CREATING INTERPRETIVE PUBLICATIONS

by

Jeffrey W. Zehr

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APPROVED BY THE GRADUATE COMMITTEE OF:

Dr. Michael Gross, Committee Chairman
Professor of Environmental Education/Interpretation

Dr. Lowell L. Klessig
Professor of Resource Management

Dr. Larry Kokkeler
Associate Professor of Communication

Mr. Ronald Zimmerman
Director of the Schmeeckle Reserve
NOTE TO THE READER

What follows is the text for Creating Interpretive Publications, the third handbook in the Interpreter's Handbook Series. The text was written to fulfill the thesis requirement for the degree of Master of Science from the College of Natural Resources at the University of Wisconsin at Stevens Point. The final published version of this handbook will be fully illustrated. Suggestions for illustrations have been included in brackets throughout the text. The Interpreter's Handbook Series is a series of practical guides written for professionals and students in the fields of environmental education and interpretation.
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Interpreter's Handbook Series
Gross and Zimmerman, Editors
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PREFACE

Publications have power. The power to inform, inspire, interpret, and persuade. Whether you are a park naturalist, an environmental educator, a museum guide, or a student studying interpretation, you can benefit by learning how to create effective publications.

This book will guide you through the steps of creating successful publications. Publication development requires the artful blending of many skills: writing, design, and printing techniques. Each of these areas is addressed in the pages ahead. We hope the following advice and examples will spark your imagination to create many exciting new publications.
PART I: BEGINNINGS

It is a luxury to be understood.

- Ralph Waldo Emerson
A Potpourri of Publications

We live in a print filled world. Publications abound in many forms, shapes, and colors. Just look to your mailbox for an endless supply of fundraising literature and mail order offers. Or walk by a newstand and scan the many racks of eye catching magazines on every subject imaginable. Printed messages compete for our attention daily.

As interpreters, we also contribute to this massive pool of print. We produce newsletters, brochures, trail guides, annual reports, exhibit guides, checklists, staff manuals, theme booklets, and more. How do we insure that our publications are being read?

[photo showing a variety of interpretive publications]

Good design and writing are the twin ingredients of any successful publication. To reach the most people with our messages, we must produce well designed and clearly written publications.

Quality?

Unfortunately many publications produced each year by interpretive centers suffer in both visual and writing quality. It is not hard to find publications with crooked headings and poorly designed pages. Hunt and Brown in their article "Who Can Read Our Writing" evaluated interpretive publications produced by three U.S. agencies. They found publications with difficult reading levels and low human interest. The first step to producing better publications is
to look critically at our weaknesses.

Publication problems result from many factors. Interpreters often perform a wide range of duties. In addition to your job as publication writer, designer, and producer, you may be responsible for creating talks, guided walks, slide shows, and exhibits.

As a consequence of your busy schedule, publications may not be high on your list of priorities. Producing quality publications takes time. It takes time to learn new skills (or train staff) and time to write, edit, design, and produce.

Another factor that limits the quality of your publications is money. With minimum funds you must carefully budget your design and production options. For example, multi-color designs will cost significantly more to produce than single color. The more you have to invest in publications, the greater the quality you can achieve.

Finding resources for producing publications is another problem. You may wonder where to obtain artwork or you may want to learn about computer applications for producing publications. There are many resources available, but little time to hunt for them.

This book may be of most use to you as a resource. In addition to being a resource on writing, design and production techniques, this guide contains listings of helpful organizations, books, magazines, computer software, and graphic art suppliers. These resource listings will give
you a place to turn for help in any of the subjects treated in this guide.

Time, money, resource availability, and experience are four factors that can limit your success with publications. This guide can do little about the first two factors, except to impress upon you the value of spending the necessary time and money to produce quality publications. Good publications will clearly communicate your messages and enhance your public image.
CHAPTER TWO: PLANNING FOR PUBLICATIONS

If you are considering creating a publication, stop and ask yourself the following questions:

Why?

Why are you producing this publication?

How will this publication promote the philosophy and goals of your organization?

What?

What themes or messages are you trying to communicate with this publication?

Who?

Who are you directing this publication to?

What do you know about the audience who will be receiving this publication?

How?

Is a publication the best way to communicate this message?

How long and detailed is the message to be communicated?

What resources do you have available to you for producing this publication?

What staff people or volunteers do you have available to produce this publication?

How many copies of this publication do you want to print?

Do you have the funds for producing this publication?

When?

When do you want this publication to come out?

If a newsletter, how often do you want it to come out?

Do you have enough time to produce a quality publication?

When will this publication have to be revised or reprinted?
Where?

Where will the audience be reading this publication?
How will this publication be distributed?
If distributed by mail, do you have a mailing list ready?

So What? (If you wish to revise an existing publication)

Did the first publication accomplish what you wanted it to?
How can it be improved?

If you have an answer to all these questions, you are well on your way to creating a good publication. The preceding questions were based on the Sender-Message-Channel-Receiver (S-M-C-R) communication model, a commonly used interpretive planning model. Like any interpretive effort, planning a publication requires a lot of thought. You need to know how your publication will fit in with the long range plans of your organization.

Publications: Strengths and Weaknesses

Is a publication the best way to transmit your message? Let's look at some of the advantages and limitations of using publications.

Publications excel at reaching large numbers of people through the mail and through other offsite outlets. Other interpretive media are much more tied to a site. Publications communicate long, detailed messages effectively. In contrast, exhibits and signs must be brief to be effective. Publications fill the need of people who wish to probe deeper into subjects that other forms of interpretation
Publications have their weaknesses. They are a one way form of communication, so readers seldom have the opportunity to ask immediate questions of the writer. Only the eyes are used to receive information. Other forms of interpretation may produce a more memorable learning experience by stimulating multiple senses. Reading requires greater effort than passively observing an exhibit or watching a movie, so visitors will often skip publications if other forms of interpretation are available.

It is important not to overuse any particular form of interpretation. People prefer variety and choices. Having a brief exhibit on prairie restoration may satisfy many people's curiosity on this subject, but others may want a detailed handbook on the topic as well. By combining interpretive methods, you can treat subjects at many different levels and meet the needs of diverse audiences.

Good Uses of Publications

Here are some good uses of publications and some suggested formats:

1. Education

Publications can educate the public on anything from local history to community issues. You can use books, trail guides, brochures, newsletters, and other forms of print to help accomplish your educational objectives.

2. Interpretation

Interpretation goes beyond informing visitors about your site. Good interpretation should provoke visitors at
interpretive sites to want to know more. Your publications should complement and expand on the information provided by talks, exhibits, and other forms of interpretation you provide. These publications may take form as brochures, theme books, and trail guides. Interpretive publications are effective in introducing people to your site before they arrive and in providing follow up information after they leave.

3. Public Relations

Publications are powerful public relations tools. Interpretive centers need to keep their publics informed of center activities and maintain good relationships with community businesses and users of the center or site. Your newsletter and an annual report can do wonders for your center's public image.

4. Management Tool

You may have rules that you would like visitors to follow when visiting your site. A simple brochure can communicate a rule such as, "please do not collect plants or animals in this sanctuary!" Rules become more meaningful when their purpose is explained.

Publications are great for orienting visitors to a site. For example, you might produce a brochure that provides a map showing trails, rest rooms, and good places to see wildlife.

Management problems, such as vandalism to signs or buildings, can be addressed in your newsletter.

5. Marketing
Interpretive centers need to announce and attract visitors to programs, workshops, and other events. Newsletters, posters, and flyers work well for informing people about upcoming events. Brief marketing surveys can be sent to the public to gather information on community interests, market segments, and demographics to help you develop successful new programs.

6. Fundraising

Publications can aid in fundraising efforts. A letter combined with a nice brochure is an effective method of raising funds and boosting memberships in direct mail campaigns. You can also use newsletters to request funds and ask the community for supplies or equipment donations.

7. Staff and Volunteer Training

A staff manual is a useful supplement to a staff training session. Manuals can provide volunteers and staff with basic information they will need on the job.

For whatever purpose you plan to use your publication, be sure to ask yourself the questions that began this chapter. Knowing the answers to these questions will help to clarify your project and keep you focused on developing the best product for your audience.
PART II: WRITING

The difference between the right word and the almost right word is the difference between lightning and the lightning bug.

- Mark Twain
CHAPTER THREE: WRITING FOR PUBLICATIONS

Are you intimidated by the sight of a blank piece of paper, a pen, and an upcoming deadline for your newsletter? Do you spend hours at your desk with your head in your hands pulling at your hair and tapping your pen frantically on your papers? These are all signs of a serious condition called writer's block. Even if you are not beset by these symptoms, you will benefit from the following advice on writing.

This chapter is not a complete treatise on the fine art of writing, but merely some tips to help improve your writing. Writing for different audiences will be considered, along with ideas for making your writing more readable and interpretive. There will also be tips on overcoming writer's block and techniques for bringing your creative ideas to the surface.

Writing for Your Audience

To write well you must know your reader. Visualize your audience as completely as you can. Think about their interests, concerns, and backgrounds. Are you writing for a well educated adult audience or for young children? Professionals or lay people? Whether you are writing a newsletter article to attract people to an edible plant walk or writing a guide for a handicap trail, you must first have a clear picture of your reader.

Let's consider some audience factors:

Age of Audience

Children need short sentences with simple vocabulary.
New words are fine for children, but clearly define them as they arise. Plan to use more illustrations. Visual cues will help understanding when reading skills are less developed.

Background of Audience

No matter what the age of your audience, it is critical that you try to relate to the past experiences of your readers. Listen to good story tellers and notice how they strike a common chord with their listeners. Using technical jargon to describe why leaves turn color in the fall will probably lose most readers that have little background in plant physiology. Freeman Tilden, in his classic book, *Interpreting Our Heritage*, states as his first rule: "Any interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile."

What approach might you take to write to some of the following readers?

<table>
<thead>
<tr>
<th>Business People</th>
<th>Scientists</th>
<th>Factory Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnic Minorities</td>
<td>Engineers</td>
<td>Teachers</td>
</tr>
<tr>
<td>Farmers</td>
<td>Women</td>
<td>Elderly People</td>
</tr>
<tr>
<td>Disabled People</td>
<td>Men</td>
<td>Families</td>
</tr>
</tbody>
</table>

Separating readers into groups is a useful exercise for fine tuning your writing, but it is rarely practical to write a publication with just one reader in mind. Once you gain an understanding of different people, you will see common threads of experience that virtually all people share. Most people like to eat, every person was once a child, and what person has never looked with wonder at the stars? Use these
common threads to connect with large diverse audiences.

Avoid alienating any part of your audience by using language bias. For example, there are ways around the his or her syndrome. Use gender neutral words such as "humans" and "people" whenever specific gender is not implied:

Man is responsible for the care of the environment.

Humans are responsible for the care of the environment. (better)

Write simply and you will reach more people. The more complex your writing, the more readers you will lose. Roger Gunning in his book, The Technique of Clear Writing, states that the majority of best selling fiction novels read at a fifth to sixth grade level. Remember E.B. White's advice, "Be obscure clearly!"

Making Your Writing More Readable

With audience in mind, you can begin to write. Following these seven rules, based on rules developed by Cook and Kellogg, will make your writing clearer and more effective:

1. Write Tight

Get the word cleaver out and chop off all unnecessary fat from your sentences and paragraphs. Extra words just complicate a passage, making it harder to read:

The honey bee returned in a hasty manner.

The honey bee returned hastily. (better)

2. Use the Active Voice

Using the active voice, which places the subject at the beginning of the sentence, is stronger than using the passive
voice which begins with the object:

My first sight of a sky dancing woodcock will always be remembered by me.

I shall always remember my first sight of a sky dancing woodcock. (better)

3. Choose Specific, Concrete Nouns

The more specific you are when choosing your nouns, the sharper will be your reader's mental picture:

The bird closed its wings and dove.

The Peregrine falcon closed its wings and dove. (better)

Use the simple word when tempted with a more obscure word. For example, choose "flower" when it will work over "inflorescence".

4. Select Vivid, Active Verbs

Just as specific, concrete nouns help to create clearer mental images, so will the use of vivid, active verbs. Avoid using "to be" and "to have" in their many forms. Do not settle for "fly" when "soar", "glide", "dive", or "flap" will paint a better picture.

Careful selection of your nouns and verbs will often eliminate the need for extra adjectives and adverbs. Modifiers have their place, but do not rely on them to carry your meanings.

5. Use Fresh, Original Language

Avoid using cliches. Phrases such as "stiff as a board" are repeated so often they lose their power to describe. Come up with your own fresh metaphors and analogies. Communicating in fresh simple, language is one of the rewarding challenges of interpretation.
6. Avoid Technical Jargon

Avoid technical terms that will be understood by few and frustrate many. Remember to write for your reader. Instead of using the botanical term "hispid" just say "with short bristly hairs."

7. Keep Related Words Together

When you violate this rule you may be obscuring the meaning of your sentences:

The biologist noticed the unusual mark on the animal in the center.

The biologist noticed an unusual mark at the animal's center. (better)

Readability and Human Interest

Writing is more readable when you use short sentences, short paragraphs, active verbs, and familiar words. There are tests that can help you evaluate the readability of your writing passages. These tests involve averaging the number of words per sentence and averaging the number of syllables per word in a section of writing. Readability tests can help keep your writing at a level easily understood by your audience. Two common readability formulas are included in the appendices. By following the directions listed with the formulas, you can check the readability level of your writing. If you use a word processor for writing, you can run a quick readability check with the help of readability testing software (also listed in the appendices).

Human interest is another component of good writing. Passages having high human interest generally contain
numerous personal pronouns and speak directly to the reader. Using the word "you" involves your readers directly in your message. Using sentences that are in spoken, question, command or request form, can also increase your reader's involvement and add to the human interest element.

Overcoming Writer's Block: The Writing Process

Each of us has our own system for writing. The system that follows is an approach many writers use to produce excellent writing. Try it out and change it to suit your own needs.

1. Research Your Topic

Before you can write, you must know your topic. Learn as much as you can about your subject, but avoid getting hung up in the research phase. Let the writing process show you where further research is needed. Gaps in your information will become apparent as your writing unfolds.

2. Brainstorm

The next step is to brainstorm your topic. This should be fun. Let your imagination go wild and list all your thoughts on what could be included in your piece of writing. Also, write down all your ideas for various approaches or angles you might take in your writing. Let one idea spark the creation of new ideas and freely associate your way up, down, and all around your paper. This brainstorming technique is called clustering. From this confused tangle of thoughts, creative approaches can emerge. Give your ideas a chance. This is not the time to be critical.

[figure showing clustering]
3. Make An Outline

Take a careful look at your brainstorm notes and select the ideas that you like. Put these ideas in an order that makes sense to you and presto you have a working outline. Use this outline to guide you through your first draft.

4. Write A First Draft

Working from your outline, write a first draft. Let your ideas flow and just write. This is called freewriting. Do not criticize what is coming out on your paper. You will edit later. Critical thinking at this stage can block your thoughts and make any writing difficult.

As you write your first draft, be sure to use double spacing. This will leave room for future editorial comments, changes, and additions.

5. Edit Your First Draft

Now is the time to really look critically at your writing. Can you rearrange sentences to make them more readable? Can you cut out unneeded words? Look at the seven rules of writing and apply them to your draft. Try reading your manuscript out loud. This can be extremely helpful in finding awkward sentences. Feel free to cut up your first draft and rearrange or add new sentences or paragraphs with tape.

Don't try to edit immediately after writing your first draft. A lapse time is needed to look at things from a fresh perspective.

6. Have Others Review Your Draft
Once you are happy with your writing, it may be time to get some critical feedback from outside sources. Ask friends to read over your writing and make comments. Friends can be a big help in finding unclear passages.

7. Finishing Touches

Take the advice of your editors and make the final changes in your writing. You should now have a piece of well polished writing.

Computers and Writing

Computers and word processing programs make the whole process of writing much easier from the freewriting stage to the final draft.

Once you are comfortable with the computer keyboard, thoughts flow easily through your fingers and onto the computer screen. At the editing stage, changes come easy with a few simple keystrokes. Much time is saved. Using a computer means an end to worn out pencil erasers, messy editing changes, and the chore of retyping.

In addition to word processing programs, there are many other computer aids on the market for writers. Text organizing programs can help you take notes and prepare outlines. Computers can check your spelling, grammar, punctuation, readability, and even your style. Some programs have a built in thesaurus that can instantly give you a choice of alternative words. Programs are also available that will automatically produce an index as you write. Check the resource guide in the appendices for a list of useful software tools for writers.
Software aids can be a great help, but computers have their limitations. A computer program is no substitute for a good human editor.

Writing with a personal computer has another strong advantage. Microcomputer technology has revolutionized the publishing industry. Future chapters in this book will be addressing ways that word processing files can be used directly to prepare publications on your computer screen.

Writing Checklist

Before you call it quits with your writing, ask yourself the following questions:

1. Have you written your publication with a particular audience in mind? Who is your audience?

2. Have you checked for scientific jargon?

3. Have you edited unnecessary words to simplify and shorten complex sentences?

4. Is your writing in the active voice?

5. Have you used specific concrete nouns and vivid active verbs?

6. Is your language original?

7. Have you kept related words together to keep your sentence meanings clear?

8. How readable is your writing?

9. Have others read and reacted to your writing?

10. Have you checked your grammar, spelling, and punctuation?
PART III: DESIGN

Form and content are inseparable in a work of art.

- William James
CHAPTER FOUR: DESIGN FUNDAMENTALS

The Importance of Design

Imagine yourself pulling off a highway at a diner sporting the words "GOOD EATS" in bold pink neon. From the parking lot you eye a ramshackle building with greasy stained curtains and plastic tulips in the window. Are you hungry enough to open the weathered door or will you drive on? Just as you might hesitate to enter such a restaurant, people are reluctant to open poorly designed publications. Even the most brilliant writing (or tastiest food) may never get sampled if it is not packaged attractively.

Design plays a critical role in the success or failure of a publication. Everyday we are surrounded by words that compete for our attention. If our goal is to reach specific audiences, we must carefully tailor our publications.

Design goes beyond the surface look of a publication. Once inside a publication, a good design provides a unified framework on which to hang carefully crafted sentences. A well designed brochure is easier to understand and more pleasurable to read than a sloppy one. Design should serve as a guide, leading the reader through the material in a publication.

Design is as powerful a tool for the communicator as writing. Writers use a vocabulary of words and designers use a vocabulary of points, lines, shapes, textures, and tones. Design, like writing, should be a well planned process of arranging elements on paper to best express a meaning. The
designer and writer should work together with the common goal of clear communication.

Designing for your Audience

Just as you should write for a specific audience, you should design for one also. How would you design a publication differently for adults than for children? Obvious things come to mind. Children require larger print and often need more photos and illustrations to hold their attention. Adults are generally better readers, and can often get along with fewer illustrations and smaller type. This does not mean that adults will not benefit from larger print and plentiful illustrations. Illustrations and a comfortable type size will enhance the communication power of any publication.

Look carefully at your audience. Is your audience a group of professionals requiring a conservative format for credibility? Or does your audience consist of families who might enjoy a loose, friendly appearance to your publications? Sound design choices can greatly enhance the acceptance of your publications by the groups you are trying to reach.

The greater the interest in the content, the less important is the design of a publication. For instance, a job hunter will wade through miniscule print in the want ads of a newspaper to find potential jobs.

Where will your publication be read? A trail guide should be designed differently than a take home publication. Outdoor publications should have larger type sizes, shorter
blocks of text, and more illustrations to make them easier to
read while standing. Paper stock, ink colors, and type size
should be varied to match different user circumstances.

Good design begins with an understanding of basic design
principles along with a careful consideration of your
audience and message.

A Framework for Design

Grids

One of the easiest ways to create an effective design is
to begin with a grid system. A grid is a series of
intersecting horizontal and vertical lines that box off
different areas on a page. These spaces or grid units are
used to plan where text and illustrations will go. A grid
serves as a framework for design by holding page elements
together in an orderly manner.

[Graphic showing a grid/ and publication created from one]

Rules for Using a Grid

Each unit of the grid should be used either for text,
illustrations, or whitespace. It is fine to combine units of
the grid for large illustrations or extended sections of
text. Do not stray outside the margins of your grid, as this
would defeat the purpose of using a grid to create order on
the page.

[graphic showing proper and improper use of a grid]

This handbook was designed using a symmetrical grid.
Notice how this grid lends itself well for illustration placement.

[graphic showing the handbook grid]

In the next chapters, you will find some grids that can be used as design templates for newsletters, folding brochures, and booklets. Modify these grids to customize your own publication designs.

Principles of Design

Interpreters often need to play the double role of writer and designer. Even if you feel you lack artistic ability you can learn to produce attractive and effective publication designs.

Using the following six design principles will help you achieve more readable and visually attractive publications. These principles are not meant to restrict your creativity, but merely to give you a foundation for design. As you read, think about how these principles have been applied in the design of this book.

Balance

Every illustration and block of text on a page is considered a page element. Every page element has its own visual weight. Large photos "weigh" more than small ones, and dark areas weigh more than light areas. Colors are visually heavier than black and whites. A page element placed towards the outer edge of a page has more weight than when placed towards the center. When designing a page keep these visual weights in mind. Opposing sides of a page
should visually weigh the same to achieve balance. Likewise, pages opposite each other should appear balanced.

Look at the two illustrations provided. Do they both look balanced?

Balance can be either formal (symmetrical) with opposing elements exactly matched, or informal with a less strict balancing of opposing elements. For example, a very dark large illustration could be informally balanced on the opposite page by three smaller and lighter illustrations. Informal balance adds interest. Formal balance can be monotonous.

Proportion

When planning paper sizes, photo sizes, and illustrations consider the proportions of the elements you are using. The Greeks and Romans regarded a ratio of 3 to 5 as the ideal proportion for rectangular shapes. Using that proportion, or the 3 to 4 ratio more commonly used in America, can be more interesting than using 4 to 4 (squares) or 2 to 4 (half-squares). A sheet of 8 1/2 x 11 inch paper is in the 3 to 4 ratio as is your television screen. Try dividing your pages into thirds, fifths, or sevenths for pleasing proportions.
Sequence

Good design sequentially guides the reader through your publication. The design should take into account the reader's normal habits of moving through a page. Most readers start at the upper left corner and exit in the lower right corner. Remember that readers tend to move from illustrations to type, from big items to small, from color to non-color, and from unusual shapes to the usual. Use lines in illustrations to lead the reader's eye to important headings or text. Keep your graphics close to the text they illustrate.

Unity

The unity of a publication is how all the elements fit together. To achieve strong unity each part must complement and tie together the whole. Unity is created by using the same typeface throughout your publication. Repetition of graphic elements from page to page can also promote unity.

Make sure your paper and ink colors complement each other. Use consistency with your illustrations. Simple line drawings may not mix well with complex multitone drawings. Using a grid design system is also a great aid in producing unified publications.
Simplicity

Simplicity is as important in design as it is in writing. Avoid filling your pages with clutter. Leave plenty of whitespace. Keep your illustrations and headings simple. Avoid overusing decorative borders and varied typefaces. Use restraint in your design. In general, the fewer the elements in a design the clearer your message will be. You do not want to divert your reader’s attention from your message.

Contrast

Important ideas should stand out in your publications. Use contrast to make your pages more lively and interesting. To achieve contrast in publications use variations in type sizes, illustration sizes, colors, shapes, etc. Giving emphasis to one element over another will help to avoid blandness in your publication and help to stress the importance of some ideas over others.

Using Publication Elements

Publications are assembled with page elements: type, photographs, illustrations, and white space. A skilled designer uses design principles in combination with carefully
chosen page elements to create successful publications.

Text Type

[Graphic showing different typefaces]

Choosing a Typeface

A bewildering number of typefaces exist for publication designers. Type can be divided into two major groups, serif and sans serif. Serifs are the small lines (or tails) used to finish the tops and bottoms of each letter stroke in certain typefaces.

[Graphic comparing serif and sans serif typefaces two groups]

Serif typefaces evolved from the letter forms carved on Roman buildings. These typefaces are sometimes called Roman faces. Serif typefaces have a warm traditional look and are highly readable. These typefaces are often chosen for the main text (or body copy) of popular literature.

Sans serif (without the serif) typefaces are cooler and more modern. This type form became popular around the time of the Industrial Revolution because of its more functional appearance. Today, sans serif faces are commonly used in technical manuals and for short passages of display type. These typefaces work especially well as headings, when contrasted with serif text. Sans serif typefaces are sometimes called Gothic faces.

If your publication has a large amount of text, choose a serif typeface. The serifs provide additional visual cues and enhance readability.
Occasionally a design may call for a special typeface such as a script-like face or a decorative face. Avoid these special typefaces when long sections of text are needed, as they can be very difficult to read.

Look at the typeface you are reading? This serif face is called New Century Schoolbook and we chose it for the text of all the volumes of the Interpreter's Handbook Series because it is a familiar, highly legible typeface.

Typestyles
A typestyle is a style variation within a particular typeface family. For instance, a Times Roman typeface may come in a number of different styles such as bold, extrabold, light, italic, condensed, extended, and outline. The most common styles are bold and italic.

Type Size and Fonts
Most text types range in size from 9 - 12 points. The point is a unit of measurement used by printers to measure letter height. A pica typewriter produces 12 point letters. Standard newspaper print is 9 point. Ten point type is a common readable size used in many publications. This book is set with 10 point type. Larger typesizes may be needed for
children and the visually impaired.

[short paragraph set in 4 typesizes: 9, 10, 12, & 14 pt.]

Line Spacing (leading)

The term "leading" comes from the old printing practice of using lead strip spacers between lines of type. Long lines of text are difficult to read if sufficient space is not left between each line. Text type is usually set with 1 to 2 points leading. Ten point text type set with 1 point leading is referred to as 10/11. Double spacing on a typewriter produces 6 points of leading. Sans serif typefaces often require wider line spacing to improve readability.

[a short paragraph set three times showing different line spacings]

Text Arrangement (Format)

Passages of text can be arranged on the page in a number of different formats. Some formats are easier to read than others.

Fully justified text has flush or even margins on the left and right edges of the page. This is considered one of the best formats for sustained reading and is popular because of its neat, even appearance. Many electronic typewriters can justify text as can word processing programs and typesetters. Fully justified text will have varied spacing between words and often some hyphenation. In narrow columns, this variation in spacing between words can become quite noticeable.
Another common arrangement is flush left with ragged right margins (left justified). Hyphenation can help smooth some of the raggedness in the right margin by keeping line lengths fairly consistent. Left justified text is another good format choice for sustained reading.

Sometimes other text arrangements are used such as right justified, centered, and asymmetrical. These less common arrangements are sometimes used for poetry, but are not recommended for long reading passages.

[paragraph set with various justification arrangements]

**Line Length**

Typographers think of line lengths and column widths in terms of "alphabets". An alphabet is the width of copy produced when an entire lowercase alphabet is set using normal letter spacing (26 characters). Column widths of 1 1/2 alphabets (39 characters) are considered ideal by professional typographers. Avoid setting your line lengths over 2 1/2 alphabets (65 characters). Lines greater than this length can cause readers to get lost on their way back to the next line. If you set your lines too short, it causes the eye to change lines too often leading to a choppy effect.

[Example showing various line lengths]

**Consistency with Typefaces**

Be consistent with the typefaces you use. Mixing a variety of typefaces will lead to a visually chaotic
publication. If you do choose to use more than one typeface, choose a second face which contrasts strongly to the first. Avoid mixing two typefaces that are similar in appearance.

[graphic showing mixture of many typefaces on one page]

Display Type

The purpose of display type is to attract attention. This type, larger than text type sizes, is useful for titles and headings within a publication. Display type plays a key role in both unifying different parts of a publication and also in breaking up long sections of text into shorter more readable passages. Headings help readers quickly find specific information they are looking for.

In choosing the typeface for your headings, go with one of the two following options:

1. Use a larger, boldface version of the typeface you used for your text. This is what we did for this book.

2. Try contrasting your text typeface with a very different heading typeface. For example, use a sans serif heading with serif text.

Once you have picked a display typeface, use it consistently throughout the whole publication to maintain unity. Mixing many typefaces in a publication is a common mistake.

[Publication example showing good use of headings]

Because display type sizes are larger than text type sizes (over 12 point), often more leading is needed between lines. More latitude can be used in choosing your display
type line spacing than with your body copy. Just make sure your display type is readable and uncrowded.

White Space

The areas on your page absent of print should not be left to chance. Ample white space is important for keeping your pages inviting, uncluttered, and readable. White space helps to rest your reader's eyes.

Plan to keep your white space together on the page. Leave most of your white space at the bottom of your page, followed by some at the sides. The remaining white space should be at the top. About one third of your page should be left as white space.

You can also use white space around graphics to set off illustrations from text.

[publication example showing good use of white space]

Avoid having large amounts of white space in the center of your page, as this tends to visually explode or scatter the other elements on your page.

Photos and Illustrations

Graphics should be considered whenever possible to break up long sections of text and add interest and variety to your publications. A good illustration can save on many words. Graphics are sometimes the only way to clearly convey complex visual information to your reader.

Don't panic if you can't paint, sketch, or draw. Many sources of free and inexpensive artwork are available. Dover Press is probably the best known source of copyright free
clip art. Clip art books are available on many subjects. The Environmental Task Force publishes a book of environmental clip art entitled *Art for Environment's Sake* (see resource listings in appendices). For computer owners, numerous software libraries exist filled with electronic clip art. Old books, out of copyright, frequently have beautiful line drawings or engravings that reproduce very well. If you are in doubt of the legality of using a graphic, ask permission first. Volunteers in your community or local art students can be another good source for illustrations. Check the resource listings in the appendices for other sources of artwork.

If you are looking for photographs, try some of the following sources. Local newspapers often have prints available for a modest price. State and federal agencies may have photo files from which you may borrow or pay a small fee for a print. Check out your local colleges for photo archives. Trade associations can also be helpful in providing specific kinds of shots. For example, the Society of American Foresters might furnish photographs of different forest cutting techniques. Always ask your sources for permission before printing a photograph.

**Graphic Selection**

You should be aware of the difference between continuous tone and line art when selecting graphics for a publication. Continuous tone art contains shades of gray, such as in photographs, water colors, and charcoal drawings. These need
to be converted to halftones before they can be printed. Halftoning is a photographic process in which gray tones are converted into regions of small closely spaced black dots.

[blow up of a halftone showing dots]

Line art lacks any shades of gray. Examples of line art include pen and ink drawings, wood prints, and engravings. Line art is easier and less expensive to reproduce because no halftone preparation is required for printing.

[example of line art]

Designing With Illustrations and Photos

A graphic should be selected to communicate a single idea, not two or three. Remember that pictures can impart emotion more quickly than words. The pictures carrying your most important ideas should be run the largest. Contrast the sizes of your illustrations and photos to add interest. Remember to always place your photos and illustrations close to the text they are supposed to illustrate. Avoid using graphics just for decoration.

When designing with illustrations and photos take advantage of dominant lines within your graphics to direct the reader's eye to key headings and sentences. The orientation of lines within a graphic can also convey certain meanings to the reader. Diagonal lines imply motion. Vertical lines impart a sense of strength, and horizontal lines convey a message of calm.
Crediting Illustrations and Photographs

Always credit your artists and sources with a credit line. This can be placed under or to the side of your photographs and illustrations. Or devote a paragraph at the beginning or end of your publication to list the artists whose works have been reproduced.

Paper and Ink

Your choice of paper and ink is as much of a design choice as choosing your illustrations. The paper you choose is a design statement in itself. A hard glossy paper leaves a completely different impression on a reader than a coarse textured paper.

Papers come in a variety of types, weights, colors, and finishes. Ask your printer to show you the range of papers you can choose from. Here are some factors you should consider when choosing papers for your publications.

Paper Types

Papers come in many different types, but they are generally broken down into two main classes: cover and text. Cover papers are heavy and include such paper types as index, tag, and bristol. Text papers are lighter and include bond, offset, text, and book.

Bond paper is a familiar paper that is commonly used for letterhead and copying. It is a low cost paper available in a number of basic colors and convenient sizes. Bond papers are particularly suited for one-sided printing.
Offset papers come in large sheets and offer a tremendous variety of colors, weights, finishes, and textures. Printers often print many pages on one sheet of offset paper and later cut it down to size. This type of paper is more suitable for two-sided printing, because it is generally more opaque (see below) than bond papers.

Cover papers (or card stock) are much heavier than the types just described and are commonly used for publication covers, business cards, postcards, greeting cards, posters, and other uses where heavier stock is needed.

Weight

The weight, in printing terminology, means the weight of 500 sheets (a ream) of paper of a standard size. Because different types of paper are cut from different standard size sheets, weights are not comparable (see chart below). Keep in mind that your paper costs will increase as you choose heavier weights.

Paper Weights

**Bond Papers**

- 16 lb. - very thin, low opacity and strength
- 20 lb. - most commonly used bond weight
- 22 lb. - medium weight letterhead paper
- 24 lb. - heavier bond
- 28 lb. - very heavy bond - expensive

**Offset Papers**

- 50 lb. - equivalent in weight to 20 lb. bond - newsletters
- 60 lb. - equivalent in weight to 24 lb. bond - newsletters
- 70 lb. - equivalent in weight to 28 lb. bond - brochures
- 80 lb. - high opacity, heavy feel - brochures - expensive

**Cover Papers**

- 65 lb. - most common, post cards, business cards, covers
70 lb. - very stiff and heavy - more expensive

Opacity

Opacity is a measure of a paper's ability to take ink without having it show through to the other side. Heavier papers generally have more opacity than lighter papers in the same paper class. Opacity also increases with the darkness of paper color. Coated papers and those with harder finishes also offer greater opacity.

To tell if the opacity of a paper is suitable for a two-sided printing job, examine a sample printed on both sides. If the ink on one side shows through, it is distracting; choose a paper with greater opacity.

Grain

The grain is the orientation of the paper fibers. Paper fibers can run lengthwise (grain-long) or run widthwise (grain-short). Knowing the direction of the grain is important if you plan to have folds in your publication. Paper tears the straightest and folds the easiest with the grain. So if you were designing an 8 1/2 x 11 inch brochure, you would select a grain-short paper as the folds would be widthwise to form the three 8 1/2 x 3 5/8 inch panels.

[graphic showing fiber orientation and folding]

Finish

Finish describes the surface of the paper. This can vary from a ripple to a hard gloss. Smooth coated finishes are best suited for delicate serif print and finely screened
half-tones. Rougher finishes can be used when detail is less important. Consider the texture of the finish you choose and how it fits in with your overall design goal.

Recycled Paper

High quality recycled papers are available in a variety of colors, finishes, and weights. If your printer does not have recycled papers in stock, you can buy your own paper and bring it in for printing or try to talk your printer into stocking some. Look in the appendices for a listing of companies that sell recycled papers.

Recycled paper may cost you a little more, but using it sets a good example and promotes the recycling industry. If you use recycled paper, be sure to advertise the fact with a recycling symbol. This can leave a good impression on your readers.

[graphic of recycled paper symbol]

Colored Papers and Inks

Using colors opens up a whole new set of design considerations. Designing with colors offers a number of advantages to communicators:

1. Colors attract attention and build retention.

Studies have shown that color use tends to attract more people to a publication. Colors offer a strong contrast to black and white printing. Colors also have high memory value. Wise use of colors can enhance the retention of messages presented in your publications.
2. Colors produce psychological effects.

Colors leave different impressions on our brains. We say that blues are cool and reds and yellows are warm. Cool colors are relaxing and are perceived to recede into a page. Warm colors are stimulating and seem to advance out of the page. Green and red-purple are between warm and cool and thus leave a neutral impression.

Color impressions can be carried further. Cool colors suggest formality and warm colors suggest informality. Colors also carry associations and ideas. Reds imply life, passion, action, and happiness. Blues suggest calm, reserve, and distinction. Greens and browns carry many associations with nature. Purple suggests splendor and white denotes purity.

With colors having such powerful psychological affects on people, it is easy to see how colors can be used to create atmosphere and reach your readers at a deeper level.

Using color can be as simple as printing black ink on a colored sheet of paper to using full four color printing techniques.

Colored Paper

Carefully consider the color combinations of your paper and ink. Black ink on white paper provides the most contrast, but this extreme contrast can appear harsh. Light colored papers are more soothing to the eye and provide sufficient contrast for many inks.

Light colored papers in warm hues can create an informal mood. Darker papers in cool color hues imply more formality.
Avoid using very dark papers unless you are trying to create a special effect.

Care must be taken if you plan to use colored paper with halftones. Keep in mind that light areas on your photographs will appear as the color of your paper.

One Color Printing

Using only black ink or a single colored ink is considered a one color printing job. If using a colored ink, much care must be taken to choose a pleasing and readable combination of ink and paper. Make sure your ink contrasts strongly with your paper. Dark blue and brown inks can work well with white or light colored papers. Printing halftones with colored inks can produce some undesirable results.

[example of a halftone printed in a single color ink]

Two Color Printing

Using two colors of ink is more expensive than one color printing, but some very desirable design effects can be achieved with two colors. Using black ink for the majority of a publication along with the rhythmic use of a second color, as for headings, is a great way to add interest and unity to a publication. Sudden bursts of color can enliven and help guide your reader's eye.

Four Color Printing

If you wish to print full color photographs, four color printing is needed. The high costs of four color printing may force you to limit your designs to one or two colors.
The mechanics of both two and four color printing will be considered in upcoming chapters.

Designing with Computers

Graphics

Personal computers can be used to create everything from simple line drawings to elaborate multi-color paintings. Graphs and pie charts can be created easily from numerical data. You can also obtain copyright free artwork with various software packages and from computer network services.

Design Manipulation

Some computer programs are designed specifically for creating publications. Using personal computers to create publications has come to be called desktop publishing. Desktop publishing programs allow you to manipulate text and graphics on a computer screen. With this type of program, endless design combinations can be tried and viewed on the computer screen. Desktop publishing will be considered in
much more detail in future chapters.

Design Checklist

Use of the principles of design:

1. Is your publication properly balanced?

2. Have you used interesting proportions for your paper, text blocks, and illustrations?

3. Does your publication have a definite sequence that can be easily followed? Are illustrations placed appropriately to agree with the text and help lead the reader's eye?

4. Does your publication have a simple look to it? Or is it busy and cluttered?

5. Is your publication unified with consistent use of typefaces and illustrations?

6. Have you used contrast to add visual interest to your pages?

Use of publication elements:

1. Have you chosen an appropriate typeface for your audience? Have you used the same typeface throughout the publication?

2. Does your display type match the body copy (text type) or contrast strongly with it?

3. Does your design include enough white space (approximately 1/3 of each page should be whitespace)? Have you avoided scattering your white space?

4. Are your photos and illustrations consistent with your overall design? Have you credited your sources and artists?

5. Are your paper and ink color combinations easy to read? Do these colors reflect your organization and its mission?
CHAPTER FIVE: DESIGNING NEWSLETTERS

Armed with the design information presented in the last chapter, we can now begin thinking about creating specific types of publications. Although the same fundamentals apply to all publications, each type of publication has its own special design needs.

Newsletters! Every organization does one, but does every newsletter get read? To insure yours does, put careful thought into your design. A well designed newsletter is a powerful communication tool that can reach out and transmit your messages to specific offsite audiences. Consider the following factors as you design your newsletter.

Keep it Short!

The aim of every newsletter should be to provide the most important information to your readers. Avoid making a newsletter more than eight pages (8 1/2 x 11 inch paper). The power in a newsletter lies in its ability to provide important information quickly. If you flood your readers with too much information, you run the risk of diluting the strength of your important messages.

Paper Choice

Sixty pound offset stock is a good weight for most newsletters. The most common page size for newsletters is 8 1/2 by 11 inches, but other paper dimensions can be used as well. A simple four page (8 1/2 x 11 inch) newsletter can be created using 11 by 17 inch paper folded in half. For a six page newsletter, a single 8 1/2 by 11 inch sheet can be inserted into a 4 page newsletter. Another option for a six
page newsletter is to use 11 by 25 1/2 inch sheets, printed on both sides and folded in thirds. An eight page publication can be made by inserting a four page section into another four page section.

[graphic example of newsletter formats]

Mastheads

The first thing a reader should notice when looking at your newsletter is the masthead or banner. This should be located at the top of the first page and serve to immediately connect your readers to your organization and purpose. Combinations of catchy publication titles and incorporated graphics make effective newsletter mastheads. Consider having a professional artist prepare an attractive logotype (or logo) for your organization. This can be incorporated into your newsletter banner and used with many other publications. A good symbol will go a long way.

The banner area is also a good place to put your publication date, volume number, and issue number.

[examples of newsletter banners]

Columns

Using two or three columns in a newsletter is an efficient use of space. The short column lines created by multiple column formats are easier to read than lengthy single column lines. Remember, a column width of 1 1/2 alphabets is considered ideal. Double and triple column
arrangements also lend themselves nicely for work with illustrations and photographs. Sample grids for two and three column newsletters are provided at the end of this chapter.

[graphic showing illustrations with multiple columns]

To add interest and emphasis, you can also mix column formats. For example, a page could contain both a story set in two columns and another story set in a single column. Mixing column formats allows for more creativity, but avoid breaking the unity of your newsletter by over using this technique.

[graphic showing mixed column formats]

Graphics and Text Placement

Research has shown that readers do not scan all parts of a page equally. The most time spent on a page is at the top and especially in the upper left hand corner. The diagram below shows the percentages of time people spend studying various sections of a typical page.

41% 20%
25% 14%

[graphic showing percentages]

These percentages are useful to keep in mind when placing text and illustrations in a newsletter. Your most important information should go in the higher percentage areas. Graphics, having a strong power to attract the eye,
can be used effectively in some of the lower percentage quadrants on the page.

Whitespace

Beware of losing your whitespace. It is often tempting to squeeze as much information on to a page as possible, but your newsletter will suffer with readability problems and a cramped look.

Be generous with your margins and keep them consistent from page to page. Your margins should measure at least 1/2 inch (3 picas) all around. With two and three column formats be sure to leave enough breathing room between columns. The amount of space left between columns will vary depending on the type size you are using. Trust your eye to tell you if you have enough whitespace.

Emphasis

There are a number of techniques that are useful for bringing special attention to important material in your newsletter. None of these techniques should be overused or they will lose the power to draw the eye.

Boxes and tint blocks are great for highlighting sections on the page. Bold lines can also be used effectively to add emphasis to important areas.

[graphic examples showing emphasis]

Self-Mailers

Postal information can be easily printed directly on your newsletter, making it a self-mailer. This will save you
the time and cost of mailing your newsletter in envelopes.

If your newsletter mailing list has 200 or more names, you can save money by sending your newsletter bulk third class. To send your newsletter at bulk rates, you must first visit your local post office and obtain a bulk mailing permit. Non-profit organizations can take advantage of even lower postage rates for bulk mail. If you need speedy delivery, bulk third class is not the best way to send your mail. Sometimes bulk mail takes two weeks to reach its destination.

To make your newsletter into a self-mailer, you must plan spaces for your return address, delivery address, and bulk rate permit number. Newsletters designed as self-mailers are usually either folded in half once or folded in half and folded in half once again. Stapling the newsletter shut is advisable if loose papers are included in your newsletter.

[example showing newsletter folds and mailer panels]

Calendars

Newsletters convey timely information to their audiences. Calendars are often used to announce upcoming events. Some of the following examples may give you ideas on how you can design creative calendars for your newsletter.

[calendar examples]

Newsletter Redesign

A valuable exercise for improving your design skills is
to critically analyze publications produced by others and think of ways they could be redesigned for improvement. Look at the example below and consider how you might change it. Next turn the page to see how we have redesigned it.

[graphics showing a newsletter redesign]

Newsletter Grids

The following grids can be used to get you started on designing a newsletter. Each grid includes dimensions and placement recommendations for mastheads, mailing panels, columns, and margins. Remember the rules for using a grid when placing type and graphics in the spaces created by the grid lines.

[two column and three column newsletter grids]
CHAPTER SIX: DESIGNING FOLDING PUBLICATIONS

We have all seen the racks stuffed with hundreds of folding brochures at tourist information centers. Have you ever wondered how many of these brochures remain in their racks never to be unfolded? Informational brochures seem to be the universal introductory messenger for many organizations. Well designed brochures are important for setting positive first impressions.

[photo of brochure racks]

In addition to being used for informational brochures, folders can be used for trail guides, exhibit guides, maps, checklists, and for many other purposes.

[photo of folders used for a variety of purposes]

Designing a folder differs from the design of other publications in that whole pages are no longer considered as the major design units. Instead, folders are designed with panels in mind. When a folder is unfolded, the creases left by the folds divide up the page into a number of panels. Each panel can then be treated as if it were a page.

Folder designers must carefully consider reader unfolding patterns as they plan text and illustration placement. A good designer can take advantage of unfolding patterns to create interesting effects.

A Variety of Folds and Formats

Letter folds are commonly used to create brochures.
Often these folds are used with common paper dimensions such as: 8 1/2 by 11, 9 by 12, or 8 1/2 by 14 inches. Letter folds are valuable because they take printed sheets down to the size of a standard number ten envelope. A #10 envelope is 4 1/8 inches deep by 9 1/2 inches wide. Letter folds are also useful for creating self mailers.

Depending on the type of letter fold you make, you can create publications with 4 panels, 6 panels, 8 panels, and even 10 panels. Try out some of these folds with a piece of paper yourself, to get a feel for the different possibilities.

[illustrations showing various folds]

Larger sheets of paper can also be used to create folded publications. For example, publications can be created that are folded like a road map. Many possibilities exist for folded publications, but before deciding to go with an unusual format check with your printer to be sure it can be produced. Odd folds and non-standard paper sizes can drive up the cost of your publication.

[photo of some unique folded formats]

Cover Panels

The cover of any publication is of critical importance. A cover should attract attention and create the desire to unfold and read on. Remember the basic design principles. To create unified publications you must establish a theme.
with each of your covers. Keep your cover designs simple to clearly communicate your themes. Avoid clutter and maintain whitespace. Use contrast with type and illustrations to attract attention. If you can afford it, use color on your covers. Color is a great attention grabber.

[photos of many good folder covers]

Placement of Text and Illustrations

Once you have decided on the dimensions of your paper and the folds that will be used, it is necessary to carefully plan the sequence of presentation of text and graphics. Use leading lines and natural unfolding patterns to help you place page elements. Your folder should appear balanced from panel to panel and also when completely unfolded.

As in other publications, pay attention to your white space, typefaces, and typesizes. Avoid using tiny typesizes (less than 10 point) in an effort to squeeze a lot of text into a small area. A three fold brochure is not an appropriate publication format for providing lengthy detailed textual information.

Be sure to leave enough white space on either side of the crease between folded panels. Each panel image area should be framed by an adequate margin.

[photos of unfolded folders]

Paper Choices

Offset paper in 60 - 80 pound weights is recommended for use with folders. This paper folds nicely and is usually
sufficiently opaque for two sided printing. Bond papers can also be used for folders if a heavy enough weight is chosen to prevent bleed through. Also remember to check the grain direction of the papers you are considering. For best folding results, choose a paper with a grain oriented in the same direction as your intended folds.

Your choice of paper should be based on the impression you are trying to make and your needs for durability. A folder with a self-mailer, should be heavy enough to stand up to the forces of postal travel, but light enough to remain economical to send. A folder to be used outside as a trail guide should be durable. Ask your printer or paper supplier for advice on paper selection for various purposes.

Folder Redesign

Examine the design of the folder shown below. How would you change it? After you have made some decisions for change, compare them with our suggestions for improvement. Don't expect your design changes to be all the same as ours. There is room for much creativity in publication design.

[redesign of a brochure, with explanations of changes]

Grids for Folders

A few standard grids for folders are provided below. Advanced designs may take you beyond these, but these provide a good starting point.

[folder grids]
CHAPTER SEVEN: DESIGNING BOOKLETS AND OTHER PUBLICATIONS

Many options exist for publication formats. Publications can be classified by purpose (i.e. newsletters, informational brochures, trail guides etc.) and by format (i.e. folders, booklets, flyers, posters, newsprint, cards etc.). Once you have clearly defined the purpose of your publication, your next decision will be to pick the best format to meet your purpose.

Sometimes a choice must be made between two or more formats that seem equally appropriate. For instance, both folders and booklets work well for trail guides. Format decisions will often depend on the amount of detail you wish to present on a subject. Folders, flyers, and cards are excellent for quickly presenting facts and important information. Booklet and newsprint formats are good for presenting information in more detail. Your final decision on format should always take into account your audience's needs.

Booklets

Booklets are small books usually made up of 8 pages or more. This format works especially well for trail guides, theme booklets, annual reports, handbooks, and for other purposes.

[examples of publications in booklet format]

Design Considerations

As in all publications, the cover is critical to success. Covers should be eye-catching and draw your readers...
into your publications. The same advice given on the design of folder covers can be applied in the design of booklet covers.

[Booklet cover examples]

Once inside a booklet, it should appear unified from page to page. Page unity can be achieved by using consistency in margins, typefaces, and page number placement. Titles can be repeated on every page in the top or bottom margins, as headers or footers, to promote unity. Use a grid system to plan spaces for your graphics and text.

[examples showing inside page designs for booklets]

Because booklets have a number of pages, a decision must be made as to how to bind them together. Booklets can be bound inexpensively using staples in a number of ways. For thicker booklets, plastic ring bindings (GBC bindings) work nicely because they allow books to lie flat when open. Another option, called perfect binding, uses a flexible adhesive to bind pages together. Perfect bindings sometimes crack with heavy use and do not allow books to lie open flat.

[graphic showing various binding options for booklets]

Your binding choices will contribute to the overall impact of your designs. Some binding techniques appear formal and others appear utilitarian. When you are planning your inside margins (gutters), be sure to plan for any loss of space that may occur from the binding process.
Offset paper is recommended for the interior pages of booklets. For durable covers, use a heavier cover stock. As for any publications, the color, texture, and weight of the papers you choose will depend on the design impression you wish to make with your readers. You may also need to consider weight and durability if you will be mailing your publication.

Trail Guide Booklets: Design Considerations

Booklets are commonly used for trail guides. When designing a trail guide, put yourself in the shoes of a person walking your trail. How much text do you want to read when walking a trail? Is your text type big enough to easily read as you stand on the trail? Try using larger point sizes (12 or 14 point) for your trail guide text.

Consider the lighting conditions on your trail. Will sunny conditions create the potential for high glare off the pages of your publication. Using a colored paper, such as light brown, can help to reduce eye tiring reflections off your pages. On trails with a lot of shade, use a paper and ink combination providing high contrast.

Is your trail guide to be used once or to be recycled for many people? Think about the durability of the paper you will need. Will your guide hold up to the handling of many people in many weather situations?

How will you guide your visitors on the trail and how will they know when to stop and read your interpretation? A map in the front of your guide will orient visitors to your
trail and indicate stopping points. Probably the most common method for trail guide interpretation is to use a combination of numbers or symbols in your booklet, corresponding to markers along the trail.

[photo of trail guide with map]
[photo showing station description in trail guide and photo of corresponding marker on trail]

When designing a trail guide, strive to create a publication that naturally draws your visitor's eye from message to message, just as a good trail should guide your visitors body from station to station.

[photos showing the inside pages of well designed trail booklets]

Be sure to break up your text with graphics. Your graphics should be more than just a drawing of something the visitor can already see from the trail. Try to make your graphics convey something deeper that might not readily be observed or understood from a normal view. For example, if interpreting a dead tree you could show the tree in cross section, indicating animals and nesting chambers that might be hidden within.

[photos of interpretive illustrations from trail guide booklets]

Other Publications

There are other types of publications that fall between the cracks of those already considered. Some publications
are created from simple flat sheets of paper. This includes flyers, posters, information sheets, and cards. Single sheets and cards are useful for checklists, fact sheets, announcements, and reference information (bibliographies, addresses, phone numbers etc.).

[photo of single sheet publications]

Many parks create visitor information guides, using a newspaper format. These are usually in smaller dimensions than a full size newspaper page (15" x 22"). The newspaper format is useful for providing large amounts of information.

[photo of newspaper format park information guide]

The best way to learn about design is to examine good publications created by others. With this in mind, we have tried to provide you with a good sampling of publication examples throughout this handbook. Start your own publication collection and use it to inspire new ideas.

Good design for all publications rests on the creative manipulation of design elements and an adherence to basic design principles. Thinking carefully about the purpose of your publications and the needs of your audience will allow you to create successful publications of all types.
PART IV: PRODUCTION

The quality of our expectations determines the quality of our action.

- André Godin
CHAPTER EIGHT: PRODUCTION BASICS

The Production Process

Production is turning design into reality. Your production goal should always be to create a finished publication that matches the quality of your design vision.

There are many methods for turning design ideas into finished publications. The methods you choose will depend on four factors: your budget, quality desired, time limitations, and availability of production resources.

The production process involves many steps:

1. Generating text and headings.
2. Producing illustrations and photos.
3. Laying out and pasting text with graphics.
4. Making a master copy or printing plate.
5. Duplication or press run.

Sometimes the production process also involves collating, folding, binding, and other finishing steps.

Generating Your Text

Using a typewriter is a simple way to generate text. To produce clean copy, make sure your machine is clean and has a fresh ribbon. Typewritten text is convenient, but has some disadvantages. Typewriters cannot match the quality of type produced by professional typesetters and they are limited in their ability to control typographical features such as typesize, style, and spacing.

Another way to generate text is to use a computer printer. Computer printers vary tremendously in the quality of their output. Some machines produce type lower in quality
than an old typewriter; whereas, others approach the quality of phototypesetting.

Dot matrix printers produce characters by forming tiny dot patterns. For drafts and other situations where optimum quality is not required, dot matrix printers will work fine for text generation. Generally, these printers are not suitable for high quality publications because the characters formed from the dots tend to have a coarse grainy appearance. One advantage of these printers is their ability to print graphics.

Flywheel or daisy wheel printers use print heads similar to many electric typewriters. These printers produce what is commonly called letter quality print. Daisy wheel printers have many of the same disadvantages as typewriters and are greatly limited in their ability to print graphics.

Laser printers can produce output that approaches the quality of phototypesetting. The sharpness or resolution of a printer is limited by the dots per inch it can print. At present, laser printers can print at resolutions of up to 600 dots per inch. Most print at 300 dots per inch. If you look closely at a laser printed character, you can see grainy edges. Laser printing can be substituted for true phototypesetting for all but the most quality demanding jobs.

If you produce many publications per year, it may be well worth the expense to purchase a laser printer. Your money will be recouped quickly as you save on the high costs of phototypesetting.
If you do not feel it would be economical to purchase a laser printer, check your area for laser printing services. Many of these services will print your floppy disk files with their laser printer for a reasonable fee. Using a computer gives you a tremendous number of options in selecting your final print quality.

Phototypesetting is the highest quality technique for text generation. Typesetting machines produce the finest resolution print, usually in the range of 1200 - 2500 dots per inch. These machines also feature full control over typesize, style, hyphenation, line justification, leading, and letter spacing. Typesetting is available through many print shops, but the service is expensive.

Copyfitting

Planning for the space that will be occupied by your text and planning for the type that will fit into your spaces is called copyfitting.

If you wish to know exactly how much space your text will occupy when it is typeset, use the following procedure:

1. First calculate the total number of characters and spaces in your writing. Count the number of characters (and spaces) in an average line of your manuscript and multiply this by the number of lines in your writing.

2. Next, using a typeface table, determine how many characters of set type will fit into your chosen line length. A typeface table gives the number of characters (of a particular typeface and size) that will fit into a pica. A pica is 1/6 of an inch. These tables should be available from your typesetter.
3. The number of lines in your document will equal the total number of characters in your writing divided by the characters per typeset line.

4. The depth of your typeset columns can then be figured by multiplying the number of lines you will have by the vertical space each line occupies (including line spacing).

[illustration showing the copyfitting process with an example problem]

By working backwards through this method, you can also determine the typesize needed to fit your text into a limited amount of space.

Generating Display Type

As with generating text (body copy), you have a number of options for generating headings.

One simple and relatively inexpensive method of generating headings is to use transfer lettering (rub-on letters). Art stores and graphic art supply companies carry these in a wide variety of typefaces and point sizes.

When laying out transfer letters use a baseline to ensure even placement. Non-reproduceable blue pencils should be used for making lettering baselines and other layout guidelines because these blue lines are invisible to printers' cameras. Blue lined grid paper also works well as a guide for letter placement.

Transfer letters are especially useful for short jobs with few headings, such as brochures or program flyers. If you have many headings to make, using transfer lettering can be tedious and time consuming.

Lettering machines produce type either photographically
or mechanically. The photographic based machines generate display type on strips of photographic paper or clear film. Other lettering machines produce strips of type with adhesive backing. You may be able to gain access to a lettering machine at a nearby college or university. Some interpretive centers have their own lettering machines, which they use for both publications and exhibit work.

Computers can also generate display type with the proper software. Here again, the final quality of the type will depend on the quality of the printer. Laser printers produce nice clean headings. Dot matrix printers are of limited value for producing headings, because they cannot produce clean sharp characters.

If you choose to go with phototypesetting, your headings can be set along with your body copy. Again, phototypesetting is expensive, but it produces the highest quality type.

Processing Graphics

All continuous tone artwork needs to be processed before it can be printed. Some line art may also need special processing. This processing may include making halftones, cropping, and changing image sizes. Image processing is usually accomplished by a printing service with a large process camera.

Halftoning

Continuous tone artwork such as photos, pencil drawings or water colors need to be halftoned before they can be
The halftoning process converts gray tones into regions of closely spaced black dots. Large black dots closely spaced create the illusion of dark tones. Small black dots widely spaced appear as light tones.

Halftones are produced photographically using fine screens to break up the reflected light from the original artwork. This scattered light exposes the camera film in a dot pattern. Finer screens produce higher quality halftones because they produce smaller dots and a greater density of dots per unit area.

A coarse halftone screen should be used if you will be printing on coarse textured paper. Newspapers are generally printed using screens with 55-85 lines per inch. Magazines, with finer paper, require screens in the 150-175 lines per inch range. Screens in the range of 100-130 lines per inch are sufficient for most offset printing needs. For the best quality, use the finest screen your paper will permit. Consult with your printer on the fineness of the screen you should use.

A halftone is created in the form of a photographic negative. For top quality photograph printing (or other continuous tone printing), your printer will use these negatives directly in the offset printing process. If halftone negatives will be used, pasteups must be prepared leaving spaces or windows on the pages where photos will eventually go.

If highest quality photo reproduction is not required, a printer can prepare you a Velox or a screened PMT
(photomechanical transfer). A Velox is a positive image of a halftone that can be used directly in a pasteup, just as any line art would be used. Using Veloxes in your pasteups is an inexpensive way to print continuous tone copy, but quality is limited. Veloxes are usually screened at 100 lines per inch or less.

**Sizing your Graphics**

It is often necessary to custom fit your graphics into planned spaces. Some techniques for doing this are cropping, reductions, and enlargements.

**Cropping**

Cropping is the process of changing the shape of a graphic by cutting off unnecessary parts. This is useful for improving the composition of photographs as well as for adapting graphics to spaces. Make it clear to your printer where you want your graphics cropped. If you wish to crop a line illustration, you can do this yourself mechanically or ask your printer to do it photographically.

![illustration showing proper cropping instructions for printer]

![cropped photo showing improved composition]

**Reductions and Enlargements**

Photocopy machines with enlargement and reduction features are an inexpensive method for changing the size of line illustrations without changing the proportions. Reducing a line drawing by 50% can enhance the quality by hiding minor flaws present in the original. In contrast,
enlargements tend to magnify imperfections. Higher quality image reductions and enlargements can be photographically produced by your printer using a process camera to create PMTs.

To determine how much you want to enlarge or reduce a graphic, either use a proportion wheel or the proportion equation below:

**Sizing Equation**

\[
\frac{\text{original width}}{\text{original length}} = \frac{\text{new width}}{\text{new length}}
\]

[graphic example showing use of this equation]

**Proportion Wheel**

Proportion wheels are used to calculate new dimensions for enlargements or reductions. They are also used for figuring percentages of change needed to achieve new dimensions. Percentages are useful for setting reducing and enlarging copy machines. Printers also appreciate percentage change instructions, as they set their process cameras for image size changes with percentages.

[photo of a proportion wheel]

**Putting it All Together: Layout and Pasteup**

Layout and pasteup are the final steps of assembling a publication. The layout step is the creation of a "dummy" publication to see how everything fits together. The pasteup (or mechanical) is a base sheet on which all the page elements have been secured in place with adhesive. Pasteups
are then used directly by printers to make printing plates.

Layout

Doing a layout provides a practice run for placing publication elements on a page. This step can help prevent costly mistakes with expensive sheets of typesetting and PMTs. A completed layout serves as a full scale model for positioning page elements in a pasteup.

To do a layout, first make photocopies of all your page elements. Use the copies to cut and paste your publication together according to your design. The details of page assembly will be covered below in the pasteup section.

[illustration of a layout]

The Pasteup Process

After finishing a layout, you will be ready for the pasteup. Proofread all your text and make corrections before you begin. Errors in text are difficult to correct once you have things pasted down.

The first step in making a pasteup is to gather together your sheets of text (galleys), headings, and graphics. Next, choose a good base paper. Bristol board or non-reproduceable blue grid sheets are recommended for base sheets. Preprinted grid sheets are handy because grid lines on the paper help you place page elements straight. Both of these papers are available at art stores.

Once you have gathered the materials, find a flat working surface with a straight edge. Drafting tables are
ideal, but drawing boards work fine also. Light tables are another option, especially if you are working with blue grid sheets. A light shining beneath a grid sheet will highlight the blue pattern and aid you in judging straightness. Whichever work surface you choose, be sure to tape your base sheet down to keep it from moving.

Image Area

The image area is the maximum area on the page where copy can be put for reproduction. When designing and pasting up a publication, it is critical to plan enough margin space on the edges of your paper. Each printing press requires a minimum side margin to grip the paper as it moves through the press. Generally, 1/4-1/2 inch side margins will be adequate for most presses, but check with your printer to be sure.

If your design calls for an image to be run right to the edge of a page, this is called a bleed. Bleeds can substantially increase your production costs, because oversize sheets of paper are run through a press and then trimmed to size to produce bleeded images.

Base Sheet Set-Up

Base sheets can be either larger than the finished publication size or the same size. Your printer may have some preferences for base sheet sizes and materials.

Using a larger base sheet can be handy, as you can provide instructions to your printer in the margins of an oversized sheet. Larger base sheets are necessary if you wish to prepare a pasteup for multi-color printing or if your design contains bleeds. Large base sheets are also useful
for laying out two pages of your publication on one sheet.

If an oversized base sheet is used, page dimensions must be defined using a non-reproducible blue pencil. Use a T-square, ruler, and a triangle to assure squareness. You should also indicate trim lines on your base sheet outside your page area.

[series of small illustrations showing how to rule out page dimensions and mark trim lines]

Same size base sheets are convenient for simple one-color printing jobs, where few special instructions are needed for your printer. Just be sure your sheets have been cut squarely and are in the exact dimensions you want for your finished product. Using same size sheets will save you the work of laying out your page dimensions, but make sure you position your base sheet with a T-Square, before preceding with a pasteup.

[illustration, showing how to square a piece of paper]

Once you have your base sheet squared (oversize or same size) and secured with tape, use your blue pencil, T-square, triangle, and ruler to draw in page margins, center lines, and other guides. Take great care in keeping your guide lines straight and your corners square or your finished product will have crooked headings and text.

[illustration showing base sheet with margins and text placement guides ruled in]

After your guide lines are in place, you are ready to
cut and paste. Carefully trim the edges of your text sheets, headings, and line art with a knife or scissors. It is expensive and time consuming to have typesetting redone after accidentally slicing a letter in half. The combination of a metal ruler and a X-acto knife works well for cutting copy cleanly.

Keep Things Straight!

Your eyes can play tricks on you when pasting up copy. To insure straightness it helps to make full use of non-reproduceable blue guidelines. Use a ruler to draw straight blue lines on your page elements (i.e. text galleys, headings, graphics) and use these lines to match up with the guide lines on your base sheet. Check the vertical straightness of your columns, as well as the horizontal straightness of your lines, with your T-square and triangle.

[illustration showing technique to paste down copy straight]

If you will be using the same design format repeatedly, as for a monthly newsletter, you can ask your printer to make some custom base sheets with pre-printed non-repro blue guidelines. These ready made base sheets save time in the pasteup process by eliminating painstaking measuring and blue pencil work.

Choosing an Adhesive

There are many options for pasting down copy. Rubber cement works well, but it tends to attract dirt and repositioning is difficult after drying. Adhesive wax is a
common adhesive used by professional pasteup artists. Copy attached with wax can be re-positioned many times without ruining the base sheet. Waxing machines tend to be expensive, but a small hand waxer might be worth the expense if you do a lot of pasteup work. Some people work with spray adhesives or glue sticks. Experiment with different adhesives until you find one that works for you.

Continuous Tone Copy

How you prepare your pasteup for photographs or other continuous tone copy will depend on the quality you desire and the process your printer will follow in preparing your printing plates.

As mentioned before, for high quality continuous tone reproduction, windows must be inserted in your pasteup where continuous tone images will appear in the final product. These windows are created by pasting in black boxes in your mechanical. Each black box should match the final dimension of the photograph you wish to reproduce. These windows can be cut out of black construction paper or preferably from a red adhesive backed film called rubylith. The color red is picked up by the printer's camera just as a solid black is. Rubylith film is easy to work with and can be obtained from most graphic arts stores.

In a pasteup containing black boxes (or red ones), the boxes create clear areas on the negative after the pasteup has been photographed. The printer then uses these clear windows to strip in the halftone negative which is prepared separately.
In cases where less quality is needed, you can simply have Veloxes prepared and paste them in just as you would line art. Here again, check with your printer to see how they work with halftones and what options you have to choose from. The Velox method is usually significantly less expensive than the window/stripping method.

Special Effects

Many graphic effects can be added at the pasteup stage. Border tapes can be used to incorporate bold lines in a pasteup. Tint block screens can be added directly to a pasteup, or windows can be placed in a pasteup, with instructions for the printer to strip in a desired tint screen. Many special design effects such as screened letters, reverses, knockouts, and overprints begin with pasteup modifications. Talk with your printer, if you wish to use some of these effects.

[graphic showing various special effects]

Multi-Color Printing

Preparing a pasteup for multi-color printing can be exacting work. When your design calls for more than one color of ink, an overlay must be prepared for each additional color. The base sheet and overlays are used to create separate printing plates for each color.

Registration

The term registration, among printers, refers to how closely different ink colors coincide on paper after a press
run. When close registration is required, precise ink placement is critical for producing a quality product. For example, if you wished to print a leaf in green, surrounded by a thin black outline, your registration would have to be very close or it would be obvious that things were off.

Sometimes only loose registration is required, as when a colored heading will go over a block of text. If a colored heading is a little high or a little low it will not make much difference in the final appearance of a publication. The technical difficulty and expense of multi-color printing increases as close registration becomes more important.

[graphic showing close and loose registration]

Two Color Printing Preparation

To prepare a pasteup for two-color printing it is necessary to use an oversize base sheet to which you can attach a clear acetate overlay sheet and registration marks. Registration marks are small circles with cross lines. They come on a roll with an adhesive backing and are used to assure that overlays precisely line up with base sheets. When a pasteup is prepared with overlays, the base sheet is called a key sheet.

[graphic showing registration marks]

Prepare your key sheet just as you would for a one color pasteup, but leave out the copy to be printed in the second color. Place three registration marks on your key sheet outside the image area. Put one at the bottom and one on
each side of your key sheet. After the key sheet pasteup is finished, attach your overlay with tape to the top of the key sheet, so it is hinged at the top. Smooth the overlay over your key sheet and place three registration marks on your overlay superimposing the three marks you placed on the key sheet.

[illustrations showing preparation of key sheet and overlay]

Once your overlay has been attached and registered, you can begin pasting elements on the overlay for the second color. You can add type, borders, line art, and windows. As on the key sheet, you should only add page elements in black or rubylith.

If three colors are to be printed, a second overlay could be prepared over the first, using the same procedure.

Four Color Process Printing

To reproduce color photographs or other types of full color continuous tone artwork, a four color process printing system is needed. All colors can be reproduced with the proper blending of the three primary colors: yellow, magenta, and cyan. In four color printing, black is also added to bring out detail and provide shades of gray.

Preparation for four color printing requires a photographic color separation. In this process, artwork is photographed with filters and screens to create screened halftone negatives of each of the three primary colors. A fourth screened halftone negative is created for the black
color. Four plates are created from these negatives for use in the four color printing process.

Four color printing preparation is beyond the scope of this handbook, but many printing services can advise you on this process if you wish to pursue it.

[Color graphic showing a color separation]

Check Over Your Pasteups

Once your mechanical is finished, check it over carefully. There is nothing worse than finding a major error after a printing plate has been made. Small errors in pasteups can often be repaired with correction fluid and simple touch up work.

When your pasteup is prepared to your satisfaction, it can be called camera ready. Camera ready copy is work that is ready to go though the photographic plate making process. The remaining steps in the publication production process are usually carried out by outside printing services.

Production Checklist:

1. What level of quality are you trying to achieve with this publication? (Your answer to this question will influence all your choices in how you generate your page elements and put them together to form your publication.)

2. How will you generate your text?
   a. Typewriter?
   b. Computer?
      - Dot Matrix printer?
      - Daisy Wheel printer?
      - Laser Printer?
   c. Phototypesetting?

3. What graphics are being used and how will they be prepared for publication?
   a. Line art?
      - Sized? Cropped?
b. Continuous tone art? (Photographs, watercolors, charcoal drawings, etc.)
   - Screened? Sized? Cropped?

4. How will you put your page elements together to form your camera ready copy?
   a. Manual layout and pasteup?
   b. Overlays needed for two color printing?
   c. Color separations?

   Before giving your camera ready copy to a printer check the following:

1. Is the text free of typographical errors?

2. Is everything lined up straight, both horizontally and vertically?

3. Are all the page elements dark and sharply defined? (Camera ready copy that is poor in quality will produce poor quality printing plates.)
CHAPTER NINE: DESKTOP PAGE PRODUCTION

No T-squares, rulers, scissors, or rubber cement were used to produce the pages you are now reading. These pages were assembled on the screen of an Apple MacIntosh Computer, using page makeup software.

Personal computers are revolutionizing the way people produce publications. With a personal computer and the right combination of software you can now generate page elements (text, headings, graphics), paste them up, and laser print camera ready documents. The process of producing publications with personal computers has come to be called desktop publishing.

Desktop publishing has many advantages over traditional methods. Just consider the number of production steps that you can perform yourself with the aid of a computer, the proper software, and a laser printer: 1) writing, 2) editing, 3) typesetting, 4) design, 5) graphic production, 6) page makeup, and 7) generation of camera ready copy. Performing all these steps in-house will maximize your control over quality, costs, and timing. If you have ever been frustrated by poor quality work, delays, and high costs associated with outside services, you will appreciate the value of desktop publishing.

Electronic Page Makeup

In previous chapters we have considered the value of computers in writing, design, and in graphic production. Software is available to assist you in these important production steps, and likewise software tools are available...
to pull these page elements together into finished camera ready publications. These electronic pasteup tools are called page makeup programs. This software can help you play the roles of both typesetter and pasteup artist.

Page makeup programs eliminate many tedious headaches associated with manual pasteup. This software allows accurate and easy placement of page elements, without the frustrations of cutting and pasting. The computer takes care of keeping everything straight, leaving you with more time to fine-tune your designs.

[labeled illustration of a desktop publishing system]

How A Page Makeup Program Works

There are many page makeup programs on the market (see resource guide) and each one works differently. What follows is a generalized discussion of how a typical program might work.

Page Set Up

All page makeup programs have some system for setting up page parameters. The computer will need information on page size, margin widths, number of columns, column widths, and other basic information about the publication that is being created.

Once page parameters are set up, most programs provide an option for saving this information as a style sheet. Style sheets can serve as page templates for different types of publications. For example, you could have individual
style sheets for a newsletter, a brochure, and a booklet. Style sheets save time by preventing repetitious and time consuming page set up for frequently used publication formats. Some style sheets also specify typesetting information, such as typefaces, typesizes, and type placement.

[photo of computer screen with style sheet]

Adding Text

After page parameters have been set up, text can be added. The easiest way to add text is to import it from finished word processing files, but many programs will also accept text direct from the keyboard. Importing fully edited word processor files is preferred, because most page makeup programs are limited in their text editing capabilities.

Many of these programs will automatically flow text into the columns and spaces prepared in the page set up. If graphics have already been placed on the screen, some programs will flow the text to fit the contours of the graphics.

[photo of computer screen showing text flowing around a graphic]

Once text is on the screen, it can be manipulated in many ways. Selected sections of text can be set in new typefaces, enlarged, reduced, and repositioned. Many programs give full control over typesetting functions such as leading, kerning, justification, wordspacing, and
Adding Graphics

Graphics can be imported into a page makeup program from a variety of sources. Electronic clip art files can be added from disks or from a network via a modem. Original images created with computer drawing or painting programs can be easily merged with text. Scanners can be used to import paper based images including photographs and other continuous tone artwork. Some programs also have built in simple drawing features useful for creating boxes, lines, and other basic artwork.

Once graphics are on the screen, they can be positioned, enlarged, reduced, cropped, rotated, and modified in many ways depending on the features of the program.

Most page makeup programs make use of a "mouse" to assist in the positioning of text and graphics on the page. Some programs will operate without a mouse, but positioning work is much slower without one.

Once both text and graphics are positioned on the screen according to the intent of the designer, the page can be printed with a laser printer. Some page makeup programs can also drive phototypesetting machines for the ultimate in high resolution print quality. This handbook was typeset on a Linotronic phototypesetting machine at 1270 dots per inch.
Consider typesetting your disks with a phototypesetting machine if you desire print quality above the standard 300 dpi resolution that most laser printers produce.

**WYSIWYG vs. Code-Based Programs**

Page makeup programs, as just described, are called "what you see is what you get" (WYSIWYG) types of programs. There are other types of page makeup programs that use a coding system to specify page formatting and typesetting instructions. These code-based programs tend to be harder to learn, because they require the memorizing of special page formatting and typesetting codes. Code-based programs are limited in their ability to show screen previews of what typeset pages will look like. These programs are also limited in their ability to incorporate and handle graphic images.

[photo of a computer screen with text formatted with codes]

Code-based programs work very well in applications where extreme typographical control is needed and where there is less need to incorporate graphics with typesetting. These packages tend to operate faster and require less memory than WYSIWYG programs, because they seldom use memory hungry graphic displays. Most code-based programs are designed to drive phototypesetting machines as well as laser printers. These programs are ideal for typesetting long documents such as books. Code-based packages are often used by professional
typographers who have experience operating code-based phototypesetting systems.

For most interpretive applications, the WYSIWYG type of program is probably the best choice. The best WYSIWYG programs offer very precise typographical control and can also do a fine job in producing longer multi-page documents.

If you plan to buy desktop publishing software, be prepared to spend some time learning to use it properly. Many of these programs are quite complex and more difficult to learn than you might expect. Taking the time to learn a program will be well worth the effort.

Continuous Tone Image Processing

Scanners are capable of doing a good job in making digitized halftones of photographs and other forms of continuous tone art. Using a scanner to incorporate halftone images directly onto your computer screen has advantages over the traditional photographically screened halftone method. For one thing, electronic halftones can be easily sized, cropped, and retouched on your computer screen. This also eliminates the need to use expensive halftoning services. Instead of preparing your camera ready copy with windows (black or red boxes) where photos will go, photos can be incorporated directly onto your pages.

The quality of the halftones created using scanning technology is limited because digital scanners do not produce variable sized halftone dots, as the photographic halftoning process does. The newer gray scale scanners can simulate photographic halftone dots by using multi-bit halftone cells.
A halftone cell is made up of a grid of printer dots. The number of printer dots turned on in a cell will determine the darkness and "size" of the halftone cell.

[illustration of multi-bit halftone cells]

Using gray scale scanners that use this halftone cell (multi-bit) technology, it is possible to create halftones that can render a variety of gray tones. Medium quality output resolution is possible with these gray scale scanned images, if they are printed with phototypesetting equipment. Gray scale scanned photos printed with a phototypesetter can have resolutions of 100-133 lines per inch (lpi). A 300 dpi laser printed gray scale scanned image, at best, will only be close to the quality of a course resolution newspaper photo (55-65 lpi).

If you require high quality halftone output (over 100 lpi) it is not practical to use scanned halftone images in your camera ready copy. Computer halftones are still no match for the quality that can be achieved through a fine screen photographic halftone process.

Another major drawback of the scanning method, is the expense of the needed hardware and software. Until this technology becomes perfected and prices come down, traditional photographic halftones will be more economical.

**Desktop Color Separations**

Software is available for preparing camera ready copy for multi-color printing.
It is relatively easy to prepare simple color separations with some page makeup programs. After a composite page is created on a screen, different sections of the page can be tagged for separate colors. The computer can then be instructed to print out separate sheets for each color, complete with corner registration marks.

As we discussed in the last chapter, full four color printing first requires the separation of the four process colors: magenta, cyan, yellow, and black. Software is available to prepare digital color separations of full color images. These programs will automatically separate the four process colors and print out four images. Each image will include registration marks and a label identifying each of the separated colors.

Combining Computer and Manual Pasteup Methods

It is easy to get carried away by reading and thinking about all the wonderful ways computers can help you produce better publications with more efficiency and less trauma, but at some point we must all take a realistic look at our resources and consider just how practical computer applications may be to us. As interpreters, our main purpose is not publishing. Much of this technology is geared to the sophisticated needs and big budgets of the business world.

Although some desktop publishing technology may be beyond the reach of our budgets, much of it is within our reach and is well worth the investment. Good page makeup programs can be obtained for under $300. You may even be able to get by with a low end $100 page makeup program.
Desktop publishing techniques can be combined very effectively with more traditional production techniques to produce excellent results with less expense. Page makeup programs can be used just for typesetting text and headings. By leaving spaces in your page makeups for graphics, you can easily paste in your own high quality line art or have your printing service strip in high quality halftone photos. In fact, if you have no desire to work with computer graphics, you might be able to get along with a less expensive computer and use a good word processor to set your type. Computers offer many possibilities for publication production.

Page Makeup Software Considerations

If you decide page makeup software is the way to go with the production of your publications, the following questions may help you sort out the merits of various program packages.

Page Formatting

1. How easy is it to set up a page format for a new document? (Page dimensions, margin widths, column information etc.)

2. Is there a way to preserve page formats once they have been set up? (As stylesheets, master pages, page templates etc.) Good programs allow you to set up a standard format for various types of documents and store them for recall when needed.

3. Will the program automatically number each page? (Important for longer documents.)

4. Does the software allow you to use headers and footers? (A header is one or more lines of text that appears at the top of every page of a document. Footers appear at the bottom of every page. These are often used in longer documents, as when a title is repeated at the top of every left hand page in a book.)

Text Handling Capabilities
1. Will the program accept text files from your word processing software? (WordStar?, Word Perfect?, Microsoft Word? etc.) Most page makeup programs will work with a variety of word processing programs.

2. What text characteristics will it accept from word processing files? (Various typefaces?, tabs?, soft hyphens? etc.) Soft hyphens (also called discretionary hyphens) are specially coded words that will automatically hyphenate in the correct place if that word appears at the end of a line during copyfitting. Some word processors use soft hyphens.

3. Can the program be used to edit the text? (Handy for making minor text changes when using a page makeup program.)

Graphic Handling Capabilities

1. What sources of graphics will the program accept? (Drawing software?, scanned images?, electronic clip art?)

2. Will the program automatically "wrap" text around graphic images?

3. Can graphics be cropped? Enlarged? Reduced? Rotated?

4. Will resizing graphics distort proportions of the images or change the resolution of the image?

5. Does the program have any capacity of its own to create graphics? (Some have drawing tools for creating lines, boxes, and other shapes.)

Typesetting Features

Many of these features are not available on inexpensive page makeup programs, but are necessary for top quality publishing efforts. Less expensive page makeup programs often have preset or default settings for these typesetting features.

1. Automatic Hyphenation? (Necessary for high quality justified text.)

2. Kerning? (Kerning is the narrowing of space between selected letter pairs to improve their typeset appearance. For example, letters that follow a T can often be tucked under the overhang of the T for a more natural spacing. Equal spacing between all letters appears unnatural to the eye. Programs with automatic kerning are preferred over manual kerning features.)
3. How many different typefaces, styles, and sizes do you have to choose from? (Are there serif and sans serif faces?, options for boldface?, italics?, What is the smallest and largest typesize you can generate in each typeface?)

4. Leading Control? (How much control is there over line spacing?)

5. Interword Spacing? (How much control does the program give you with the spacing between words?)

6. Justification - Can this program justify text? Flush right? Flush left? Ragged right? (How well it can do this will depend on its word and letter spacing abilities mentioned above.)

Operational Considerations

1. WYSIWYG or Code-based operation? (Does the program offer a "What you see is what you get" approach or a coding approach to typesetting?)

2. What kind of hardware requirements does the program need to operate? (How much memory is needed? Hard Disk? Mouse? Speed?)

3. What kinds of printers will the software support? (Dot-matrix printers?, laser printers?, phototypesetters? What brands of these products?)
CHAPTER TEN: PRINTING CHOICES

The production of a good camera ready pasteup takes time, care, and craftsmanship. This care is well worth the effort, as the quality of your printed copies can be no better than the quality of your pasteup. Special care is also needed in choosing your printing methods and services. A poor printing job can quickly ruin all the hard work that is invested in the preparation of a publication.

The two most common methods of reproducing publications today are photocopying and offset printing. Each of these techniques has its own advantages and limitations.

Photocopying

Photocopying machines and services can produce high quality reproductions quickly and at low cost. Often these services can print your work while you wait or by the next day. Photocopying machines are capable of using papers in many different weights, textures, and colors. Many machines can also handle enlargements and reductions.

The low cost advantage of photocopying should be qualified. Most copy centers charge you the same price for every copy, no matter how many copies you make. If you are producing large quantities of a publication, over 500 copies for instance, it may be less expensive to use an offset printing service. Compare costs for both methods if you will be printing in the 300-500 copy range. Photocopying and offset printing prices vary substantially between services.

Producing Quality Photocopy Reproductions

For best results, take your camera ready copy to a
service with a high quality photocopy machine. Ask for a sample, photocopied from your pasteup, before all your copies are made. A good machine should produce clean dark print, free from black lines created from pasteup shadows. If shadow lines seem to be a problem, try placing correction tape along the edges of your pasted down elements. This will often eliminate the shadow problem.

[photo showing shadow lines from photocopying]

Keep your pasteups free from stray marks and smudges. Even non-reproduceable blue pencil will reproduce on some copy machines if lines have been drawn too dark.

Avoid making copies of copies, as this can cause a great loss in sharpness from the original. Successive enlargements tend to magnify small flaws.

Reductions, on the other hand, can actually improve the appearance of large originals by diminishing imperfections. Avoid reductions of reductions, as this also leads to losses in sharpness.

Photocopying works well for many simple printing jobs, but this technique has its limitations. Paper choices are limited to standard sizes, usually no greater than 11 by 17 inches. Color printing possibilities with photocopiers are severely limited and photographs can not be copied with any degree of quality. None of these limitations apply to offset printing.
Offset Printing

An offset printing press works by first transferring an inked image from a photographically prepared plate to a cylinder with a rubber surface. The rubber faced cylinder then rolls the inked image onto the paper. Because the ink is not directly transferred from plate to paper, this printing process is called offset printing or more technically photo-offset lithography. This technique is the most common printing system used in the United States today.

[diagram showing how an offset press works]

Offset plates are produced through a photo-chemical process in which images of camera ready copy are burned into light sensitive materials. These plates can be metal (aluminum), plastic, or paper. Offset plates work on the principle that grease and water repel each other. As an offset press operates, the printing plate is first wetted with water and then inked by rollers. The water sticks to the non-image area on the plate. This water also repels the grease-based ink keeping it in the image area.

There are two methods of making offset plates. One method makes use of photographic negatives of pasteups and halftones. These negatives are taped down (stripped) onto a sheet of opaque paper called a mask. This assemblage of negatives is called a flat. Before the plate can be made from this flat, windows need to be cut out of the opaque mask for each negative. Once the flat is prepared, it is placed over a metal plate. Light is passed through the flat and
onto the plate where the image is burned in.

[illustrations showing plate making process]

The second method of plate preparation is called photo-direct. In this process, the pasteup is used directly to make the plate (usually paper or plastic), with no negatives produced in the process. This second method is less expensive and much faster than the first. The photo-direct method works well for short printing runs and simple jobs.

The first method should be used when top quality is needed for photographs, screening, and close color registration work. The metal plates produced by the first method also hold up better for longer press runs.

Offset printing has many advantages over photocopying. Offset presses can print on large sheets of paper and many ink colors are available. Some presses are designed for two, three, and four color printing. Excellent results with continuous tone (photographs) printing can be obtained through the offset process.

Finding a Good Offset Printer

By the time you are ready for a printer, you have invested substantial time and energy in producing a quality publication. Take the time to find someone who does quality work.

A good way to quickly locate a good printer is to ask around. If you are impressed by a locally produced publication, find out who did the printing.
Once you have found some potential candidates, make an appointment with a sales representative to discuss your job. Beware of places that are unwilling to take time with you. Establishing a good working relationship with your printer is important from the start.

Your Talk With A Printer

Start by mentioning the type of publication you are producing and ask for samples of their work. Make sure they have the necessary equipment to do your job.

For the printer to give you an accurate estimate of costs, you should be prepared to answer the following questions:

1. Will the document be camera ready? If not, what work needs to be done to make it camera ready? (Halftoning, typesetting, pasteup, etc.) (The more they do, the more it will cost you.)

2. How many pages will your document be? What will be the dimensions of your pages? (Non-standard page sizes will cost more.)


4. What color ink do you want? How many colors will be used? (Black ink is the cheapest and colored inks cost a little more. Using multiple colors can be very costly.)

5. Are there any photographs? How fine a screen will you need? What sizes? Any bleeded photographs? (A bleed is a photograph that runs to the edge of a page. These cost more to print.)

6. Do you need folding or collating? (Hand folding and collating can take a very long time.)

7. How many copies do you want?

8. When do you want the job finished?

Once the printer has all this information, they can give you a price quote. If you work for a non-profit center or
organization, it never hurts to ask for a price break as a donation to your cause. Your publications are a potential source of regular business for a printing firm.

Don't forget to ask how long the job will take. This is very important if your publication carries dated information such as descriptions of upcoming events. A late newsletter can result in poor turnouts for programs and stale news.

If you will need typesetting or pasteup work done, ask if you will be able to see proofs before the final plates are made. You should always have the opportunity to check proofs and make corrections before the job hits the presses.

After talking with a number of printers, you will probably find some that you like better than others. Choose a business that can offer you quality work, a fair price, and a good working relationship.

Working With The Printer You Select

Once you have selected a printer, clearly communicate your specifications for the job.

If you plan to bring in camera ready work, check to see how your publication should be prepared. The printer may have special requests for the set up of your camera ready copy. Some printers may want to see corner marks on your pasteups, others may recommend special base papers or grid sheets.

If you need typesetting, give the printer complete instructions. Clearly indicate what typefaces and sizes you want for your text and headings. Remember to include special instructions for italics or boldface type.
If you want photographs screened, specify the fineness of the screen and any cropping or sizing instructions.

Be sure to discuss proofing. If you are having typesetting done, check the typesetting carefully before you or the printer proceeds with the pasteup. The more mistakes you can catch early in the process the better.

Ask your printer for advice on paper selection if you are not sure what you want. Remember to specify weights, textures, and colors for paper.

Choose your ink color or colors. Clearly designate where extra colors should go if you are using more than one ink color.

Remember to ask about collating, folding, and binding if you want any of this done.

Get a price quote and discuss payment terms. Some printers like to draw up contracts based on the specifications to ensure there are no misunderstandings.

Clearly communicate when you need the job finished and make sure the printer can meet your deadline. Allow extra time in your planning to protect yourself against unforeseen delays.

The better you communicate your needs, the more satisfied you will be with your end product. Good communication is critical in maintaining a good working relationship.

The Economics of Publishing

Publications can take a large chunk out of any
organization's budget. Here are a few tips for keeping costs down.

**Do As Much As You Can Yourself**

The farther you can proceed with a publication on your own, the more money you will save. Having professionals do intermediate steps, like design and typesetting, will cost you. With practice, you can design and produce your own publications and minimize reliance on costly professional services.

Taking advantage of computers and desktop publishing technology can help you do-it-yourself and save money.

At times, you may want maximum quality, as for a special fundraising brochure or annual report. Or you may lack the time needed to self produce a good publication. Sometimes it is well worth the money to have professionals reduce your work load and produce top quality results.

**Substitute Laser Printing For Phototypesetting**

Laser printers come close to matching the quality of phototypesetting. A page of laser printed text is a fraction of the cost of a page of phototypesetting. If you do not own a laser printer, take advantage of a laser printing service.

**Shop Around For A Printer**

Call a number of printers for price quotes on your job. Prices for services vary widely. It is usually less expensive to have your halftones prepared by an outside graphic arts camera shop than a regular offset printing shop. Graphic arts camera shops are specialists in making halftones and often do higher quality work. Again, shop around and try
to find good quality along with the best prices.

**Large Press Runs vs. Small Press Runs**

The expense of offset printing comes from the production of the plates and set up of the press. Once everything is set up, the individual copies cost very little. Larger runs are cheaper on a per copy basis.

If your job is simple and fewer copies are needed, photocopying may be more economical than offset printing. Check with your printer to see which printing process would be less expensive. Keep in mind the limitations of photocopying.

**Other Ways to Cut Costs**

If you are on a tight budget, stick to one color ink. Try using a complementary combination of a colored ink and a light colored paper to make your publications more attractive. Using colored paper is much cheaper than using multiple ink colors.

In general, if you want to keep your costs down, keep things simple.

**Costs for Producing Publications**

The following information will give you a rough idea of the range of costs for printing various publications. Be sure to check your local area for exact estimates on printing jobs.

**Offset Printing Costs**

*Newsletter:* 6 pages (8 1/2 by 11 inch), black ink, 500 copies, 60 pound white offset paper, camera ready:
  Lowest quote: $100
Highest quote: $180

With typesetting (@ $25 a page): Extra $150

Brochure: 1 page (8 1/2 by 11 inch) printed both
sides, 70 pound colored offset, one color ink,
1000 copies, camera ready, letter fold:
Lowest quote: $70
Highest quote: $110

With typesetting (@ $25 a page): Extra $50
With extra color both sides: Extra $30 - $75
With bleeded photographs: Extra $20

Typesetting: $25 a page (8 1/2 by 11 inches) or $50 an hour

Laser Printing: $.65 - $2.00 per page (8 1/2 by 11 inches)

Photocopying: 4 - 7 cents a page

Halftoning: The cost of a screened print varies depending on
the print size and the fineness of the screen.
Up to 5x7 inches - $4-$8 per print
Larger sizes - $9-$15 per print

Folding and Collating Charges: Folding $5-$10
Collating $5-$15
(depending on job size)

The above cost information was obtained from four
printing services located in Western Massachusetts in 1988.

You can see how quickly expenses can build and how
variable prices can be for the same services. In estimating
production costs, don't forget to add in your own time or
employees' time in figuring total costs.

Publication Budget Form

Use the following form to prepare a budget for each of
your publications:

Writing Expenses

Writer's Hourly Wage X Estimated Hours for Job...........$____
(or cost for whole job, for outside writer)

Editor's Pay for Job..................................................$____
Other expenses (computer use, paper, etc.) $___

Design Expenses

Designer’s Wage X Hours for Job $___
Materials Expenses (Computer, paper, pens etc.) $___
Illustrator Expenses $___
Photographer Expenses (Wages and Materials) $___

Production Expenses

Layout Artist and Pasteup Artist Wages $___
Materials for Mechanical $___
Continous Tone Art Screen Preparation $___
Typesetting or Laser printing $___
Proof Editing $___
Offset Printing Costs (includes paper, ink, offset plate preparation, and press run) $___
Folding and Collating $___
Delivery $___

Total $___

Finishing Your Publications On Time

Producing publications is not a difficult task, but many steps are involved. A good production schedule will help you accomplish each step on time.

A simple way to set up a production schedule is to organize all the steps involved in producing your publication. List these down the left side of a piece of paper. Across the top of the paper, list the weeks you have to complete your project. Next, place check marks under the weeks when each task should be completed. This checklist will keep you on schedule by breaking down the job into a
number of smaller production deadlines.

Give yourself enough time for each step and allow extra buffer time for delays. The time your publication is at the print shop can often be a bottleneck in the process. Printing services often carry very heavy workloads and occasionally experience equipment breakdowns. Notify your printer in advance of when you will be dropping off a printing job. This may help you get your job finished more quickly, as your printer can plan time for your work.

Below is an example of a production schedule.

Publication Production Schedule

| Production Steps                        | Week 1 | Week 2 | Week 3 |...
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Initial Design Concept</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Rough Draft Written</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. 1st Revision</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. 2nd Revision</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Edit Copy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Typesetting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Proof Typesetting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Prepare Illustrations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Take Photographs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Halftones Made</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Photos and Illustrations Sized/Cropped</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Layout publication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Prepare pasteup</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Proof the pasteup</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Send to Printer</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
16. Press Run
17. Folding and Collating
18. Pick up from printer or delivery
19. Distribution

Good luck in all your publication endeavors!
GLOSSARY

alphabet length - The length of a complete lower case alphabet in a given type style and size. This measurement is often used to compare various types and to determine proper line lengths for maximum readability.

art - Photographs, drawings, and anything else that is not text. Also a pasteup of materials that is ready to be made into an offset plate with a printer's camera.

banner - A large headline or title crossing the top of a page. Also used to indicate any large heading.

bleed - An illustration or photograph that fills a margin and runs over to the edge of a page. Bleeds can be costly, because they are more difficult to print.

blueprint (or blue or blueline) - A fast proof on paper made from an offset flat or negative. The printing is in blue. Printing services often give these to their customers to check before the final offset plate is made and the press run begins.

body - The main text of a publication.

body type - Type for the main message of a document. Generally body type is 14 points or less in size.

boldface - A variation of a typeface, that appears to be darker because of thicker and more pronounced strokes. Boldface is used for emphasis or to increase the visual weight of a section of text.

camera ready - Material that is ready to be printed.

color separation - Process of preparing separate primary color plates. When these plates are printed in register they produce a full-color illustration.

continuous tone - An image having grays or shades of color.

copy - Text or art that is to be reproduced or printed.

copyfitting - Estimating the: (1) space required for copy, (2) amount of copy to be written for an allotted space, (3) size of type to accommodate an amount of copy in an allotted space.

crop - To select only part of an image by cutting off portions from the edge(s).

display type - Type larger than body type, used for headings and titles.
dummy - A mock-up of a publication, often made using proofs of text, illustrations, and captions.

duotone - A two-color reproduction of a halftone made from two separate plates.

electronic paste-up - Combining graphic and text elements electronically on a computer monitor, instead of physically cutting and pasting together pieces of paper.

flag - The stylized name of a publication shown on the first page.

flat - A group of negatives mounted on paper ready to be exposed to make a printing plate.

folder - A publication having one or more folds.

font - A complete set of letters and characters in one typeface and size.

format - The size, shape, and style of a publication. Also typographical arrangements, such as line length, typeface, size, and so on.

galley proof - A proof from phototypesetting arranged in columns, but not made into pages.

grid - A system of regular rectangular areas dividing up a design space. These rectangular areas serve to contain page elements and create order and structure on a page.

gutter - The inside margin at the binding between two facing pages.

halftone - A reproduction made from continuous tone artwork. Gradations in tones are reproduced by variations in small dot patterns. These halftone dots are created by photographing continuous tone copy through specially etched screens.

head - Short for heading or headline.

justify - To align text along a margin, or along two margins.

kerning - Reducing the space between selected letter pairs so that one letter extends over another, i.e., placing an "i" under a "T".

layout - The arrangement of text and graphics on a page. Sometimes used as a synonym for dummy.

leading - The spacing between lines of type.
mechanical - Camera-ready copy with type and illustrations positioned on a base sheet. May also include one or more overlays. (Also called a pasteup.)

negative - In the photographic printing process, the film containing a reversed image.

offset - A printing method in which the inked image transfers from plate to rubber blanket to paper. This method is also called indirect or photo-offset lithography.

overlay - Transparent paper or acetate sheet placed over a pasteup to protect it; or to carry additional images to be made into a separate plate (i.e. images to be printed in a second color).

pasteup - See mechanical.

pica - Standard printing unit for linear measurement. One pica is equal to 12 points (approximately 1/6 of an inch).

plate - The metal, paper, or plastic sheet which transfers an inked image to paper (or other printing surface) during a printing operation.

PMT (photomechanical transfer) - A processor for automatically making enlarged or reduced photoprints from line copy. These photoprints are used in pasteups.

point - Standard printing unit used for measuring type size and for other printing measurements. One point is equal to 1/12 of a pica (approximately equal to 1/72 of an inch).

process color - Reproduction of continuous tone color originals through photographic color separations. Each color separation on film is made into a plate for carrying the respective ink colors to paper.

proof - A trial printing of type, negatives, or plates to be checked for errors.

register - Placement of negatives and printing plates so they will print images in precise relation to or over other images, as in color printing.

sans serif - Typefaces having no serifs.

scanner - An electronic machine that will "read" a visual image on paper and convert it into an electronic image that can be manipulated with a computer.

screen - Cross-ruled glass or film used in cameras to convert continuous tone copy into halftone dots.
**serif** - The finishing cross stroke or ornament that appears at the end of a main stroke in a type letter.

**soft hyphen** - A hyphen character that is specially coded within a word. The hyphen will only be displayed if the word ends up at the end of a line during typesetting. This is also called a *discretionary hyphen* or *ghost hyphen*.

**software** - The programs that direct the operation of a computer.

**spot color** - Any color printing other than four color process printing (i.e. two color printing).

**stripping** - Fixing film negatives to a flat during the process of plate making.

**text type** - See *body type*.

**typeface** - A complete set of characters in a particular style or design.

**Velox** - A screened photoprint made from continuous tone copy such as a photograph.

**x-height** - The size of a small letter "x" in a particular font, which is also the height of the main body of the lowercase letters in the font excluding ascenders and descenders.
REFERENCES

Chapter One: Interpreters and Publications


Chapter Two: Planning for Publications


Chapter Three: Writing for Publications


Chapter Four: Design Fundamentals


Chapter Five: Designing Newsletters


Chapter Six: Designing Folding Publications


Chapter Seven: Designing Booklets and Other Publications


Chapter Eight: Production Basics


Chapter Nine: Desktop Page Production


Chapter Ten: Printing Choices


As mentioned in chapter three, there are many tests available to help writers assess the readability of their work. Two commonly used tests are presented here which you can use to test the ease or difficulty of your writing. Both of these tests rest on the assumption that long sentences and words with many syllables make writing passages more difficult to read.

Flesch Reading Ease Score

The Flesch Readability Formula was developed by Rudolph Flesch. To calculate the Flesch Reading Ease Score, try the following steps:

1. Take 3 to 5 random 100 word samples from a piece of writing.
2. Count the number of sentences in each sample.
3. Also count the number of syllables in each of your 100 word samples.
4. Calculate an average for the number of syllables per 100 words.
5. Determine an average for the number of words per sentence.
6. Finally, use the following formula to calculate your reading ease score:

\[
20.835 - (.846 \times S) - (1.015 \times W)
\]

Where: \( S = \) the average number of syllables per 100 words
\( W = \) the average number of words per sentence

Use the chart below to evaluate your readability score:
Another popular readability test is the Fog Index developed by Roger Gunning. This test is easier to use than the Flesch method because only words that have three syllables or more are counted. Follow the directions below to calculate the Fog Index for a writing sample:

1. Count all the words in a section of successive sentences. If you are testing a long piece, take several samples of approximately 100 words. If you are taking samples, stop the word count with the sentence which ends nearest the 100 word total.

2. Calculate the average sentence length by dividing the number of words by the number of sentences. If there are long sentences that are broken up by commas and/or semicolons, treat complete thoughts as one sentence.

3. Next, go through your samples and count the number of words of three syllables or more per 100 words. Do not count words that are (1) capitalized, (2) combinations of short easy words (like "fisherman" and "horsepower"), or (3) verb forms made three syllables by adding -ed or -es (like "created" or "trespasses"). This number gives you an idea of the percentage of long words in a passage.

4. To determine the Fog Index, use the following formula:

\[(SL + LW) \times 0.4 = \text{Fog Index}\]

where:

- \(SL\) = average sentence length per 100 words
- \(LW\) = number of long words (three syllables or more) per 100 words

Use the chart below to interpret your Fog Index score:
Try to keep most of your writing below the Fog Index of 13. Robert Gunning, in his The Technique of Clear Writing, mentions that nearly every successful writer of this century has written at a grade level lower than 12. If you consistently write above this level you run a great risk of having your writing ignored or misunderstood by many people.

If you write with a word processor you can use readability testing software that will automatically calculate reading levels of your text files. Computer programs eliminate the tedious task of manually counting words, sentences, and syllables. Look in the writing resources section for a list of readability testing software.
RESOURCE GUIDE

Resources for Writing

Books to Help You Write:

There are many good books on writing available in your library or local bookstore. Here are a few you may find useful.

Simple and Direct
Jacques Barzun
Harper and Row, 1975

Writing with Power
Peter Elbow
Oxford University Press, 1981

The Art of Readable Writing
Rudolf Flesch
Harper and Brothers Publishers, 1949

The Technique of Clear Writing
Robert Gunning
McGraw Hill, 1969

Making the Right Connections, A Guide for Nature Writers
Interpreter's Handbook Series
James Heinztman
UW-SP Foundation Press, Inc., 1988

The Elements of Style
William Strunk Jr. and E.B. White

On Writing Well
William Zinsser
Harper and Row, 1980

Books to Help You Edit:

Line by Line: How to Edit Your Own Writing
Clair Kehrwald Cook
The Modern Language Association of America
Houghton Mifflin, 1985

A Practical Style Guide for Authors and Editors
Margaret Nicholson
Holt, Rhinehart and Winston, 1967
Books on Word Processing:

Silicon English: Business Writing Tools for the Computer Age
Darlene Frank
Royall Press, 1985

The Writer's Guide to Desktop Publishing
Cathy Lang
Harcourt Brace Jovanovich, 1987

The Word Processing Book
Peter McWilliams
Prelude/Ballantine, 1982

The Complete Book of Word Processing and Business Graphics
Walter Sikonowiz
Prentice-Hall/Micro Text, 1982

Writing With a Word Processor
William Zinsser
Harper and Row, 1983

Computer Software for Writers

Word Processing Software:

Word Processing programs vary tremendously in price and features. All do the basics, such as editing, moving blocks of text, and printing. Many also have built in spell checkers, outline programs, and thesauruses. Reading magazine reviews and asking salespeople to demonstrate products can help you sort through the array of confusing options and determine exactly what you need. Here are a few popular word processing programs for the Apple MacIntosh and for IBM PCs (and compatibles).

Fullwrite Professional (Macs)
Ashton-Tate
20101 Hamilton Ave., Torrance, CA 90502-1319

GEM 1st Word Plus (PCs)
Digital Research, Inc.
70 Garden Ct., Box DRI, Monterey, CA 93940

Macwrite (Macs)
Claris Corporation
440 Clyde Ave., Mountain View, CA 94043

Manuscript (PCs)
Lotus Development Corporation
55 Cambridge Pkwy., Cambridge, MA 02142

Microsoft Word (Macs & PCs)
Microsoft Corporation
16011 N.E. 36th Way, Redmond, WA 98073-9717
Microsoft Write (Macs)
Microsoft Corporation
16011 N.E. 36th Way, Redmond, WA 98073-9717

MultiMate Advantage II (PCs)
Ashton-Tate
20101 Hamilton Ave., Torrance, CA 90502-1319

PC-Write (PCs)
Quicksoft, Inc.
219 First Ave. N. #224, Seattle, WA 98109

PFS: Write (PCs)
Software Publishing Corporation
1901 Landings Dr., Mountain View, CA 94043

Word Perfect (Macs and PCs)
Word Perfect Corporation
1555 N. Technology Way, Orem, UT 84057

WordStar 2000, Wordstar Professional (PCs)
MicroPro International
33 San Pablo Ave., San Rafael, CA 94903

Xywrite III Plus (PCs)
Xyquest
44 Manning Rd., Billerica, MA 01821

Other Software Tools for Writers:

Computer software is available to check spelling, grammar, punctuation and even writing style. Programs are also available for creating outlines, checking readability, and indexing. You might find a thesaurus program helpful for coming up with just the right word when you need it.

Proofreaders and Thesauruses:

Coach Thesaurus (Macs)
Deneba Software
7855 N.W. 12th St. #202, Miami, FL 33126
A thesaurus for the MacIntosh.

Hyper Spell (Macs)
Hyper Press Publishing Corporation
P.O. Box 8243, Foster City, CA 94404
A spell checker for the MacIntosh.

Sensible Speller and Sensible Grammar (Macs)
Sensible Software, Inc.
335 E. Big Beaver #207, Troy, MI 48083
A Mac spell checker and grammar checker.
The Word Plus (PCs)
Oasis Systems
6160 Lusk Blvd., Ste. C-206, San Diego, CA 92121
Finds and corrects spelling mistakes.

Turbo Lightning (PCs)
Borland International
1800 Greenhills Rd., Scotts Valley, CA 95066
Another popular spell checker. This also gives you immediate access to the Random House Thesaurus.

Webster's Electronic Thesaurus (PCs)
Proximity Technology, Inc.
3511 N.E. 22nd Ave., Fort Lauderdale, FL 33308
A thesaurus for PCs.

Wordfinder and Spell Finder (PCs)
Microlytics, Inc.
300 Main St., East Rochester, NY 14445
A good electronic thesaurus and spell checker.

Punctuation, Style, and Reading Level Checkers:

Doug Clapp's Word Tools (Macs)
Aegis Development, Inc.
2115 Pico Blvd., Santa Monica, CA 90405
Word Tools checks readability, punctuation, and style. The author condensed the best of the Chicago Manual of Style and Strunk and White's Elements of Style into this program to test for wordy and improper phrases.

Grammatik III (PCs)
Reference Software
330 Townsend, San Francisco, CA 94107
Calculates average sentence and word length (useful for readability checking). Also looks for grammar and punctuation errors.

Punctuation and Style (PCs)
Oasis Systems
6160 Lusk Blvd., Ste. C-206, San Diego, CA 92121
This program for PCs will point out possible errors in punctuation and check for erroneous phrases in your writing.

Readability Analyzer (PCs)
PC Disk Magazine
P.O. Box 5930, Cherry Hill, NJ 08034
This program, also known as Fog, determines readability and calculates reading level by grade.

Right Writer (PCs)
Rightsoft, Inc.
2033 Wood Street, Suite 218, Sarasota, FL 34327
Checks grammar, style, usage, and punctuation.
Indexing Programs:

Index (PCs)
Digital Marketing
2363 Boulevard Circle Suite 8, Walnut Creek, CA 94595
Creates an index and table of contents for WordStar files on PCs.

MacIndex (Macs)
Boston Software Publishers Inc.
1260 Boylston Street, Boston, MA 02215
An indexing program for the MacIntosh.

Text Organizing Programs:

Ready! (PCs)
Symantec
117 Easy St., Mountain View, CA 94043
A good outlining program for PCs.

Think Tank (PCs and Macs)
Symantec
117 Easy St., Mountain View, CA 94043
Assists both PC and MacIntosh users with drawing up outlines.

Design Resources

Books:

Adobe Illustrator: The Official Handbook for Designers
Tony Bove, Cheryl Rhodes, and Frederick Davis
Bantam Books, 1987

How to do Leaflets, Newsletters, and Newspapers
Nancy Brigham
PEP Publishers, 1982

The Grid
Allen Hurlburt
Van Nostrand Reinhold Company, 1978

Publication Design
Roy Paul Nelson
William C. Brown Company, 1972

Newsletters: Designing and Producing Them
Colleen Schuh
University of Wisconsin-Extension, 1978

Desktop Publishing by Design
Ronnie Shushan and Don Wright
Microsoft Press, 1988
The Graphics of Communication
Arthur T. Turnbull and R.N. Baird
Holt, Rinehart and Winston, 1980

Editing by Design
Jan V. White
R.R. Bowker Company, 1974

Mastering Graphics, Design and Production Made Easy
Jan V. White
R.R. Bowker Company, 1983

For a catalog of good books on graphic design write to:
PRINT Graphic Design Bookstore
6400 Goldsboro Road, Bethesda, MD 20817-9969

Artwork Sources:

Art for the Environment's Sake: A Collection of Environmental Graphics
Environmental Task Force
1012 14th St., N.W. 15th Floor
Washington, D.C. 20005
Environmental clip art.

American Art Directory
R.R. Bowker Company, 1984
Contains listings of art organizations, museums, art schools, and libraries.

Artmaster
550 North Claremont Blvd.
Claremont, CA 91711
Clip art.

The Bettmann Archive
136 East 75th Street
New York, NY 10022
Photographs.

Dover Publications, Inc.
180 Varick Street
New York, NY 10014
A great source of inexpensive clip art books.

Dynamic Graphics
P.O. Box 1901
Peoria, IL 61656
Clip art.

Forward Graphics
7031-P University Avenue
Des Moines, IA 50311
Clip art.
Graphic Products
3601 Edison Place
Rolling Meadows, IL  60008
Clip art.

Society of Illustrators
128 East 63rd Street
New York, NY  10021
Publishes the Society of Illustrators Annual which shows sample illustrations and price ranges.

Volk Corporation
1401 North Main Street
Pleasantville, NY  08232
Clip art supplier.

Computer Software for the Designer

Draw and Paint Programs:

Adobe Illustrator 88 (Macs)
Adobe Systems, Inc.
1585 Charleston Rd., Mountain View, CA 94043

Aldus Freehand (Macs)
Aldus Corporation
411 First Ave. S. #200, Seattle, WA 98104

Fullpaint (Macs)
Ashton-Tate
20101 Hamilton Ave., Torrance, CA 90502-1319

GEM Paint and GEM Draw Plus (PCs)
Digital Research, Inc.
70 Garden Ct., Box DRI, Monterey, CA 93940

Macpaint (Macs)
Claris Corporation
440 Clyde Ave., Mountain View, CA 94043

Macdraw II (Macs)
Claris Corporation
440 Clyde Ave., Mountain View, CA 94043

PC Paintbrush, PC Paintbrush Plus, Publisher's Paintbrush (PCs)
Zsoft Corporation
450 Franklin Rd. # 100, Marietta, GA 30067

PC Paint Plus (PCs)
MSC Technologies, Inc.
2600 San Tomas Expwy., Santa Clara, CA 95051
Windows Draw (PCs)
Micrografx, Inc.
1820 N. Greenville Ave., Richardson, TX 75081

Windows Paint (PCs)
Microsoft Corporation
16011 N.E. 36th Way, Redmond, WA 98052

Sources of Electronic Clip Art:

Adobe Illustrator Collectors Edition (Macs)
Adobe Systems, Inc.
1585 Charleston Rd., Mountain View, CA 94043

Centennial Graphics (Macs)
New Edge
201 Noone Falls, Petersborough, NH 03458-3090

Click Art (Macs and PCs)
T/Maker
1973 Landings Dr., Mountain View, CA 94043

Desktop Art (Macs and PCs)
Dynamic Graphics, Inc.,
6000 N. Forest Park Dr., Peoria, IL 61614

Desktop Publishers Graphics (PCs)
Zyzx, Inc.
1325 Chesnut St., Henderson, NV 89015

Digit Art PostScript, 10 Vols. (PCs)
Image Club Graphics, Inc.
2915 19th St. N.E., Calgary, Alberta, T2E 7A2 Canada

Maccessories Graphic Accents (Macs)
Kensington Microware
251 Park Ave. S., New York, NY 10010

Mac Art Library (Macs)
Compucraft
9034 Arrow Grass Way, Highlands Ranch, CO 80126

Metro Imagebase Electronic Art (Macs and PCs)
Metro Imagebase, Inc.
18623 Ventura Blvd. #210, Tarzana, CA 92503

Micrografx Clip Art (PCs)
Micrografx, Inc.
1820 N. Greenville Ave., Richardson, TX 75081

PC Quik-Art (PCs)
PC Quik-Art, Inc.
394 S. Milledge Ave. #252, Athens, GA 30606
Desktop Publishing Resources

Books:

The Art of Desktop Publishing
Tony Bove, Cheryl Rhodes, and Wes Thomas
Bantam Books, 1986

Desktop Publishing from A to Z
Bill Grout, Irene Athanasopoulos, and Rebecca Kutlin
Osborne/ McGraw-Hill, 1986

Desktop Publishing
Fred Davis, John Berry, and Michael Weisenberg
Dow Jones Publishing Company, 1986

Page Makeup Software (WYSIWYG):

Front Page Personal Publisher (PCs)
Haba Arrays, Inc.
6711 Valjean Ave., Van Nuys, CA 91406

GEM Desktop Publisher (PCs)
Digital Research, Inc.
70 Garden Ct., Box DRI, Monterey, CA 93940

Page Maker (Macs and PCs)
Aldus Corporation
411 First Avenue S. #200, Seattle, WA 98104

PFS: First Publisher (PCs)
Software Publishing Corporation
1901 Landing Dr., P.O. Box 7210, Mountain View, CA 94039-7210

Ready Set Go (Macs)
Letraset USA
40 Eisenhower Dr., Paramus, NJ 07653

Ready Set Go (PCs)
Manhattan Graphics
401 Columbus Ave., Valhalla, NY 10595

Springboard Publisher (Macs)
Springboard Software
7808 Creekridge Circle, Minneapolis, MN 55435

Quark Xpress (Macs)
Quark, Inc.
300 S. Jackson St. #100, Denver, CO 80209
Text Formatters/ Typesetting Programs (Non-WYSIWYG):

Command Typographer (Macs)
The Software Shop
233 Bedford Ave., Bellmore, NY 11710

Just Text (Macs)
Knowledge Engineering
115 Mason St., Greenwich, CT 06830

Mactex (Macs)
FTL Systems, Inc.
234 Eglington Ave. E. #205, Toronto, Ontario, M4P 1K5 Canada

Magnatype (PCs)
Magna Computer Systems, Inc.
14724 Ventura Blvd., Sherman Oaks, CA 91403

PC Tex (PCs)
Personal Tex Inc.
12 Madrona Ave., Mill Valley, CA 94941

Scenic Writer (PCs)
ScenicSoft Inc.
12314 Scenic Drive
Edmonds, WA 98020

Spellbinder Desktop Publisher (PCs)
Spellbinder Software Products, Inc.
P.O. Box 1950, Davis, CA 95617

The computer software market is constantly changing. New products come out often and older products improve with updated versions. Reading computer periodicals is helpful in keeping abreast of new product developments and software updates:

Magazines:

Desktop Publishing
P.O. Box 5245, Redwood City, CA 94063

Personal Computing
Hayden Publishing Company
P.O. Box 2941, Boulder, CO 80321

Personal Publishing
Renegade Publications
Box 390, Itasca, IL 60143
An excellent resource to turn to when researching computer software is Software Reviews on File. This monthly periodical highlights various microcomputer software products and provides excerpts of magazine reviews on these products. Check your library for this useful resource:

Software Reviews on File
Published by Facts on File, Inc.
460 Park Ave. So., New York, NY 10016

Production Resources

Books:

How to do Leaflets, Newsletters and Newspapers
Nancy Brigham
PEP Publishers, 1982

Production for the Graphic Designer
James Craig
Watson-Guptill Publications, 1974

Studio Tips for Artists and Graphic Designers
Bill Gray
Van Nostrand Reinhold Company, 1978

Printworks: A Guide to Planning and Producing Materials for Printing
Jeffrey Schwartz
Jeffrey Schwartz, 1987

Pocket Pal, A Graphics Arts Production Handbook
International Paper Company, 1983
220 East 42 St., New York, NY 10017

Graphics and Printing Supplies:

A.H. Gaebel, Inc.
P.O. Box 5-P, East Syracuse, NY 13067
Catalog of graphics and printing supplies.

Dot Pasteup Supplies
1612-P California St., Omaha, NE 68102
Pasteup supply catalog.

Hartco Products Co.
226 West Pearl St., West Jefferson, OH 43162
Graphic supply catalog.
Letraset USA
40 Eisenhower Place, Paramus, NY 07652
Press type.

Midwest Publishers Supply Co.
4640 North Olcott Ave., Chicago, IL 60656
Catalog.

The Printer's Shopper
111-P Press Lane, Chula Vista, CA 92010
Catalog.

Zipatone, Inc.
150 Fenc1 Lane, Hillside, IL 60162
Press type.

Recycled Paper Suppliers:

Byron Weston Company
Dalton, MA 01226

Conservatree Paper Company
10 Lombard St., Suite 250, San Francisco, CA 94111

Earth Care Paper Company
100 South Baldwin St., Madison, WI 53714

Friends of the Earth
P.O. Box 1866, Fairview, IL 62208

Graham Pierce
11607 W. Highway So., P.O. Box 1866,
Fairview Heights, IL 62208

Northwest Resource Recycling
1680 Irving Rd., Eugene, OR 97402

Prairie Paper
P.O. Box 81814, Lincoln, NE 68501

Recycled Paper Outlet
P.O. Box 10540, Portland, OR 97210

100% Recycled Paper Stationers
12 Montcalm Ave., Brighton, MA 02135