midway between the "highly abstract" and "highly concrete" points of Flesch's scale. It does not contain examples of all of Flesch's categories of definite words, but to illustrate all of them would have taken a quite long passage. Rather than present such a long paragraph, we refer anyone interested in further information on how to spot "definite" words to Flesch's own description of his "level of abstraction" formula (54 or 55).

This concern with level of abstraction has come into readability research partly through the closely related field of semantics. Much of what Korzybski has had to say through his interpreters, Hayakawa, Stuart Chase, and others, has dealt with abstract words as deterrents to communication. What these writers have dealt with qualitatively, Flesch has tried to deal with quantitively.

The second style suggestion is to write actively rather than passively. Active writing is characterized primarily by a large proportion of verbs compared to adjectives or nouns. Vividness and forcefulness result, and the writing bears a closer resemblance to normal speech than is the case with more passive constructions. Part of the attractiveness of fiction for the average reader is the action involved and the resemblance it bears to a life situation. Naturally writing cannot always include the quotes of fiction; it can, however, be more active than passive and resemble fiction in that way. Just how much fiction and scientific writing vary can be seen from the fact that the former has, on the average, about

three verbs per adjective, but the latter only 1.3 verbs per adjective. Extreme among scientific papers for passive, over-qualified constructions are doctoral dissertations, one of which was found to have only 0.3 verbs per adjective!

The four suggestions we've made are the major ones to consider when trying to meet a reader. We have two final miscellaneous ones to add for particular writing situations. The first concerns repetition of words, which seems almost a taboo, it is so carefully avoided. There is reason to believe that repetition of words *can* bore readers. Poor synonyms, though, can leave the look of "forced" writing, particularly where it is obvious that a writer has had to reach for them. This is true, in general, of non-technical writing; in technical writing synonyms may introduce another fault, ambiguity. This is even more serious, since meaning can easily be distorted or lost through carelessly-chosen words. Many technical terms have *no* synonyms, and many more have no *adequate* synonyms, so the most satisfactory solution is usually repetition.

Finally, avoid frequent use of unusual words or meanings, or technical terminology only to impress your reader. The impression they leave may well be undesirable, and probably will be if they are not understood. Some technical words, or even quite a number, may be necessary at times. How can writing that is highly technical be made more readable, if synonyms are not used? It cannot be made as readable to the average person as non-technical material, but it can still be greatly improved merely by working only on the non-technical words in the passage and by keeping the sentences even shorter than in non-technical material. If the reader has technical vocabulary to cope with, it makes it harder for him to assimilate the technical vocabulary if he has more than the simplest sentence structure to contend with. Since in even the most technical writing the number of technical words and phrases seldom exceeds ten per cent of total words used, surprising readability changes can be safely made in the non-technical vocabulary.

So much for our six suggestions on how to meet your reader. Our job, making them, has been the easy one; the difficult one of using them wisely in making writing more readable we must leave to the writer. Many successful writers have long used them with or without realizing it. It is a strange paradox that the character-

istics of a skill as universally necessary as writing are so little known, and can be so inadequately taught even by good writers. It is only recently that research has begun to usefully define these characteristics, and it is these we have tried to present. We would like now to present some general observations on what happens to writing when some of these characteristics are made use of.

Perhaps the best starting point for this is a comparison of a less readable first draft with a more successful second. One might suspect that, if care has been taken not to alter the content (or meaning) or change technical terms, the second would be longer than the first. In most cases, the opposite is true. As thoughts become clarified and concepts simplified, the number of words tends to decrease. Or, even if the number of words is the same, the writing is shortened because familiar words are usually not as long as unfamiliar. Even this one seemingly insignificant change can result in a decrease of as much as 10 lines per 100 when the writing has been simplified quite a bit (e.g., from college level to 6-7 grade level).

But the second draft will likely be longer where clarity must be achieved by additional definition or description. The need for more words may arise whenever a reader is not familiar with a topic, and is particularly acute when the writing is of a technical or semi-technical nature. The occurrence of a difficult, unfamiliar concept or an unknown word that cannot be replaced sets the need. Note that readability formulas will give a more readable score to the writing even though the unknown (or technical) word is not changed. This is true because the addition of known, understandable words "thins out" the effect of the unknown. And that, after all, is the definition of *definition*: the unknown in terms of the known.

In closing we'd like to say again that a writer can best meet his reader if he writes a) on a topic of interest to him, b) clearly and interestingly, and c) distinctively. This chapter itself covers only b); a) has already been covered and c) the writer must find in himself.

Of prime importance for clear and interesting writing are understandable words and clear sentences for comprehensibility and a concrete and active style for reader interest. Of lesser importance, except perhaps in technical or semi-technical writing, are the additional points of using repetition where necessary and

avoiding the use of difficult words or meanings merely to impress a reader. We believe that formulas, if used wisely, can help a writer in these respects, but the big job of skillfully putting words together to best meet the reader in a distinctive way, we realize, must remain the writer's.

13. READER EFFECT

THROUGHOUT THIS BOOK, we have tried to stress a simple point: the primary purpose of the writer is to communicate. This is one of those truths to which all writers pay lip service but which few take to heart. Many seem to be too absorbed in the secondary aspects of writing—being interesting, having a lively style, etc. But because the reader *must* be reached, it is crucial that a writer know as much as possible about the effect his writing has on readers.

Self-evident? It would seem so, but it must not be to everybody when a hundred million dollars a year is spent by industry to sell what its copywriters consider to be the American way of life and the campaign gets nowhere. This was the conclusion reached by W. H. Whyte and the editors of *Fortune* (185) after studying the public's reaction to institutional ads.

Of course there is always more for a reader to react to than the writing itself. There is also the printed page with its typography and illustrations. This chapter will discuss them as well as the contrasting effects of readable and of difficult prose.

First of all, readers generally choose to read an easier version in preference to a more difficult, or if both are begun, will read farther into the easier. This is particularly true if the reader is merely reading for pleasure. Writers may consider this too self-evident to be important, but Swanson (164) demonstrated it graphically when he found that college students who got an "easy" (about 5-6 grade) version of a newspaper read as much as 80 or 90% farther into it that those who got a "hard" (high-school) version of the same paper.

Somewhat more surprising than this, perhaps, is the fact that readers find easy material more "pleasant" than difficult material, even though both versions are on exactly the same subject and do

not differ in content. This was actually tested by Klare, Gustafson and Mabry (in as yet unpublished studies), using "split versions" of some material. One split version had the first half "easy" (about 7-8 grade level) and the second half "hard" (about college graduate level); another split version had the first half "hard" and the second half "easy." Readers of these split versions, despite the fact that they liked the content of the second half better than that of the first, still preferred the easier to the harder material. They called it both "easier to read" and "more pleasant to read," and this relationship itself was extremely high. (Incidentally, tests showed they understood the easier material better and also read it faster. A more complete annotation of these studies appears at the end of the bibliography.)

We have mentioned a number of times that easy material seldom insults the superior reader if skillfully written. The reason for the qualifying "seldom" is that occasionally readers with an excellent background for a topic will say they prefer a difficult version to an easy one. Certainly the advantages of the easy version are largely lost on them because they see little that is unfamiliar or unclear in difficult material. If they are asked about two versions on a topic less well known to them, however, the preference reverts to the easy.

The conclusion that follows is that a writer should not write at a reading level too much below that of his audience. This is true, but only if another point is kept in mind—that, when the reading is not required, readers prefer material that is several grades lower than the level at which they *can* read with understanding. In many cases the level is sharply defined. Examples are groups in which all readers have completed a given school grade, or had an intensive course of study in the topic written about.

When this is true, there is an additional reason for not writing more simply than necessary—time can be saved. A writer, if he must revise, almost always has to go in the direction of easier writing, and it is this revision that takes time. If he normally writes at a level that is clear to his readers, much less effort need go into the preparation of a publishable form.

Before this begins to sound too attractive, we should re-emphasize several things mentioned in an early chapter. The more readers an author has, the less likely it is that he can sharply define their reading abilities.

Considering only the adult population, the *average* literate

person reads at about the ninth grade level. This means that many adults read at less than this level, and when the maximum audience must be reached, the writing must be several grades easier.

The magazine industry learned this long ago. Most slick fiction is at about the sixth grade level, and digests at about the seventh or eighth. Even quality magazines are only around ninth to eleventh. Scientific journals are much more difficult (college or college graduate level), and comics much easier (fourth grade or lower). Writing readably does not mean writing down to readers, and adult material at seventh or eighth grade level is not childish writing. More important, readers need not be insulted by it even though some few experts might say they prefer a more difficult version.

Up to this point we have discussed reader effect nearly exclusively in terms of what we know through readability, or style, analyses. What about typography and related aspects of the printed page? Relatively little research has been done, and what research there is indicates that typography generally has no great effect on reader comprehension. Some few things about it seem to affect understanding, but most affect the "acceptability" of the writing, i.e., the reader's pleasure in looking at it (not necessarily even reading it). Acceptability, while secondary to understandability in most instances, is nevertheless important, especially when the reader is not required to read.

Most of the work on the effect of type faces and sizes is in terms of how fast it can be read. All modern type faces are about equal in this respect; older and, especially, more elaborate faces do decrease reading speed somewhat. Differences in type size between 8 and 12 points affect the rate of reading very little. Smaller sizes do decrease the rate, but there is little evidence that those larger than 12 points increase it even when used in first and second grade textbooks.

(There are 72 points to the inch. Most newspapers are printed in 8 point type. This book is printed in 10 point type.)

Line length, the research shows, can be varied widely without disturbing readers, and so can the space between the lines if type size is also varied. Though little over half of most pages is occupied by type, even a filled page (no margins) does not decrease reading rate. We should point out, however, that readers seem to prefer emptier pages, probably because they are accustomed to wide margins. Related to this is a reader preference for pages

that are broken up (by paragraphs, illustrations, etc.); solid text covering an entire page seems to imply forbidding text.

Those interested in more information than we have given here should consult Paterson and Tinker (140) and the other references in our bibliography.

An interesting idea is the use of typesetting variations aimed at increasing speed and comprehension by presenting material in "thought groupings." One such variation is that proposed by Andrews (2) and called "square-span." Here is an example:

Notice	how	these	are
	easily	units	visualized.

There are two psychological considerations here. First, the eye sees up and down as well as to the sides when reading, and the reader must train himself as a child *not* to regard what he sees in the lines above and below the one he is concerned with. Second, the typographical grouping of thought units can save the reader what may be a tough job. The difficulty with this arrangement is even more obvious, however; readers have read, and typesetters set, line-by-line type for so long that the habit is highly resistant to change. A proposal by North and Jenkins (132), called "spaced-unit," may be somewhat more practical today for this reason. Here is our previous sentence in spaced-unit:

Notice how easily these units are visualized.

Much more use and research are needed, of course, before either of these variations could be recommended to the practical user or endorsed for the reader. We mention them only to show the kind of frontier research that has implications for the future.

If these two efforts seem farfetched, consider that many textbooks for early primary-grade children already take a step toward the spaced unit lines. Lines are not turned in the middle of a phrase. Also, well into the Middle Ages poetry was transcribed, not line for line as today, but run-on, like prose.

What about italics, bold-face type, all-capitals, etc? They have the advantage of tampering very little with set reading habits, and yet they are of potentially great value in helping the reader to stress the right words or see the intended pattern in writing. This value is based on two bits of evidence. First, typographic variations embedded here and there in the regular type of a page have been found to attract the reader's attention. Second, if the

reader can successfully give a sentence the stress that the writer intended, he will be greatly aided in understanding.

Again only a small amount of pilot research has been done in this area. Dearborn, Johnston and Carmichael (27), the first to actually experiment with the use of typographic variations to improve comprehension, have developed what they call the "peak-stress" method. Working with typewritten manuscripts they underlined and re-struck (to simulate bold-face) each letter of the one word of each sentence which carried the peak stress. They found that comprehension of this stressed material was significantly better than that of the same material when not stressed.

Perhaps a slight digression on the psychology of reading will help explain this. Though most readers fail to notice it, their eyes do not flow continuously across a line of type when reading. Rather, they stop (fixate) about 6 to 16 times, with very short, quick movements between. Readers do all their reading during these stops, since the type of a page is actually blurred during the movements. The number of stops readers make depends on the length of the line they are reading, the difficulty of the material, and their own reading ability. Differences in sheer ability of readers to see more or fewer words during a stop are relatively unimportant, as are differences in the speed of between-stop movements. Even the extremely fast skimmer does not get his speed from exceptional visual equipment. The big difference in number and length of stops, and therefore speed of reading, between readers of a given page is due to the ability to grasp meaning quickly from a few well-chosen glances.

Considering all this, it is easy to see how typographic stress can be of great potential value. You may ask, at this point, whether the faster reader is necessarily the *better* reader, whether he understands as much. He *is* the better reader, for he actually understands more than the slower in most cases.

Two additional bits of evidence will help to relate all this to readable writing as well. First, the good reader's eyes are about 20% of a line ahead of his voice when reading aloud, but this span can change and may drop to zero when he encounters difficult words. Second, readers recognize easy words faster than difficult. Thus, helping the reader with understandable words goes hand in hand with helping him to stress important words.

Despite its potential value, the use of typographic variations to indicate stress has limitations. First, there are few well-defined

guiding principles today (further research may, of course, provide more). Second, little is known about the reader's acceptance of stressed material. Although actual tests have shown that italics and bold-face are no harder to read than ordinary Roman type, readers *think* they are harder. This may well be due, again, to reading habits, since anything but Roman in the body of a text is rare. On the other hand all-capital words are *not* recognized as well as lower case (and upper and lower case) words. This is because many of the cues to word recognition are the above- and below-line extensions of letters; since words entirely in upper case letters present a block appearance, these cues are absent.

But more important than these specific facts about reading is the more general question of how well the reader will accept material that contains a lot of stressed words. Present limited information seems to indicate that they neither like nor dislike it, feeling toward it much as they do toward unstressed writing. More work certainly needs to be done with it, however.

The third, and last, possible limitation is that frequent use of stress may tend to lower its value. The ability of the human to adapt makes one wonder if the force of present stress methods will not decrease if they become commonplace. Again, however, there is the opposing possibility that their force may increase as they become ingrained in regular reading habits.

Perhaps the best answer for the present is to use typographic stress methods where clearly indicated, but to avoid over-use. Certainly they should not be thought of as a crutch for the unskilled writer. One justifiable way of making stress integral with writing and yet avoiding its limitations is to use punctuation wisely. Punctuation is, basically, a method of adding stress to written material to make it similar to that naturally found in speech. Since speech is informal, stress can come from many things—a raised or lowered voice, pauses, facial expressions, gestures, etc. In writing, punctuation must carry most of this load, so the importance of skilled use cannot be overestimated.

To summarize this chapter, we'd like to emphasize again that the ultimate criterion of most writing must be the effect it has on the reader. When the writer can go directly to his reader for information, he should. When he cannot, and this is more often, he should consider what is already known about the effect of writing on readers. Research on readability is valuable here, but the writer should remember that formulas cannot safely be inter-

preted too literally. They do a somewhat better job of showing relative readability than absolute readability, and are more accurate for easy than for hard material. This is fortunate, since writers seldom want to write a more difficult version than they already have.

Relatively little is known about the effect of typographic variations on the reader; available research indicates that within the conventional range followed by printers and designers the effect is usually small. Stress, indicated typographically, *may* be an exception.

14. FORMULA PITFALLS

THIS CHAPTER IS DIRECTED to those who might misinterpret readability formulas and their use. While this may not happen very often, we have seen it happen often enough to justify this chapter. We feel, further, that our account of the desirable effects formulas can have might give only one side of the picture. Formulas can lead to writing faults, but they need not. By pointing out the more important of these faults, we hope to reach two groups of users or potential users—those who underemphasize formulas because they *can* lead to faults and those who overemphasize them because they fail to see these faults. We have briefly mentioned some of these faults in formula use in various earlier chapters, but are going to describe them more fully and get them together in one place here.

The first group of users seems to be made up almost entirely of writers. We have pointed out earlier that writers generally dislike numbers and dislike formulas partly because formulas involve computation. If this were their only objection to formulas we could merely mention again that there are ways of avoiding this computation (the prepared tables and devices cited in Chapter 10). Actually, though, another and more serious objection is more frequently made, that formulas stultify writing. It is this charge that we want to take up here.

The second group, the overemphasizers, includes some writers but seems more largely made up of editors and administrators. These latter naturally find formulas quick and useful in going over manuscript; most do not misuse formulas. Only those so sold on formulas that they push them harder than they ought are guilty.

A formula is not a magic key to readable writing, nor is it a destroyer of writing. Those who believe it is the one have gone

beyond it to make unwarranted, and the other to make unfair, implications. They are at fault, not the formula.

Formulas are merely tools for measuring the readability *level* of writing, and as sources of hints for more readable writing. Certainly in neither case are they perfect, nor can their use result in a good style where it did not exist before. (But heeding them *can* improve a style that was wordy to begin with.) They measure readability only in a general way, for the general reader. They do not measure many of the factors that go into good writing, so many, in fact, that we have devoted the entire following chapter to those aspects of style they do *not* measure. Even those factors that readability formulas purport to measure are not measured in an absolute way. The shortest word is not always the simplest; the most "familiar" word is not always the best; the shortest sentence is not always the clearest or the most readable.

But formulas used properly can be of invaluable assistance to the writer. They can *help* eliminate guessing at clarity of statement, and they provide a useful measuring device. In short, they help the writer see his material as the reader will. And, perhaps most important to the writer, they suggest how wide a readership an author can reasonably expect for any particular piece of writing.

Proper use of formulas depends on each individual situation, and we believe the quickest way to indicate proper use is to demonstrate what not to do as well as what to do. Probably the most common fault that critics believe formulas lead to is usually called "writing to formulas." Perhaps a word of explanation is necessary here. We are not referring to the practice of writing stories with a set plot (e.g., boy meets girl, boy loses girl, boy wins girl). This practice, used frequently in slick fiction and in varied form in "true" stories, is also called "writing to formulas."

What we mean, rather, is the fault of writers who are overzealous, and often naive, in their use of *readability* formulas. There is a certain similarity in these two uses of the term, and both can indicate hackneyed writing. As we have used the term in this book, however, it always refers specifically to "writing to *readability* formulas." An instance is indiscriminately chopping long sentences in half.

What was, we hope, one of the more flagrant examples of this occurred in a piece of technical writing we saw. It appeared that readability formulas had been somewhat forcibly advocated to

its author. In trying to comply with them, he transformed a mediocre sentence (here paraphrased) into two bad sentences. The original sentence was "Lead-in wires can be differentiated by their colors, red wires constituting right leads and white wires constituting left leads." This sentence was transformed into "Lead-in wires can be differentiated by their colors. Red wires constituting right leads and white wires constituting left leads." It would have been simple enough to say "Lead-in wires can be identified by their colors, red for right leads and white for left leads." Or, if the sentence just *had* to be split, "Lead-in wires can be identified by their colors. Note that right leads are red and left leads are white."

Many other examples, equally poor, can be found when a writer takes a sentence containing one complete, well-rounded thought and breaks it into two sentences. Each may then contain half a thought, poorly expressed. Such a break may also lead to unpleasant and unnecessary repetition of certain sentence elements. Consider these two sentences, "Forced oil pressure is used on —— engines. The reason for forced oil pressure on such engines is to assure satisfactory lubrication when the oil supply varies." The sentence could be put more deftly this way: "Forced oil pressure is used on —— engines to . . ."

Word errors are not as clearly seen from short examples as sentence errors, but they are probably more frequent and certainly *may* be more serious. The kind of error often ascribed to the use of formulas is the thoughtless substitution of an easy or short word for a hard or long one. Inappropriate change of words can lead to change of meaning, or at least distortion. The most serious thing about this is that the reader usually cannot discover it, since only the writer is certain what he intended. Yet the sentence can still "make sense" with the substituted word.

Consider, for example, C. W. Eliot's sentence, "A cultivated man should express himself by tongue or pen with some accuracy and *elegance.*" *Grace* and *dignity* can in some cases be synonymous with *elegance,* and *grace* is certainly shorter and *dignity* more familiar. But try to substitute either of these for *elegance* and the distortion in meaning is clear; try to use *ease* or *daintiness* and the meaning is clearly changed.

Word errors, unless malapropisms or true slips, are less humorous than confusing. Sentence errors are usually not so serious because they tend more to "roughen" writing than change its

meaning. Few faults from writing to formulas are more ludicrous, though, than an example cited by Irving Lorge. He tells of a writer who, having been told that prepositional phrases can lead to reading difficulty, blithely changed "I am going to town" to "I am going townwards."

Misuse of writing hints that grow out of the use of readability formulas may lead to dull writing as well as confusion or amusement. Writers often fear that use of formulas will lead to mechanical, or wooden, dullness. Such an effect is easy enough to get, but misuse of formulas makes it even easier.

We've been talking so far only about what can reasonably be called misuse. Some writers cannot justifiably be called misusers, but they can at least be called misunderstanders. They make two rather well-defined sorts of errors, the first a failure to use sentence variety and the second a failure to choose words carefully. These faults are rather typical of poor writers generally, and to that extent cannot be blamed on formulas. Nevertheless, misunderstanding of correct formula usage fosters these faults, too, and to that extent formulas can be blamed. But again, perhaps we shouldn't throw even this blame on formulas, but rather on those who advocate formula use so strongly they fail to point out what misuse can lead to, and what formulas cannot do.

A failure to use variety in writing leads to unpleasant extremes. Formulas tend to emphasize the desirability of short sentences, a criticism of the long, involved sentences too often found in writing. Such emphasis is needed. The inference some writers draw from this, though, is "the shorter the sentence, the better." No such inference is legitimate. The oft-repeated criticism that formulas lead to "primerized" writing stems from this implication, since perhaps the most obvious characteristic of primers is their short, simple sentences. Primers must have short sentences, probably nearly all short sentences, but books for adults, even those on unfamiliar topics, are not primers in this sense. The adult brings a background to his reading that helps him understand longer sentences. He should not be confronted with such long sentences that meaning is not clear, of course. Nor should he be spoon-fed, primer style. It is one thing to find "John has a dog. The dog is brown. The dog is named Duke." in a first grade reader. But it is quite another to find "Scientists have found a compound. It gives plants their green color. It is called chlorophyll." in an article on chemistry for adults.

It is true that some available books actually attempt to set down sentence length limits for readable writing. Such advice seems to us unreasonable. We can only say that it certainly goes beyond what any available formula, no matter how thorough its development, can justify.

A pleasant mixture of moderately long and short sentences lends variety to writing. Longer sentences are sometimes *necessary,* as well, to complete a single idea or coherent portion of it. The arbitrary division of a long sentence into two or more short ones often presents the reader with the task of conjunction that is really the task of the writer. Shorter sentences are sometimes also necessary for emphasis, to bring the reader up short or stimulate his thinking. Shorter sentences, again, are sometimes necessary for conjunction, for the smooth progression of ideas. Sentences, then, should be neither always "short" nor "long," but should be a mixture of "shorter" and "longer," both words being relative to each other and the ability of the reader.

The second error, failure to choose words carefully, can grow out of two desires, to impress with long words or to clarify with short. The first desire seems most often found in beginning writers but some better writers cannot resist the desire to resort to unnecessarily long words. Scientists are often guilty in their technical writing, too, and the layman's charge that they are deliberately attempting to confuse, or to cover their own confusion, may have some basis in fact. But long words are not always unjustified. Used by the writer on general fiction or nonfiction topics, they often add variety just as longer sentences do. Used by the scientist-writer, they frequently indicate a specially defined idea. It is when shorter words will do the job as well or *better* than longer words that the longer should be avoided.

The desire to use *only* short words seems to grow out of overemphasis on formulas. Short words, too, have their special disadvantages, the chief one being inaccuracy. The most ambitious project ever to advocate short words was Basic English. Its developers hoped that restricting vocabulary to 850 simple (basic) words would make communication easier, especially for such groups as those just learning English and those engaged in foreign trade. This may well have been partially achieved, but Lorge (114) has pointed out that the 850 words selected can have at least 12,425 meanings plus 5,991 senses not separately numbered. In use, Basic English can lead to ridiculous circumlocutions and

sometimes serious meaning and emphasis alterations. Many readers of Basic English will probably agree with Flesch's assertion (46) that it is neither Basic nor English. Perhaps there is no better example of this than that "blood, sweat and tears" might end up as "blood, bodywater and eyewash."

The use of *only* short words in regular English composition can lead to the same sort of circumlocution Basic English leads to. A writer attempting to replace a long word may sometimes have to use half a dozen short words to achieve the same meaning. If the reader is not likely to know a long word and its context will not define it, a straightforward definition is in order. But if the reader is likely to know the word or if the padding is too obvious, he will be annoyed. Even a formula will speak out against this, for a great increase in sentence length will show nothing is gained.

Another point to consider is that even *accurate* short words are not enough. *Any* words must be skillfully put together to produce the right effect. Several writers have pointed out to us how readability formulas can fall down in this respect. Perhaps their favorite example is to suggest that a formula evaluation be made of a paragraph from *last* word to *first* word. Despite the "easy" rating which a formula would give, there is little doubt that this backward reading would be gibberish.

This particular illustration may be unfair to formulas, but the question it raises *is* fair. Can material which a formula rates "easy" still be difficult to understand? Certainly. Formulas are not perfect, and they must be used wisely for that very reason. When used wisely, they will usually give excellent estimates of the difficulty of general reading material. Since they were not meant for rating gibberish or near-gibberish, they will *not* give accurate ratings of it. Since they are not perfect, they will not give accurate results for *every* passage they are applied to.

A good example is the Pythagorean theorem. It is probably much more difficult to comprehend than its formula rating indicates. Formulas were not intended as measures of all the significant aspects of style, and they will not measure all of them. But again, we say, when used wisely on general (meaningful) material, formulas will give an excellent estimate of difficulty.

But when this estimate *is* inaccurate, in what respects does it err? For one thing, formulas appear to give somewhat better prediction of readability for easy material than for difficult. There are two reasons for this. The first is that some samples taken from

writing that is very difficult as a whole are still quite easy. The readability score is thus an average of samples that range quite widely in readability. In easy material, on the other hand, there are seldom any very difficult samples. The readability score is thus an average of samples that differ relatively little.

The second and chief reason for this variation in prediction is the previously mentioned fact that adult readers differ more from each other than do children. The same is true for adult reading materials as compared to children's. For older readers, outside reading, jobs, and, simply, experience sometimes make understanding greater than estimates of general reading ability would indicate. For highly capable adults, therefore, formulas can overestimate the difficulty of some specific kinds of material.

Because of inaccuracies, a writer should not interpret readability scores too literally. The "true" score for a piece of writing may well be slightly on either side of the formula score, and therefore fine differentiations (e.g., between beginning tenth grade and late tenth grade material) are not justified. A writer should consider a passage as difficult as the formula says unless there is good reason to believe the formula is overestimating. It is better to have writing somewhat less difficult than it can afford to be, instead of more difficult than it should be.

Even though formulas are often inaccurate in predicting *absolute* readability scores, their ability to predict *relative* readability scores is impaired little. Thus a formula can distinguish difficult and easy pieces of writing quite well, and can serve as a valuable aid in telling whether revisions of an original draft are more readable or less. Remember, too, that formulas are least accurate for difficult material; since it is very unusual to want to write a *more* difficult version than that originally written, there is even less reason for concern.

In summary, readability formulas are not recipes for a good style, as Kearl (88) has pointed out. We should like, in fact, to divorce readability and style to the extent that readability should be considered only one aspect of style. We hope that the next chapter will indicate at least a few of the many other things that go into style. We *can* say this—bad readability scores for the particular group of readers at which writing is aimed do mean reading difficulty; good readability scores do *not* by themselves mean good writing.

Each user of formulas must have clearly in mind what they were

intended to do, and can do. Those who want to overestimate their value should remember especially what they cannot do. Certainly such persons misuse formulas unintentionally. Yet the consequences may sometimes be even more serious than a failure to recognize formulas at all. The pitfalls that have trapped the careless or unsuspecting will be only too obvious in their writing.

It is unfortunate, on the other hand, that many writers underestimate the value of formulas. They do so intentionally by assuming formulas lead only to undesirable writing habits. Recognizing that they can be misused, we want to say again that they *need* not be. They are useful tools, in their place. To ask more of them at this time is unjustified; to recognize that they are not perfect is desirable; to impute to them the faults of some of their users is unfair.

The writer, not the formula, must always be the master.

15. ART OR SCIENCE?

MANY WRITERS SERIOUSLY question readability formulas because of their simplicity. They feel that nothing so complicated as style can be adequately measured merely by counting words or syllables and making a few computations. Formulas *cannot* measure style as such, but then they do not pretend to. By measuring several aspects of style, they are attempting only to assess style difficulty, and even this they cannot do perfectly. We have said this many times previously in various ways.

But we doubt whether this answer is really what such writers are after. What they want to know, we feel, is whether formulas are making a science out of the art of writing. Isn't there a danger in this, they ask. Our opinion is that writing well is an art, and undoubtedly always will be.

On the other hand, we do not believe that science, in its broadest sense, need be incompatible with art. Readability formulas represent the application of scientific knowledge to but a very limited aspect of the art. It is nevertheless an important part of the art, its effectiveness. Because writers usually do not write only for other writers, but rather for large groups of readers, each *must* study effectiveness. The problem is aggravated by the fact that writers are experts with words. They can stupefy readers just as a college professor can go over the heads of students or a mechanic can mystify the average car-owner.

Not that most writers *want* to stupefy readers. They usually merely assume that readers share more of their skill and knowledge than they actually do. Here is where scientific knowledge enters the picture. In the guise of readability formulas and the research based on them, such knowledge helps the writer to appraise readers. This does not imply—and here is the crucial point for writers—that using this knowledge makes writing a science.

First of all, we cannot conceive of science ever completely measuring style. There are hundreds of ways of analyzing it, many of them quite accurate scientifically. Yet all of these, and probably all to come, cannot be expected to do the job completely or perfectly.

A good example of how authors' styles can be analyzed as similar, yet be found to differ in other ways, is provided by a study of Williams (188). He counted the number of words in the first 600 sentences from each of three books, G. K. Chesterton's *A Short History of England,* H. G. Wells' *The Work, Wealth, and Happiness of Mankind,* and G. B. Shaw's *An Intelligent Woman's Guide to Socialism.* He selected these books because they all dealt with somewhat similar sociological subjects and were not in the "conversational" style.

Williams found that Wells used an average sentence length of 24.1 words and Chesterton of 25.9 words, not too different. On the other hand, the sentence length used most commonly by Wells was 21 words, while the same for Chesterton was 25 words. To complicate matters, Wells' sentences ranged in length from 3 to 93 words, while Chesterton's ranged from 5 to only about 60 words (two were over 60 words long). Thus it appears that Chesterton is quite consistent and Wells relatively variable in the use of sentence lengths. Yet a readability formula, using only *average* sentence length, would indicate *only* similarity; and while Chesterton and Wells *are* probably about equally readable, there is no question that their styles are different.

The analysis of Shaw's work emphasizes this point. He uses slightly longer sentences, on the average (31.2 words); his most common sentence length (26) is about the same as Chesterton's; his variability is much greater (there is a range of 3 to 143 words in his sentences). Certainly no question here of a style difference that is greater than the readability difference.

If we thought of style only as the putting together of words, it is plain that every writer could easily have a different style from every other writer. Now of course not every possible combination of words can be used meaningfully and writers' styles are not as distinctive as they could be. But though this be true, the task of measuring style completely is still an impossible one. Style, furthermore, is not a simple matter of combinations of

words. We shall not even attempt to mention all the things we believe go into style.

Further consideration, however, leads to an opposing conclusion, that certain aspects of style *can* be made to stand out. This holds for such aspects of style as average sentence length, word usage, degree of abstraction. Were it not for this, teaching writing at all would be impossible. Here again we feel that scientific knowledge has something to offer to the teaching of writing. It can help to make certain aspects of style stand out clearly for consideration.

What we've been leading to is that readability formulas, as scientific tools, can and should be useful to writers. They help to evaluate one aspect of style, difficulty. They measure only this one aspect of style, and do not even measure *it* perfectly. As is true in most scientific endeavor, they are as good as scientific research can make them, not perfect.

This, then, is what formulas *do* measure. To show just how much of an art writing is, we need only consider what they do not measure. The list, though not pretending to be complete, is long. Several of the points may sound like repetitions of things previously mentioned, particularly in the preceding chapter. Remember, though, that in Chapter 14 we discussed the faults that use of formulas can lead to, while in this chapter we are emphasizing aspects of writing that formulas do not measure. The most skillful writer, even though not guilty of the faults, must still consider and evaluate these unmeasured aspects of writing as an artist.

We mentioned briefly that formulas do not consider word order, but we'd like to emphasize the point again in connection with "meaningful" sentences. Take the simple words *do, easy, is, it, not, right, that, the, thing, to.* A few of the meaningful sentences that can be built with them are "It is not easy to do the thing that is right," "It is not right to do the thing that is easy," "Right is not the thing that it is easy to do," "That it is easy to do right is not the thing," or, colloquially, "It is right easy to not do the thing, that is." Each sentence is short and is composed of easy words, and would, in fact, have the same formula rating. Yet no developer of formulas would claim that the sentences were equally easy. Though context must be thought of, it is probable that even context would not equate them.

We've listed these particular sentences because they point to several things besides word order that formulas do not measure.

First of all, the same word can have different meanings. "Right" can mean simply "correct," or it can have a lofty philosophical meaning. A formula, whether it involves a word-list or a measure of word length, would give the word the same rating in either case. So too for "page" (of a book) and "page" (a servant), "bear" (in a zoo) and "bear" (to carry), and countless other words. The intended meanings of such words can be inferred from their context.

Just as the difficulty of certain words may be underestimated, so the difficulty of others may be overestimated. Particular sets of words become familiar at a particular time in history and lose their "intrinsic" difficulty. World War II provided such examples as "blitzkrieg," "displaced" (person), etc. Care must be taken, however, in assuming that such words are familiar to all readers. Public opinion polls have frequently shown that a large number of the people queried are not familiar with what appear to be very simple words or terms. "Cold war" is a good example of a term that formulas would rate too easy. What the writer must remember is that certain difficult words or terms may become more or less difficult with the times, and where context is not sufficient explanation, a rather full definition may be required.

There are many more possible examples of the elusiveness of word difficulties, but before we get too far from our five sentences we'd like to make another point. Our fifth sentence used the phrase "right easy," a slang expression. Formulas fail to evaluate slang properly for several reasons. The first is that word-list formulas make no provision for it, and the second is inherent in the differences between oral and written expression. Oral expression is characteristically informal and fluid; compared to it, written expression is formal and rigid. Almost every adult can speak, but many people cannot write (the number is surprisingly high even in the United States). Linguists may argue that written expression seems dead compared to the richness of colloquial speech; writers may argue equally well that writing is a higher, more refined form than oral expression.

The problem of slang enters when we remember that it is usually born of colloquial speech. Some readers may object strenuously to seeing slang when reading, particularly if it is in nonfiction or not part of a quote. Apart from this, however, there is some question of whether or not the slang terms used will be understood. Some may be perfectly clear when spoken, but will go

unrecognized when read. Readers may simply fail to make the written-to-oral form transition, partly because of the many odd spellings in the English language. A sigh, for example, may become "phwew" or some such when written. What might be passed over quickly by the hearer may cause the reader to flounder. And of course if the *hearer* does not get such a word, he can usually ask questions; the *reader* in the same position can't.

We do not mean to imply that slang should not be used. It is often very effective, but it should be used with an appreciation of the difference between oral and written expression. Readability formulas will not evaluate it properly, or the associated dialect forms or old forms of expression such as are found in the King James Version of the Bible. Or, for that matter, the more common recent usage of abbreviations; Y.M.C.A. would hardly need to be spelled out in an article, while A.I.E.E. (American Institute of Electrical Engineers) should be spelled out at least on first appearance. As before, the writer must be the judge—a formula cannot be.

Nor can a formula judge the effectiveness of analogies. A clever analogy often makes clear the most complex relationship; yet a formula might evaluate writing with or without it as equally easy. Cryptic statements or figurative expressions, on the other hand, may be rated far too easy by formulas. A "flag-waver" *may* mean a person who waves a flag, but usually doesn't.

One of the vocabulary difficulties frequently encountered today is the difficult concept built up of two or more fairly simple words. *Federal grand jury,* for instance, has no components that are really difficult for the average adult, yet the three words together make up a difficult concept. Unless the reader actually knows what one is, how it comes into being, what its function as well as its limit is (or can get this from context), he misses much of what he reads that involves a *federal grand jury.*

The difficulty of an entire related writing style—satire—is underestimated by formulas. The effect of satire lies in its deceptive simplicity. Readability formulas miss the point and are fooled just as some readers are. A satirical piece of writing might be rated understandable to a ten-year-old, and he might well get a straightforward meaning from it. An adult, however, might get exactly the opposite meaning. Or, even if the adult doesn't get the opposite meaning, he might at least get an entirely different

meaning. Literature provides many notable examples, from Swift's *Gulliver's Travels* to Thurber's *Many Moons.*

So far we've talked about fairly specific aspects of writing that formulas do not measure, at least not well. There are many more general aspects of writing for which this is also true. Over-all organization of a piece of writing is one, and so is the organization of smaller units, with logical progression of important points the goal. Introduction and conjunction of sentences, paragraphs, and chapters or sections are again important but unmeasurable. Still other such general style considerations are the effectiveness of vivid imagery and the emphasis of dramatic expression.

These latter are found more often in fiction than nonfiction, which brings up those peculiar to fiction. Among them are excellence of plot structure, appropriateness of characters, accuracy of character delineations, effectiveness of mood or feeling portrayals, etc. We need mention these only briefly because their relation to reading ease or difficulty is not so direct as the relation of word meanings and such. The skilled writer, however, should recognize their possible relation to the reader's pleasure and satisfaction in reading.

While *many* of the important characteristics of fiction cannot be analyzed by formulas, poetry is generally not amenable to formula analysis at all. Subtle meanings abound in poetry, and even were it not for that, the poetic form is difficult to analyze. One need only look at modern poetry to see that formal sentence structure is often avoided and that a formula would be nearly impossible to apply.

So much, then, for the style variables that readability formulas do not cover. Besides the writing itself, however, formulas fail to cover an equally important area, reader characteristics. Since we discussed the reader in Chapters 6 and 7, we will do no more here than emphasize important points, and bring in new ones specifically related to formula use.

One of the more important reader characteristics not considered by formulas is special background experience. A reader with experience in the area covered by a book will understand it better than another reader who is similar except for the experience. "Hame," "trace," and "singletree" are as familiar to farmers as they are unfamiliar to city dwellers. Localisms present a similar problem. A soft drink may be variously "soda," "pop," "dope," and "tonic" in different parts of the country.

Another important characteristic is reader interest. Few men, for example, can define "chartreuse" very adequately, and few women "differential gear," yet a formula would not show these differences.

Related to a reader's background and interests is his purpose in reading. Formulas are insufficiently sensitive in some cases because they cannot take care of varying reader purposes. Most formulas are based on the assumption that if a reader understands 75 per cent of the material in a piece of writing he will get its meaning. For the average writing this seems to hold. For writing of a highly technical sort this is often not true (e.g., where understanding of a final step in a procedure requires understanding of all the preceding steps). Many instruction books that accompany home appliances err in their presentations.

On the other hand, satisfactory understanding of light fiction may occur at less than the 75% level of comprehension. Formulas can therefore somewhat overestimate the difficulty of a book read merely for general appreciation and underestimate the difficulty of a book read for details.

Other characteristics could be mentioned, such as the intelligence of the reader (since it is not perfectly related to how many grades he has completed), his cultural status, and the general climate of opinion at the time he reads. The important thing to remember may be restated as "know your reader." Formulas cannot take account of a reader's background, interests and purpose; a writer should, however, because they go far in determining whether the reader will want to read, and if he does, how far he *will* read (which has been called "span of attention").

One aspect of *printed* material that can affect this span is format. As we've mentioned, format can be expected to affect comprehension little but its effect on reader acceptability is important. Formulas, of course, treat any format uncritically. Illustrations and their effect are untouched since a formula must skip over them.

And so it goes. The perceptive writer can undoubtedly find other characteristics of writing and readers that formulas do not consider. Taking them together, we hardly need say again that readability formulas do not make writing a science. Even style difficulty, the one thing formulas do measure, cannot be measured accurately when formulas are not used wisely.

Formulas are *rating* tools, not *writing* tools. Their use in rating,

however scientific, does not imply that writing should become mechanized, or is a science. The writer should view rewriting, using them, as a helpful way of adjusting difficulty when a formula rating has pointed it out. Emphasis should be on the writing, not the rating, since only when viewed this way can difficulty be safely altered.

Considering all the aspects of writing that cannot be measured by readability formulas, it may seem surprising that they can be of *any* value. They can and have been of value in helping writers meet their readers. But they are of most value when their limitations are considered, both in terms of what is written and who will read it. The limitations are most serious when formulas are applied indiscriminately; formulas are likely to be inaccurate to the extent that the things we mentioned are present. Formulas are actually invalid for some writing, such as the experimental work of Gertrude Stein or James Joyce. Formulas make their writing appear much easier to comprehend than it actually is.

In conclusion, we want to emphasize that formulas are not invalidated for the great majority of writing. On the other hand, what they cannot measure should make clear that they cannot make writing a science. Even future formulas, which may well consider some of the present immeasurables, will never take the art out of writing.

16. THE FUTURE

NOW LET'S SEE WHAT the future may bring in communication research relating to readability.

"Communication" is not a new term, but one would certainly think so from its increasing use in scientific and scholarly circles. It has taken a place in such widely differing areas as the social, the biological, and the physical sciences. It plays a part in the understanding of giant electronic brains, man's body, and human social behavior. It is at home as abstruse mathematical theory, as statistical theory, and as simple face-to-face description.

Such a word would seem to have to be ambiguous to apply to so many different kinds of studies. Actually, it isn't. As a matter of fact, use of it (as a concept) has begun to pull together and relate the many diverse groups studying man and his world in somewhat the same way philosophy once did. And yet it has only begun to realize its potential.

This chapter will rely on three rather well-defined sources, the anticipations and expectations of readability experts, knowledge chosen from fields related to our topic, and our own research. We shall begin with readability formulas themselves, and gradually move on to material somewhat less highly related at present. We pointed out what formulas do not measure in Chapter 15, and these points should also be kept in mind while reading this chapter, since the ideal formula of the future would naturally be one that measures them.

To begin, there are two possible approaches for future formulas, greater simplicity or greater complexity. The chief possible advantage of the former is the saving in formula application time that could result. For those who use formulas constantly on all kinds of materials the saving would be welcome, of course. For *writers* who use them in the process of writing, how-

ever, we wonder whether this saving *could* be very big. The time necessary for writers' use, as we noted earlier, is a very small part of that required for the preparation of a particular piece of material. Application is relatively infrequent, and just the time required for revision of the material itself is far greater than that for application.

Even in an absolute sense, the use of most present-day two-element formulas takes little time. And even if speed of application were the only concern, it would be hard to conceive of a faster formula than the Farr-Jenkins-Paterson version of Flesch's reading ease formula. About the only apparent solution would be to use but one element, and as we noted, that could hardly be done without an undesirable drop in accuracy. To be sure, one early formula (that of Johnson [85]) had but one element, but it could hardly be expected to stand up to today's formulas.

Actually, there is one other *possible* solution to this problem, but it is not a likely one for the near future at least. It is the use of a better base for formula development; that is, a more satisfactory reading test from which to build. The Lorge, Dale-Chall, and all three of the Flesch formulas have been based on the McCall-Crabbs *Standard Test Lessons in Reading*. This particular test is ideal for readability work because of the large number of test passages and the manner in which they are presented. But it is, after all, basically for children's reading and is old besides. It is true that formulas based on it have been adjusted to handle adult material, but nevertheless use of a good adult reading test would possibly increase formula accuracy.

The Gray-Leary and a few other early formulas *were* based on tests developed for adult reading, but these tests lacked the chief advantages of the McCall-Crabbs. Despite its acknowledged inadequacies for adult formula development, the McCall-Crabbs test is simply the most nearly adequate that is available. The cost and effort of developing a parallel but improved adult reading test are enough to make its appearance unlikely, especially when what could be gained is at best an unknown, and probably a small, amount.

All of which indicates that formulas probably will get no simpler than they are today. There would, in fact, seem to be a disadvantage if they did, for there is a rough relationship between complexity and the amount of information about difficulty that a formula gives a writer.

The remaining direction formulas can go, then, is towards greater complexity. Time and effort in application must increase, but increased accuracy and information about difficulty *can* justify this. Remember that, as we pointed out in Chapter 9, increased complexity cannot merely involve addition of the simple style elements already uncovered and studied. They add complexity but very little accuracy. The increase will have to come through the use of new elements.

What these new elements should be is not yet entirely clear, but readability experts have some ideas. Dale and Chall (24) believe that format and organization, content, and expressional elements, which must now be considered separately, can all one day be incorporated in a single formula. Lorge (116) feels that conceptual difficulty and organization ought to receive consideration. Gray (69) believes that understanding is bound up with content in different ways for different readers, and should be so studied. Flesch (51) thinks readability work should (a) be related to the psychology of personality, (b) make use of other language elements such as verbs, adjectives, and participles, and (c) give more attention to the work of linguists.

Frontier efforts have begun to be made to meet many of these needs. Flesch notes that his first formula (that of 1943) made use of a kind of linguistic analysis by its count of affixes, that is, prefixes and suffixes. The formula is not used much compared to more recent ones, but its point is still valid—that added affixes are an indication of difficulty. The methods of adding affixes, and their purpose, in different languages, is an interesting part of the study of comparative linguistics. We might mention that writers who would like an introduction to linguistic method could profitably consult Bloch and Trager's short *Outline of Linguistic Analysis* (11). A longer, but fascinating, introduction to linguistics is *Language: Its Nature, Development, and Origin* by Jespersen (84). Bodmer's (12) *The Loom of Language* is excellent for those who want a popularized introduction to languages.

Another closely allied area in which work has begun is that of conceptual difficulty. One early attempt to measure it was that of Morriss and Halverson, two of Lorge's students. They attempted to classify words according to their degree of concreteness or abstractness, and Lorge (113) actually found that their word classes could be accurately used to predict the readability of written passages. Another measure of abstraction is Flesch's new for-

mula (54), which we have described briefly previously in this book. It makes use of the language elements advocated earlier by Flesch, verbs, adjectives, and participles.

Both the Morriss-Halverson and Flesch methods appear formidable in application compared to present-day readability formulas, but for the latter at least this is somewhat illusory. First application often does prove difficult, but succeeding use makes the formula almost as quick and easy to apply as some two-element formulas. It is an excellent predictor of readability, and has two distinct advantages when used by writers. The first is that writers, as word and language experts, usually prove able to apply it accurately, and the second is that it provides a good deal of information about *why* writing is difficult or easy.

Korzybski (101) has built an entire system around the problem of abstraction and meaning, with *Science and Sanity* his most complete presentation of it. He has developed nothing in the nature of a formula for application, but does present an interesting point of view, called "general semantics." Unfortunately for a writer on language, much of his work is rather difficult to understand, even for his students. Perhaps the best book for those interested in a more readable discussion is Hayakawa's (79) *Language in Thought and Action.*

Abstraction verges on meaning, and here, too, beginning studies have been made. We have pointed out several times the seeming paradox of short, simple words being potentially difficult because of their many meanings. Several related facts bear on this. Zipf found that as a word becomes older, it tends to become shorter, and Thorndike subsequently found that as it becomes shorter it also tends to acquire more meanings. (Those interested in this sort of statistical analysis might like to look into Zipf's *Human Behavior and the Principle of Least Effort.)*

Fortunately, this problem is not as serious as it sounds, as the studies of Lorge and Thorndike show. Thorndike, as our introductory historical chapters indicated, was one of the first to become interested in the frequency of occurrence of various words (the stimulus to the development of readability formulas). He published three wordbooks (167, 168, 170) presenting his findings, and Lorge followed these up with a semantic study (117) of the most frequent words. These words tend to be the shortest and simplest of the English language, and study of their meanings therefore provides our answer. Lorge and Thorndike found that,

while these frequent words did have many meanings, the meanings themselves did not appear an equal number of times. The crucial point is that the most common or several most common meanings were generally far more frequently used than the least common. Two present-day dictionaries, the *American College Dictionary* and the shorter *Thorndike-Barnhart Comprehensive Desk Dictionary,* list the various meanings of each word in order of frequency.

Meaning and how it is built into words has interested many philosophers and psychologists. One pioneering study was that of Ogden and Richards (133) in *The Meaning of Meaning.* A notable recent book on language by another philosopher is Morris' *Signs, Language and Behavior.* In discussing meaning Morris comes close to a psychological point of view in that learning theory borrowed from psychologists is integrated with the development of meaning. A short review of various theories of meaning is given by the psychologist Osgood (135), along with a presentation of his own theory. His article also contains an excellent bibliography of psychological studies on meaning. Some relevant background is almost a must for complete understanding of Morris and Osgood. Miller's (125) *Language and Communication* requires less background, but contains relatively little on meaning among the many areas it covers.

We can profitably make a distinction here between the structure and content of language, since it serves to divide studies we have presented into two groups. Readability formulas at present consider only certain structural characteristics of language, but as they move toward the measurement of conceptual difficulty they begin to take up content as well. Meaning studies are definitely on the side of content, so that within psychology there are two rather distinct kinds of studies of language. This is even more true in philosophy. We have mentioned the content side; the structural side is represented by the symbolic logicians.

Symbolic logic is a method of manipulating language in much the same way that algebra does numbers. This may not sound like an advancement to a writer, but we feel certain that it can be and will be much more so with the passage of time. Symbolic logic opens up amazing new possibilities for the analysis of language, and at the same time shows just how complex language is and why it is often very difficult to understand. A popular intro-

duction to logic is contained in the Liebers' (111) *Mits, Wits and Logic.* For those with enough desire to spend a good deal of time in study, Reichenbach's *Elements of Symbolic Logic* (147) is very good, especially since emphasis is laid on the applicability of logistic symbolism to everyday language. No knowledge of mathematics beyond algebra is necessary in order to understand it, fortunately.

To date, symbolic logic has found its most spectacular use in the development of large-scale electronic computing machines, the so-called "giant brains." Berkeley has a book by this title that discusses computing machines and tells about the contribution of symbolic logic to their development. Many other engineering applications have also been made, and such work has led, oddly enough, full circle back to advance the knowledge of human behavior. Wiener (186), in *Cybernetics* (subtitled "Control and Communication in the Animal and the Machine"), has drawn an interesting parallel between human behavior and that of complex machines.

Wiener became interested in information and communication at about the same time as two other research men, the statistician Fisher and the engineer Shannon. While the other two arrived at similar conceptions, it was Shannon who first developed completely a mathematical theory of communication.

Shannon's theory is highly technical and requires advanced mathematics for understanding, but Weaver has collaborated with him to present a book (156) that has a great deal to offer non-mathematicians as well. Shannon's general conception of the process of communication is being adopted by increasing numbers of social scientists. Those interested in research on writing have been able to gain much from the analogies it permits of the writer-reader relationship.

So much for the structural kind of analysis. It has great unrealized possibilities, but has even now far out-distanced content analysis. This is serious for those interested in "mass communications," as writers are. Beginning attempts have been made by social scientists to handle content, and the results have been gratifying, but so far no stable unit of content of much generality has been uncovered. It may be that none ever will. Even if not, the present state of knowledge gives some valuable insights into what lies beneath the more obvious appearance writing presents to the

reader. A readable little book by Berelson, *Content Analysis in Communication Research* (7), is the most recent in this growing field. It brings the topic up to date, and includes an extensive bibliography.

To return to readability research, one of the suggested directions for it is indicated by Flesch's interest in the relationship of readability work to the psychology of personality. There is reason to believe, from the background of psychological knowledge of normal and abnormal personalities, that such study can be profitably undertaken. Certainly the most immediately useful way of studying personality has proved to be through the medium of language. Language disorders are, also, among the better ways of detecting abnormal behavior.

One kind of exploratory measure that seems to be closely related to both readability and personality differences is the verb-adjective ratio. A high proportion of verbs compared to adjectives, as we noted earlier, indicates an active style, which is usually desired by readers. This same active style, when found in children's speech, seems to indicate emotion and is characteristic generally of more emotional children. Another measure that has been used in both readability and personality measurement is the "type-token ratio." As used in early readability studies it was called a "running count," meaning the number of *different* words (types) compared to the *total* number of words (tokens) in a passage. Johnson (87) in an appendix to *People in Quandaries,* shows how the type-token ratio can be used in research on language-personality problems. Johnson, like Hayakawa, is a general semanticist and a follower of Korzybski.

A further extension of the relationship of communication and personality is the theory proposed by Ruesch and Bateson in their *Communication, the Social Matrix of Psychiatry.* They believe that insanity is nothing but a breakdown in ability to communicate. Successful communication therefore becomes, to them, synonymous with adaptation and life. Once again, however, we find a communication book having some trouble communicating to readers. As *Time* magazine commented, after quoting two of the more difficult paragraphs, "If Psychiatrist Ruesch's definition is correct, Author Ruesch is in a pretty interesting condition himself."

We hope we have not gone quite so far in our book that we've left this implication about writers of unreadable writing. Un-

readable writing is undesirable writing, certainly, but more to the writer's reader than to himself.

We are happy to leave the writer to his own personality and to his art. We only hope that by presenting him with some of the more significant observations science has made of his craft we have helped him to reach his reader better.

APPENDIX I

Applying Flesch's Reading Ease and Human Interest Formulas and Farr, Jenkins and Paterson's Simplified Flesch Reading Ease Formula

We shall present here sufficient information to apply the three formulas mentioned above. The directions for the Flesch Reading Ease and Simplified Flesch Reading Ease have much in common, and we shall present separately only the specific directions that differ. The following material will be in the form of "steps" to follow. Other general information on the use of formulas will be found in Chapters 9 and 10 (particularly).

Step 1—For all three formulas. Unless you want to test a whole piece of writing, take samples. Take enough samples to make a fair test (say, three to five of an article and 25 to 30 of a book). Don't try to pick "good" or "typical" samples. Go by a strictly numerical scheme. For instance, take every third paragraph or every other page. Each sample should start at the beginning of a paragraph.

Step 2—For all three formulas. Count the words in your piece of writing or, if you are using samples, take each sample and count each word in it up to 100. Count contractions and hyphenated words as one word. Count as words numbers or letters separated by space.

Step 3—For the Flesch Reading Ease formula. Count the syllables in your 100-word samples or, if you are testing a whole piece of writing, compute the number of syllables per 100 words. If in doubt about syllabication rules, use any good dictionary. Count the number of syllables in symbols and figures according to the way they are normally read aloud, e.g. two for $ ("dollars") and

four for 1918 ("nineteen-eighteen"). If a passage contains several or lengthy figures, your estimate will be more accurate if you don't include these figures in your syllable count. In a 100-word sample, be sure to add instead a corresponding number of words in your syllable count. To save time, count all syllables except the first in all words of more than one syllable and add the total to the number of words tested. It is also helpful to "read silently aloud" while counting.

Step 3—For the Simplified Flesch Reading Ease formula. Follow the same directions as above, except to count the number of one-syllable words rather than all the syllables in each sample.

Step 4—For the Flesch Reading Ease and Simplified Flesch Reading Ease formulas. Figure the average sentence length in words for your piece of writing or, if you are using samples, for all your samples combined. In a 100-word sample, find the sentence that ends nearest to the 100-word mark—that might be at the 94th word or the 109th word. Count the sentences up to that point and divide the number of words in those sentences by the number of sentences. In counting sentences, follow the units of thought rather than the punctuation: usually sentences are marked off by periods; but sometimes they are marked off by colons or semicolons—like these. But don't break up sentences that are joined by conjunctions like *and* or *but.*

Step 5—For the Flesch Reading Ease Formula. Find your "reading ease" score by inserting the number of syllables per 100 words (word length, *wl*) and the average sentence length *(sl)* in the following formula:

$$\text{R.E. ("reading ease")} = 206.835 - .846\,wl - 1.015\,sl.$$

The "reading ease" score will put your piece of writing on a scale between 0 (practically unreadable) and 100 (easy for any literate person).

Step 5—For the Simplified Flesch Reading Ease formula. Find your "reading ease" score by inserting the number of one syllable words per 100 words (*nosw*) and the average sentence length (*sl*) in this formula:

$$\text{R.E. ("reading ease")} = 1.599\,nosw - 1.015\,sl - 31.517.$$

Step 6—For the Flesch Reading Ease formula. Roughly, reading ease scores will tend to follow the pattern shown in Table 3. Use this Table for interpretation of scores.

TABLE 3

PATTERN OF "READING EASE" SCORES

"Reading Ease" Score	*Description of Style*	*Typical Magazine*	*Estimated school grades completed*	*Syllables per 100 Words*	*Average Sentence Length in Words*
0 to 30	Very difficult	Scientific	College	192 or more	29 or more
30 to 50	Difficult	Academic	High school or some college	167	25
50 to 60	Fairly difficult	Quality	Some high school	155	21
60 to 70	Standard	Digests	7th or 8th grade	147	17
70 to 80	Fairly easy	Slick-fiction	6th grade	139	14
80 to 90	Easy	Pulp-fiction	5th grade	131	11
90 to 100	Very easy	Comics	4th grade	123 or less	8 or less

Step 6—For the Simplified Flesch Reading Ease formula. The reading ease scores can be interpreted in terms of Table 3.

Step 7—For the Flesch Human Interest Formula. Figure the number of "personal words" per 100 words in your piece of writing or, if you are using samples, in all your samples combined. "Personal words" are: (a) All first-, second-, and third-person pronouns except the neuter pronouns *it, its, itself,* and *they, them, their, theirs, themselves* if referring to things rather than people. (b) All words that have masculine or feminine natural gender, e.g., *Jones, Mary, father, sister, iceman, actress.* Do not count common-gender words like *teacher, doctor, employee, assistant, spouse.* Count singular and plural forms. (c) The group words *people* (with the plural verb) and *folks.*

Step 8—For the Flesch Human Interest formula. Figure the number of "personal sentences" per 100 sentences in your piece of writing or, if you use samples, in all your samples combined. "Personal sentences" are: (a) Spoken sentences, marked by quotation marks or otherwise, often including so-called speech tags like "he said" (e.g., "I doubt it."—We told him: "You can take it or leave it."—"That's all very well," he replied, showing clearly that he didn't believe a word of what we said). (b) Questions, commands, requests, and other sentences directly addressed to the reader. (c) Exclamations. (d) Grammatically incomplete sen-

tences whose full meaning has to be inferred from the context (e.g., Doesn't know a word of English. —Handsome, though. — Well, he wasn't.—The minute you walked out). If a sentence fits two or more of these definitions, count it only once. Divide the number of these "personal sentences" by the total number of sentences you found in Step 4.

Step 9—For the Flesch Human Interest formula. Find your "human interest" score by inserting the percentage of "personal words" (*pw*) and the percentage of "personal sentences" (*ps*) in the following formula:

$$\text{H.I. ("human interest")} = 3.635\,pw + .314\,ps.$$

The "human interest" score will put your piece of writing on a scale between 0 (no human interest) and 100 (full of human interest).

Step 10—For the Flesch Human Interest formula. Human interest scores will follow the general pattern shown in Table 4.

TABLE 4

PATTERN OF "HUMAN INTEREST" SCORES

"Human Interest" Score	*Description of Style*	*Typical Magazine*	*Percentage of Personal Words*	*Percentage of Personal Sentences*
0 to 10	Dull	Scientific	2 or less	0
10 to 20	Mildly interesting	Trade	4	5
20 to 40	Interesting	Digests	7	15
40 to 60	Highly interesting	*New Yorker*	11	32
60 to 100	Dramatic	Fiction	17 or more	58 or more

The directions for applying these formulas are not as involved as they may seem at first. After using the formulas several times, rating becomes very rapid. Remember, too, that Chapter 10 lists a number of sources of "aids" to computation of formula scores. These aids are particularly useful for writers or editors who plan to use formulas a great deal.

APPENDIX II

Readability and Level of Abstraction

Let's examine some copy and see what the formulas indicate. First, read the following passage. It's the complete text of a full-page political ad that appeared in the New York *Times* before the 1952 presidential election. As you read it, note your own reaction (favorable or unfavorable) to it. Decide about what grade-level of reading ability you think could handle it comfortably.

> Let's put away all the ten-dollar words and call a spade a spade. Socialism—in plain English—is nothing more nor less than *political management* of the lives—*the total lives*—of people.
>
> Somewhere back in history—around 1776—it seems we polished up some muskets, rammed 'em with gunpowder, and stopped the first attempt to *manage* our lives. And again in 1917. And again in 1941.
>
> What manner of people are we who will fight at the drop of a hat to prevent control from the outside—and submit blindly to conquest of our lives from within?
>
> Step by step—inch by inch—the starry-eyed dreamers and planners in our midst go on and on—plotting and planning more control of our Business machine—without which this nation would swiftly lose its power and its greatness.
>
> Step by step—the burden of taxes grows heavier—stifling Business growth and progress—undermining our capacity to create jobs.
>
> More and more, restriction follows restriction. More and

more, *political management* of our lives—*our total lives*—makes a farce of democracy—the last genuine democracy on earth.

That—Mr. and Mrs. U. S. Citizen—by whatever name you choose to call it—is *Socialism in the making!*

That is the same bag of political tricks that has finally made the courageous, fighting people of England victims of a busted economy. Victims—finally—of *political management of Business.*

Under political management last year in England, Civil Aviation lost a hundred million dollars, Coal lost a hundred and eight million dollars, Railroads lost an estimated hundred million dollars.

And who pays the bill? The people, of course—in taxes that kill all initiative—all desire even to work for more than the bare necessities of life.

A 40 dollar a week worker in England works twelve weeks out of the year to pay his taxes.

Austerity—they call it. The other word for it is *starvation.*

And what is the prospect of relief? None—as long as Business remains under control of politicians who know nothing of Business operation and management.

This is Socialism in England—in action! This is *political management* in action! Management that has driven prices up and the standard of living down, turned profits into losses, lowered production, reduced the quality of goods and services. Management that will finally run *the total lives of people at a loss*—a loss of pride, of dignity, of freedom, of all that we hold sacred.

In England—it may be too late. For once a nation gives up its freedom—submits to those who seek power for power's sake—there is small chance of escape.

In this country—where *your* freedom is at stake—it is later than you think, and the decision is *yours.* Before *you* decide that you will allow U. S. Business—*your* Business to be *po-*

litically managed—your life—*your total life*—stripped of the freedoms you have known—it will profit you well to watch out for this thing called Socialism—because brother—*you don't know the half of it.*

Not hard *reading,* by any means. The average sentence length of 18— words and the average word length of 1.5+ syllables put this passage, according to the Flesch formula, at about the 7-8th grade reading level. The number of "personal" words and "personal" sentences puts this passage in the *interesting* range as far as human interest goes.

Now let's look at another piece of copy; then we'll come back to this piece you just read. While the piece above was aimed at the entire readership of the *Times,* this one, part of a *Classical Journal* article on word lists, is directed only to trained language specialists, and its purpose is the same as that of the political piece above, to get the reader to adopt the writer's views about something. This particular piece is only about twenty words longer than the other. We selected it as an example of scholarly technical writing that is at the same time uncluttered by sentences unnecessarily turned-around, or excessive technical terms.

Practice and Theory

THE PRACTICAL word-counter and the classroom teacher will, of course, be satisfied with something less than a theoretical ideal and may well protest at this juncture that a satisfactory approximation of what is happening in the current language may be obtained by statistical methods which will show the number of words a student meeting the language for the first time needs to acquire to be able to speak, read, or write effectively, and, still more important, in what order he should learn these words.

The customary procedure in determining this practical list of useful words has been "to secure a representative sampling of the vocabulary of the whole range" of the language and by plotting these words on a curve to establish a point of diminishing returns, that is, the point on the count-curve where the addition of more words only very slightly reduces the remaining total. All the words appearing before the point of diminishing returns make up the list of essential words and are

considered important in direct relation to their frequency rating.

Considerable apparent validity is given to this method by the fact that this group of words invariably makes up an extremely high percentage of the total number of *running* words of the samples analyzed. By this method, for example, Diederich found that 21 Latin words comprise one-fourth of all the words a student "will ever read in Latin" and that 1,471 words account for 83.5 per cent of the total number of running words in the three anthologies he analyzed. Similarly, Charles Voelker discovered that 50 words make up one-half of the spoken words in English. Miles Hanley found that 100 words give 122,480 of the 260,430 running words in James Joyce's *Ulysses*. This pattern seems to be universal in the European languages. A study of 5,000 Spanish adjectives shows that 180 adjectives equal half the running total, 17 over one-fourth. A check of all the reflexive verbs in Ramón Sender's *El lugar del hombre* shows 17 verbs comprising five-eighths of the total.

There can be little doubt that the majority of the *running* words of any language is composed of an extremely small per cent of the language's total vocabulary. Current opinion accepts this evidence at face value and concludes that the student who learns the proper set of words is capable of recognizing 75 to 85 per cent of the running vocabulary and is, therefore, adequately prepared to read or understand the whole language.

Frequency vs. Meaning

THERE ARE, however, a number of important problems which have been too lightly treated both in establishing these lists of words and in interpreting their value to the student once they are established. First, word frequency has been established upon the mere physical presence of the lexical units without regard for the multiple meanings of those units. The assumption that the frequency of a word equates in some fashion with the frequency of its meanings is demonstrably fallacious and most dangerous pedagogically. It would be rash indeed to expect a foreigner who knows one or even two meanings for each word in Richard's Basic English list to be

able to manage the 12,000 concepts capable of being expressed by those words.

The average sentence length of this passage (33 words) and the average word length (1.7 syllables per word) put this in the difficult reading range according to the Flesch formula. Its human interest is almost nil. It's close to college graduate level in reading difficulty.

Certainly no one will quibble about the difference in reading level of the two passages just cited. But let's consider another element: how specific or how concrete are they? That spade-a-spade, straight-from-the-shoulder, down-to-earth talk in the political ad must be a lot more concrete than what the professor has to say about word lists. Applying Flesch's level-of-abstraction formula, mentioned elsewhere in the book, though, we find that the two passages are equally abstract. Each contains only about 27% "definite" words. (Flesch's categories of "definite" words were discussed in an earlier chapter.) This puts them both in the fairly abstract range.

Questions arise here which neither we nor any formulas can answer. Are the two authors equally aware that they are using abstract language? In each case do the abstractions mean the same to the reader as to the writer? Are the two writers being abstract for the same reason?

Now let's examine another piece of copy. This is a lead story from the New York *Times*, selected because it seems to be typical in style and content of the *Times*' leads. Read it over and decide how you think it compares with the other two passages.

WASHINGTON, Dec. 11—The United States has asked the Soviet Union to give full and serious study to President Eisenhower's proposal for an international pool of atomic-energy materials as a most significant step toward world peace and stability.

The State Department reported today that Charles E. Bohlen, United States Ambassador to Moscow, had twice called on Vyacheslav M. Molotov, Soviet Foreign Minister, following the President's speech. Today, in delivering the text, Mr. Bohlen stressed "the seriousness and importance" of the atomic proposals, which would create an atomic pool for peaceful purposes.

There are indications that the White House and State De-

partment regard the President's proposal for international cooperation in the development of atomic energy as the most important foreign policy statement, with the greatest potentialities for peace, laid down by the present Administration.

Envoy Stressed Importance

Ambassador Bohlen did not even wait for the President to make his address to the United Nations. On Monday, conveying only the information that the President would speak the next day, Mr. Bohlen called on Mr. Molotov.

The Ambassador told the Foreign Minister that President Eisenhower would deliver "an address of the highest importance on Tuesday and that the text would be made available as soon as it arrived in Moscow.

In that address, which he delivered the day after the ending of the Western Big Three conference in Bermuda, the President called specifically upon the Soviet Union to join with the United States and others in a pool of knowledge and resources directed toward harnessing atomic energy for the "benefit of all mankind."

Henry Suydam, State Department news chief, said that to his knowledge the Soviet Union had not yet made a "formal" response to the President's address. His comment did not preclude the possibility that Mr. Molotov might have indicated his reaction to Mr. Bohlen, but the department spokesman declined to discuss it.

More Studious Attention Seen

The Moscow radio, which often but not invariably foreshadows official pronouncements, has suggested a rejection of President Eisenhower's appeal for Soviet cooperation. A broadcast Wednesday night charged that the President "threatened atomic war."

Reaction in the rest of the world has been so favorable, however, that official Moscow, in contrast to propaganda Moscow, may have to give the Eisenhower proposal more studious attention than was reflected in the broadcast.

United States officials at least have not publicly given up hope for a more constructive Soviet answer.

The State Department disclosed, meanwhile, that it had "under consideration" a plan to call a meeting of the United

Nations Disarmament Commission early next month as a first step in carrying out the President's proposal.

It is then planned that a subcommittee be named from the major atomic powers to try, by private negotiations, to break the impasse that has developed between the majority of the United Nations members and the Soviet Union on atomic disarmament proposals.

Some authorities were recalling today that the President's proposals actually had a prototype on a small scale already in operation in Europe. Under the sponsorship of the United Nations Educational, Scientific and Cultural Organization a twelve-nation pool of nuclear research has been established in Geneva. It is known as the European Organization for Nuclear Research.

The countries taking part are Belgium, Britain, Denmark, France, Western Germany, Greece, Italy, the Netherlands, Norway, Sweden, Switzerland and Yugoslavia.

Using Flesch's formula again, we find that the average sentence length is shorter (27 words) and the average word length is longer (1.8+ syllables) than the copy from the *Classical Journal* article. Since word length is the more important factor, the passage actually rates as slightly harder reading—college graduate level in fact.

But consider some other factors. The human interest rating is in the mildly interesting range, according to Flesch's human interest measure. The "definite" words (33%) put it in the fairly concrete range. These factors, plus the fact that most *Times* readers have some background for such a news story cannot help but increase the story's readability somewhat for them. This in spite of the fact that the passage rates as hard reading.

These are two important points then in reaching the reader. One is whether he can cope with the vocabulary, sentence structure, and sentence lengths in a particular passage. The other is whether he can recognize abstract language and tell when the writer is legitimately using abstractions and when the writer is not. Much is known about the first of these. The second becomes more important every day.

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One additional study, by George R. Klare, James E. Mabry, and Levarl M. Gustafson, was of use in the writing of this book. It is being prepared for but has not yet reached publication, however, and is thus not available and has not been listed in the bibliography. A summary of results is therefore presented below for the interested reader.

The study presents the results of a series of experiments on the re-writing of technical material. In all the experiments, technical terms and content of the material ("*what* is said") were judged unchanged; only the structure of the material ("*how* it is said") was changed. It was found that versions of the material that were rated "more readable" by readability formulas were: a) more completely learned by readers; b) read faster; and c) found more pleasant to read. It was also found, however, that for readers

with a very high background knowledge of the material these results did not hold. The use of "human interest" did not increase the amount learned, though it did tend to result in faster reading. On the other hand, it was less "acceptable" to readers (less pleasant to read). This could well be due to the technical nature of the material, since technical material is normally highly impersonal in style. The use of certain kinds of underlining (for stress) helped the better readers learn but hindered the poorer; speed of reading and acceptability were affected very little.

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A NOTE ON THE PROFESSIONAL WRITERS LIBRARY

Know Your Reader by George R. Klare and Byron Buck is the sixth volume in the Professional Writers Library, a series established in 1951 by Hermitage House. Gorham Munson is the general editor of the series.

The aim of the series is to offer good books for writers who have passed the tyro stage—books for professionals in short. The unifying conception of the Professional Writers Library has been the fundamental relationship of writers and readers, a relationship that requires communication of thought and transmission of emotion from writer to reader. Hence, it was inevitable that the series should in time include a survey of readability research such as the present volume.

Previous titles in the Professional Writers Library in the order of their appearance have been:

A Reader for Writers edited by William Targ;

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Best Advice on How to Write edited by Gorham Munson;

The Writer's Workshop Companion by Gorham Munson;

Science-Fiction Handbook by L. Sprague de Camp.

In all of the above books there has been a sharp focus on the reader, his expectations, his psychology, and his predictabilities and unpredictabilities.