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TEXT1

Reference Manual

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Preface

You are reading the Reference Manual for the *TEXT1* text processing system. *TEXT1* is designed for students, staff, and faculty to create academic papers. But *TEXT1* is not limited to papers. It can be used to create simple letters or complex mathematical equations. *TEXT1* is designed to work on laser printers, digital phototypesetters, and it also works on line printers in a limited fashion.

This manual includes all *TEXT1 markup* (also known as control words or macros) that you place with text to format papers. To use *TEXT1* you should be familiar with file handling and editing on the CMS operating system. All you need is a CMS account and access to a full screen terminal.

The syntax is presented with each markup description. After every description of markup, there is at least one sample. All of the sample input is printed in the `typewriter` face. When illustrated, the printed output from a sample input is in a shaded box.

TEXT1 is based on the mathematical typesetting program, Tau Epsilon Chi (TEX), written by Professor Donald Knuth of Stanford University. Most *TEXT1* markup are unique. Some *TEXT1* markup are identical in name to TEX commands, although they may function differently. These few are listed in the appendix.

An introductory tutorial, *Starting on TEXT1* (S-532), is available. This manual accompanies the *Starting on TEXT1* short course. Basic *TEXT1* markup are presented in the *TEXT1 Users Guide* (S-522). For more detailed descriptions of math mode and Plain TEX refer to *The TEXbook* by Knuth. These books are available at the Personal Computing Center (PCC) in the Computer Science Building.

Introduction

TEXT1 is designed to provide you with the capability of designing, printing, and typesetting your own paper. Simple papers are easy to do. Complex structures, such as tables or mathematical equations, are built up out of simple ones.

This manual presents the entire *TEXT1* markup. The markup is shown with sample text.

Because the type of printing you get depends on the printers available, you may want to refer to a list of supported printers on campus. Because the types of terminals and work stations vary widely in their keyboard layouts, you may want to check with a Consultant in the WSU Computing Service Center Information Center to see what effect that may have on your work.

The terminology used in this guide is easy to understand, although not all of it may be familiar. Many of the terms, such as *input* and *parameter*, are computer terms. Others, such as *point*[1] and *baseline*,[2] are typesetting terms for which there are no simple equivalents. The glossary in the back of this manual defines these terms and others. *TEXT1* uses typesetting terms to describe formatting. This makes it easier to proof a paper on a terminal screen, print a draft on a laser printer, and ultimately submit typeset copy to a publisher.

To simplify the creation of letters, memos, resumes, papers, and theses, automatic formats are provided in *TEXT1 models*, which are standards prepared according to various style guides from *The Chicago Manual of Style*, the State of Washington, and the Washington State University Press. These models contain all the necessary markup—you only need to enter your text.

1. a unit of measure equal to .0138 inch, traditionally used in printing
2. an imaginary line that the body of letters sits on

TEXT1 Basics

Markup Syntax

Markup has certain conventions to make it distinguishable from text. Each markup begins with a *backslash* (\), which is the control character that activates it. *TEXT1* markup consists of a backslash and a descriptive word, `\paragraph` or `\figure`, for example. In general,

- Markup may appear anywhere on a line and may be grouped together.
- The space following markup is appropriated as part of the markup; this is not true if a parameter follows the markup and not generally important when markup is on a separate line.

Delimiters

The left and right *curly braces* ({}) are used to limit the effects of markup (and so are called *delimiters*). For example, the use of italics within a paragraph can be achieved by placing the `\italic` markup and the word(s) to be italicized within curly braces. Everything within the braces will be printed in italics; everything outside will be printed in the current typeface, such as roman.

Example:

```
Up to Copernicus' {\italic De Revolutionibus}
(1543) the 'official' astronomical order of the
universe was as follows:
```

Up to Copernicus' *De Revolutionibus* (1543) the 'official' astronomical order of the universe was as follows:

Parameters

Markup may have values or parameters associated with them. Parameters in general can be either text or numbers, depending on the markup and circumstances. The `\underscore` markup has the label text in braces as a parameter, "`\underscore{Occurrence 2}`" for example. The `\verticalspace` markup, by comparison, has a number and a valid unit of measurement for a parameter. For example, "`\verticalspace{1in}`" will leave a one inch space.

Space Measurement

TEXT1 uses units of measurement, such as inches or centimeters. Typographical terms, such as points and picas are acceptable, also. The `\baseline` markup (abbreviated `\bl`) specifies vertical skip as a whole line. Left and right curly braces ({}) are used to enclose the measurement. The opening brace immediately follows markup (without any space) and the closing brace immediately follows the value, which must have a unit of measure associated with it. For example, "`\verticalspace{12pt}`".

	Units of Measurement **Description**	**Horizontal Measure**	**Vertical Measure**
`pt`	point (1pt = .0138in)	√	√
`pc`	pica (1pc = 12pt)	√	√
`in`	inch (1in = 72.27pt)	√	√
`bp`	big point (72bp = 1in)	√	√
`cm`	centimeter (2.54cm = 1in)	√	√
`mm`	millimeter (10mm = 1cm)	√	√
`dd`	didôt point (1157dd = 1238pt)	√	√
`cc`	cicero (1cc = 12dd)	√	√
`em`	width of a capital "M"	√	
`ex`	height of a lower case "x"		√
`sp`	scaled point (65536 = 1pt)	√	√
`\bl`	baseline (1\bl = isk)		√

To specify two base lines (or blank lines), you could say "`\verticalspace{2\bl}`".

Nested Markup

Some markup can occur within other markup. For example, text within a table title can be italicized. Each opening curly brace must have a matching closing brace.

Example:

```
\tabletitle{Abbreviations used
    in {\italic De Genesi ad litteram}}
```

Table 1
Abbreviations used in *De Genesi ad litteram*

Special Characters

TEXT1 offers a wide range of special characters for your use. Since many of these do not appear on terminals, they must be obtained through markup.

Quotation Marks

Quotation marks are punctuation used to surround an exact phrasing or title. Composing printers are equipped with opening (‘ and “) and closing quotes (’ and ”). Typewriting printers have only two quotes (' and "). The type of mark available on a printer is dependent on the type of fonts available on that printer.

There are also three kinds of quotes found on most keyboards. The opening quote (`), closing quote (') and the double quote ("). The different kinds of quotation marks are contrasted below:

you type in	**Typewriter Printer output**	**Composing Printer output**
`	'	‘
``	''	“
'	'	’
''	''	”
"	"	”

Example:

```
``Civilization exists by consent of Geology, subject
to change without notice.''
```

“Civilization exists by consent of Geology, subject to change without notice.”

Dashes

A dash is a punctuation mark used to indicate an abrupt shift in the structure of a sentence, for instance, an incomplete thought or parenthetical expression. It can also be used to separate numbers. A hyphen is a punctuation mark used to divide a compound word. A minus sign is a mathematical symbol. Each of these horizontal rules is a different length and is used in different circumstances.

- hyphen, used to connect two words or two parts of one word
- en dash, used to connect two numbers
- em dash, used to connect two phrases
- minus sign, used to show negativity

Typesetters traditionally are equipped with different sizes of dashes. The punctuation rules available depend on the printer you are using and on the fonts available on that printer. The table below outlines the dashes available. All *TEXT1* typewriter printers will have the dashes available which are listed under "Typewriter", except that the math mode minus sign is not available, since math mode is not available in monospaced.

	you type in	**Typewriter Printer output**	**Composing Printer output**
hyphen	`-`	-	-
en-dash	`--`	--	–
em-dash	`---`	---	—
minus sign	`$-$`	NA	−

Hyphens

TEXT1 hyphenates words as part of its normal justification process using TEX's advanced technique. TEX hyphenation is exceptionally good. Over 98% of *Webster's Collegiate Dictionary* was hyphenated correctly. The few exceptions have since been added to TEX's hyphenation exception dictionary. Refer to the *TEXbook* for the complete hyphenation rules.

Even at that, you may likely use a word *TEXT1* is not familiar with, such as is common in foreign languages, or some proper names. You can add *discretionary hyphens* to these words to ensure correctness and increase the flexibility of the program. Discretionary hyphens that are not used disappear before formatting is complete. Discretionary hyphens are markup and begin with a backslash. To indicate a discretionary hyphen, enter the markup (`\-`). If you type a simple hyphen between words without the backslash, *TEXT1* will print the hyphen instead of marking a discretionary.

Example:

```
The comparison may seem fac\-ile, but from deliberate
o\-ver\-sim\-pli\-fi\-ca\-tion comes complex
ob\-fus\-ca\-tion and
general the\-o\-retifi\-cation.
Be\-hav\-i\-or\-al research will lead in this
direction, as the general theory of
soc\-i\-o\-ge\-ol\-o\-gy predicts ...
```

> The comparison may seem facile, but from deliberate oversimplification comes complex obfuscation and general theoretification. Behavioral research will lead in this direction, as the general theory of sociogeology predicts . . .

Square Brackets

The left and right square brackets (`[]`) are not available on some keyboards. If you use a terminal that *has* brackets and you switch to a terminal which *does not* have them and modify a line on which brackets occur, then the brackets will be converted to minus signs (`--`) or accented characters (õÊ). This is a limitation of the terminal, not *TEXT1*. To avoid this potential problem, it is recommended that you use the following markup when your terminal lacks the square brackets.

- `\leftsquarebracket`: (abbreviated `\lsb`) is a substitute for the left square bracket (`[`).
- `\rightsquarebracket`: (abbreviated `\rsb`) is a substitute for (`]`).

On terminals that do not support the brackets, they will print as minus signs (`--`) or accented characters (õÊ).

Accents

An accent is a mark used in writing to indicate a specific sound, stress, value, or pitch for a spoken letter. *TEXT1* has the ability to use the special accents defined in *The TEXbook*:

Type	*to get*	(name)
`\‘o`	ò	(grave accent)
`\’o`	ó	(acute accent)
`\¬o`	ô	(circumflex or “hat”)
`\^o`	ô	(circumflex or “hat”)
`\"o`	ö	(umlaut or diaeresis)
`\~o`	õ	(tilde or “squiggle”)
`\=o`	ō	(macron or “bar”)
`\.o`	ȯ	(dot accent)
`\u o`	ŏ	(breve accent)
`\v o`	ǒ	(háček or “check”)
`\H o`	ő	(long Hungarian umlaut)
`\t oo`	o͡o	(tie-after accent)
`\c o`	o̧	(cedilla accent)
`\d o`	ọ	(dot-under accent)
`\b o`	o̲	(bar-under accent)

The markup for the accent precedes the letter on which the accent appears. Within the font, such accents are designed to appear at the right height for the letter 'o'; but you can use them over any letter, and *TEXT1* raises or lowers the accent appropriately. Notice that spaces are needed for some cases, to separate the control sequences from the letters that follow. You could, however, place the letter within curly braces if you are using `\asisbegin`, for example, `Tr\H{o}us`, in order to avoid printing an unwanted space before the "o" in "Trőus".

When you are using Computer Modern, the roman face font contains the dotless letters "ı" and "ȷ", which you can obtain by typing `\i` and `\j`. These are needed because "i" and "j" should lose their dots when they gain an accent. For example, the right way to obtain "mīnŭs" is to type "`m\=\i n\u us`" or "`m\={\i}n\u{u}s`".

Special Characters

Certain letters and *ligatures* (combinations of two or more letters) in European alphabets are unique and do not occur in English. *TEXT1* offers some of these for composing printers only.

Type	*to get*	
`\oe,\OE`	œ, Œ	(French ligature OE)
`\ae,\AE`	æ, Æ	(Latin and Scandinavian ligature AE)
`\aa,\AA`	å, Å	(Scandinavian A-with-circle)
`\o,\O`	ø, Ø	(Scandinavian O-with-slash)
`\l,\L`	ł, Ł	(Polish suppressed-L)
`\ss`	ß	(German "es-zet" or sharp S)

Reserved Characters

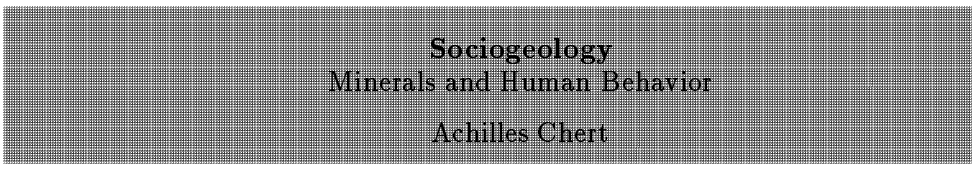
There are ten characters that *TEXT1* reserves for special functions. They can be printed as text, also.

1. The *backslash* (\) is used to begin every *TEXT1* markup. If you actually do want a backslash to print in your text, then enter two consecutive backslashes (\\).
2. The *left curly brace* ({) is used with those markup that require a parameter value. For example, the label markup requires the label text to be put in curly braces. The right curly brace ends the parameter started with the left curly brace. There should be a right curly brace for each left (excluding, of course, non parameter braces such as "\}"). You can limit the effects of markup, such as `\bold`, with curly braces. If you do want a curly brace to print in your text, then precede it with a backslash (\{).
3. The *right curly brace* (}) is used in conjunction with the left curly brace in setting off parameters for markup, and in emphasizing text. If you do want a curly brace to print in your text, then precede it with a backslash (\}).

4. The *percent sign* (%) denotes the text following the percent sign to the end of the line is to be a comment (which is text that does not print). If the percent sign comes in the middle of a line, then from the percent sign to the end of the line, any text will be treated as a comment.

Example: This example does not print the first line, or half of the second line from "`spoof`" to the end of the line.

```
\cl{\bd Sociogeology} % spoof on Sociobiology
%   Start paper, April 15, 1985
\cl{Minerals and Human Behavior}
\par\vs{6pt}
\centerline{Achilles Chert}
```



If you do want a percent sign to print in your text, then precede it with a backslash (\%).

5. A *pound sign* (or hash mark #) is used when creating your own markup (or macros). Refer to *The TEXbook* for more on this special character. If you do want a pound sign to print in your text, then precede the pound sign with a backslash (\#).

6. A *tilde* (~) prints as a space, but it ties words together preventing a line break between them. For example, "Dr. Chert" can be entered as "`Dr.~Chert`", so that both words stay on the same line. The tilde also suspends the extra space that normally follows punctuation.[3] The previous example, without the tilde, would print with extra space after the period: "Dr. Chert". Or it could have printed "Dr." at the end of one line and "Chert" at the beginning of the next. If you do want a tilde to print in your text, then enter `\tilde`.

7. The *ampersand* (&) is used in producing tables. Refer to `\halign` or `\settabs` for more on tables. If you do want an ampersand to print in your text, then precede the ampersand with a backslash (\&).

8. The *dollar sign* ($) is used in *TEXT1* to start and end *TEXT1* "math mode." Math mode gives you the ability to do special math functions and equations in *TEXT1*. Refer to *The TEXbook* or the *TEXT1 Users Guide* for more on math mode. Typewriter printers cannot use math mode. If you do want a "dollar" sign to print in your text, then precede the dollar sign with a backslash (\$).

---

3. The extra space following punctuation is also suspended when the punctuation follows a capital letter. For example, "D&M. Then ..." will **not** print the extra space after the capital "M." See *The TEXbook* for more on these rules.

9. The *negation symbol* (¬), is used in math mode. Some terminals use a *circumflex* or *hat symbol* (^). This character shows that the following is to be superscripted. For example, "`$4¬2=16$`" (or "`$4^2=16$`") prints as $4^2 = 16$. Typewriter printers cannot do this since they cannot use math mode. If you do want a negation symbol to print in your text, then enter `\neg`.
10. The *underscore* (_) is used within math mode to indicate that the following character is to be printed as a subscript. For example, "`$4_{32}$`" prints as 4_{32}. Typewriter printers cannot do this since they cannot use math mode. If you do want an underscore to print in your text, then precede the underscore with a backslash (`\_`). To underscore words, use the `\underscore` markup.

Except for the tilde and negation symbol, which are used with a backslash to make "tilde" and "circumflex" accents and so must be spelled out to print, these characters must be preceded by a backslash to be printed as text. Since a backslash indicates markup and since markup abducts the space following it, it may be necessary to require a space afterwards. This can be done with a slash space (`\␣`), two empty curly braces, or the required space (tilde), as shown below:

- `and 62\%\ of the human body.`
- `and 62\%{} of the human body.`
- `and 62\%~of the human body.`

The special characters and how you print them are illustrated below:

Character	**Enter**
backslash (\)	`\\`
left curly brace ({)	`\{`
right curly brace (})	`\}`
percent sign (%)	`\%`
pound sign (#)	`\#`
tilde (~)	`\tilde`
ampersand (&)	`\&`
dollar sign ($)	`\$`
negation symbol (¬)	`\neg`
underscore (_)	`\_`

Other Characters

All of the special characters listed in Appendix F of *The TEXbook* are available to you with *TEXT1* composing printers. Some of the more frequently used ones are listed here.

- *dagger*: When you enter `\dagger` you will get a single dagger (†). This is often used with the `\footnote` markup.
- *ddagger*: When you enter `\ddagger` you will get a double dagger (‡). This is also used with the `\footnote` markup.
- *Section mark*: Enter `\S` to print a Section mark (§).
- *Paragraph mark*: `\P` prints a Paragraph mark (¶).
- *Open Question mark*: When you enter a question mark followed immediately by an opening quote (`?``) you will get an Open Question mark (¿). Note that this character does not use the backslash.
- *Open Exclamation mark*: When you enter an exclamation mark followed immediately by an opening quote, (`!``) you will get an Open Exclamation mark (¡). Note that this character does not use the backslash.

TEXT1 Markup

Throughout this chapter, each markup begins on a new page. At the beginning of the description for the markup, any defaults are listed in a screened box which looks like:

```
\figureformat{\skipbefore{1\bl}
        \titleformat{\bqb\hp\tenpt
                \bf Figure \figurenumber.
                \rm\figuretitle \bqe}
            \skipafter{1\bl}
        \incontents{yes}
    }
```

After the defaults, the valid abbreviation, parameters (when applicable), and description of the markup is given. *Submarkup* is markup which may **only** appear within the markup being described. If submarkup exists for a markup, the submarkup's description will follow the description of the markup. Submarkup **never** has an abbreviation.

All sample output is illustrated in a screened box like:

Bibliography

Grabens, Gruss M. 1970. *Mechanical Processes in the Human Geomechanism.* Winston: Geomedical Publications, International.

Illite, Ivan. 1911. "Picking the Philosopher's Stone." *Mining Truth.* 11:455–601.

appendix

\appendix{*title*}

Abbreviation: \app

Parameters: *title*

Description: The \appendix markup starts a new page, centers the title in bold and adds the title text to the table of contents. Appendices are lettered consecutively. This markup can be used as often as necessary.

Example:

```
Instead, let humanity strive to make good places,
``eutopias,'' on earth, peacefully and in good spirit.
\par
\appendix{Calculations from ``Nuclear Winter''}
```

Appendix A
Calculations from "Nuclear Winter"

Example: If you want to refer to an appendix later, you can use the \set markup. For example, you can set "moderators" to contain the appendix number ("B" in this example):

```
\app{Session Moderators}
% This is the second appendix
\set{moderators}{\appendixnumber}
⋮
\app{Attendance List}
Those marked with \dagger~also chaired a session. Refer to Appendix
\moderators.
```

This appendix would look like:

Appendix C
Attendance List
Those marked with † also chaired a session. Refer to Appendix B.

Note: Refer to the \appendixformat markup if you need to change the appendix style.

Note: If you have text you want included in the appendix title in the document, but not to be printed in the table of contents, you can exclude it with the \notintoc markup. Refer to the \figure markup for an example on how to use \notintoc.

Note: The \toclinebreak May be used to have a line in the Table of Contents break differently than the way it is printed in the document. Refer to the \figure markup for an example on how to use \toclinebreak.

appendix

Note: It is possible to carry the appendix title in the running head. Refer to `\appendixformat` for an example of how to do this.

appendixformat

```
\appendixformat{\numberingstyle{A}
  \titleformat{\dumpinsertseject
        \centerline{\twelvept\bold
                        Appendix \appendixnumber}
        \centerline{\twelvept\bold\appendixtitle}
        \vs{1\bl}
        \setchapternumber{0}
        \setsubheadanumber{0}
        \setsubheadbnumber{0}
        \setsubheadcnumber{0}
        \setsubheaddnumber{0}
        \setfigurenumber{0}
        \settablenumber{0}
        }
  \incontents{yes}
}
```

Abbreviation: `\apf`

Parameters: submarkup

Submarkup: `\numberingstyle, \titleformat, \incontents`

Description: The `\appendixformat` markup allows you to modify the default markup that controls the appearance of the appendix title. The submarkup is described.

`\numberingstyle` allows you to change the style from capital letters, the default, to Arabic numerals (`1`) or roman numerals (`I`).

Example:

```
\appendixformat{\numberingstyle{I}}
⋮
\appendix{Glossary}
```

If this were the fourth appendix, it would print as:

Appendix IV
Glossary

`\titleformat{`*Nested Markup*`}` controls the appearance of the appendix title banner. You may use markup such as `\newpage`, `\verticalspace`, and `\centerline` within `\titleformat` as *Nested Markup*. Other markup you may use within or outside of `\appendixformat`:

- `\appendixnumber` prints the most recent appendix number.

- `\appendixtitle` prints the most recent appendix title.

`\incontents` determines whether the appendix title is to be included in the contents. The default can be changed to `no` to inhibit the appendix title from being included in the contents. See the second example below.

Example: In this example, the appendix starts a new page, the number and title are centered in bold, and one line is skipped afterwards.

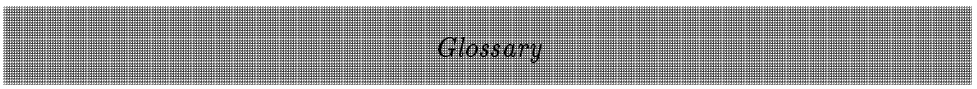
```
\appendixformat{\numberingstyle{1}
    \titleformat{\dumpinsertseject
      \cl{\bd \appendixnumber. \appendixtitle}
      \vs{1\bl}}
    \incontents{yes}}
⋮
\app{Glossary}
```

This would print the fourth appendix as:

Example: In the next example, the appendix starts a new page (instead of using `\dumpinsertseject`, skips down the page 2 inches, centers the title in italics, and skips one line. The title is not put in contents.

```
\appendixformat{
    \titleformat{\newpage
      \vsk{2in}
      \cl{\it \appendixtitle}
      \vs{1\bl}}
    \incontents{no}}
⋮
\app{Glossary}
```

This would print the fourth appendix as:



Example: If you want to carry the appendix title at the top of each page, you may use `\mark` to save the value of the appendix title. You would then specify `\firstmark` in the `\runningheadformat`. `\mark` and `\firstmark` are both described further in the *TEXbook*. In this example, the appendix title is carried on the right side of even pages, and the left side of odd pages.

```
\appendixformat{\titleformat{\dumpinsertseject
                  \mark{\appendixtitle}
                  \centerline{\twelvept\bd Appendix \appendixnumber}
```

appendixformat

```
                \centerline{\twelvept\bd\appendixtitle}
                \vs{1\bl}
                }}
⋮
\appendix{List of Gold Producing Mines}
\runningheadformat{\evenpages{\lft{\pn}\rt{\firstmark}}
                   \oddpages{\lft{\firstmark}\rt{\pn}}}
⋮
```

asisbegin

```
\asisbegin
```

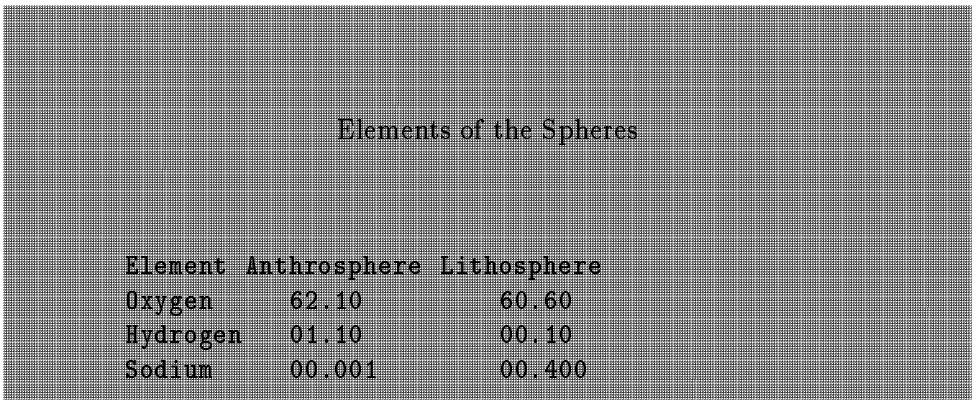
Abbreviation: `\aib`

Parameters: none

Description: The `\asisbegin` markup forces the following text into an unformatted block. Each line is printed as it was entered. Line breaks and interword spacing are honored. *TEXT1* markup within an "as is" sequence is limited to `\verticalspace`, `\verticalspacekeep`, `\autofootnote`, and font changes.

Example:

```
\centerline{Elements of the Spheres}
\vs{12pt}
\asisbegin\tt
Element Anthrosphere Lithosphere
Oxygen     62.10         60.60
Hydrogen   01.10         00.10
Sodium     00.001        00.400
\asisend
```

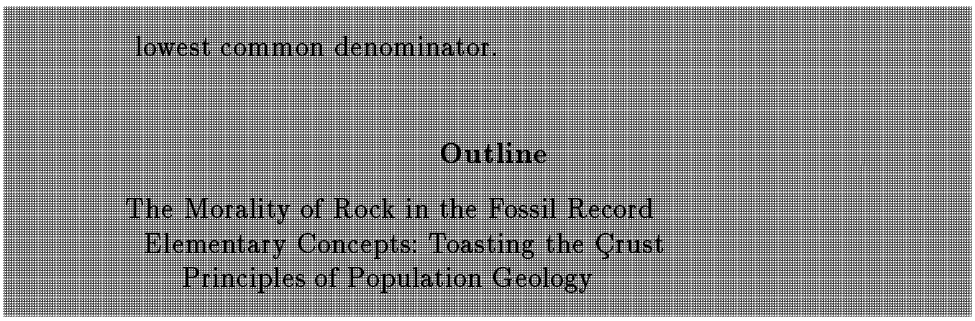


Note: The decimals will only line up if you are using `\typewriter`.

asisbegin

Example: If you use accents while in \asisbegin, you must surround the accented letter with curly braces.

```
lowest common denominator.
\vs{12pt}
\centerline{\bd Outline}
\aib
\vs{6pt}
The Morality of Rock in the Fossil Record
  Elementary Concepts: Toasting the \c{C}rust
    Principles of Population Geology
\aie
```



Note: With the typewriter font you can use the "as is" sequence to have *TEXT1* obey precisely your text placement, including space between words. With proportionally spaced fonts only the lead blanks would line up; blanks "inside" the text would be different widths (depending on the width of previous characters).

Font changes within an \asisbegin may change the horizontal spacing.

Every \asisbegin must have a matching \asisend.

You cannot use \asisbegin within any of the following markup: \appendix, \autofootnote, \bibliography, \centerline, \chapter, \drawbox, \footnote, \item, \label, \marginnote, \paragraphbox, \part, \preface, \rightline, \runningheadformat, \runningfootformat, \selectfontset, \selectmathset, \subheada, \subheadb, \subheadc, \subheadd, or \tabletitle.

asisend

```
\asisend
```

Abbreviation: `\aie`

Parameters: none

Description: The `\asisend` markup ends an "as is" series.

Example:

```
\aib
    This fortress built by Nature for herself
       Against infection and the hand of war,
                                        (Richard II)
\aie
```

This fortress built by Nature for herself
Against infection and the hand of war,
(Richard II)

Note: Each `\asisend` must have a matching `\asisbegin`. Omitting the ending `\asisend` may produce the following error message:

```
(\end occurred inside a group at level 2)
Output written on TEXT1$$.dvi (1 page, 436 bytes).
Transcript written on TEXT1$$.texlog.

See \asisformat to modify the defaults for \asisbegin and
\asisbegin.
```

asisformat

```
\asisformat{\skipbefore{6pt}
            \everyasis{\leftindent{0pt}}
            \skipafter{6pt}}
```

Abbreviation: `\aif`

Parameters: submarkup

Submarkup: `\skipbefore, \everyasis, \skipafter`

Description: The `\asisformat` markup allows you to modify the "as is" block. The "as is" markup skips 1 blank line (a baseline) before and after the series. There is no indentation from the left.

`\skipbefore` indicates how much space is to be skipped *before* printing a block. This amount is in addition to any paragraph skips. The default skip is `6pt`.

`\everyasis`{*Nested Markup*} determines how the 'as is' text is printed. This submarkup is only valid within the asisformat markup. Spacing and font changes are allowed, but not justification, right indentation, or other paragraph information.

`\skipafter` indicates how much space is to be skipped *after* printing a block. This amount is in addition to any paragraph skips. The default skip is `6pt`.

Example: In this example, the "as is" text is to be indented 7 picas from the left margin, the text is to be printed in ten point typewriter, and 4 points skipped before and after.

```
\asisformat{\skipbefore{4pt}
       \everyasis{\leftindent{7pc}\tenpt\tt}
             \skipafter{4pt}}
⋮
Consider my favorite breakfast recipe:
\cl{\bd Muckles}
\asisbegin
3 eggs     beaten
1 cp       cream
1 cp       flour
1/4t       baking powder
1 T        sugar
pinch of salt
bacon (optional)
\aie
Heat butter or bacon in frying pan.
Pour all of
the batter into the pan. Cook $\approx$
10 minutes at 375$\neg\circ$. Cut into pieces
and serve hot with plenty of syrup.
```

Consider my favorite breakfast recipe:

Muckles

```
3 eggs     beaten
1 cp       cream
1 cp       flour
1/4t       baking powder
1 T        sugar
pinch of salt
bacon (optional)
```

Heat butter or bacon in frying pan. Pour all of the batter into the pan. Cook ≈ 10 minutes at 375°. Cut into pieces and serve hot with plenty of syrup.

atmathon

```
\atmathon
```

Abbreviation: none

Parameters: none

Description: In older *TEXT1* versions (prior to version 4.0), the math mode character was the corporate at sign (@). Since version 4.0, the math mode character has been the dollar sign ($), which is the same as PLAIN TEX. If you want to use this old math mode method, you can specify `\atmathon`.

Example:

```
\atmathon
⋮
@@z\neq x_2-y¬2 = (x+y)(x-y).\eqno(15)@@
```

$$z \neq x_2 - y^2 = (x + y)(x - y). \tag{15}$$

Note: If used, it should be specified at the top of your document. To change back to using the dollar sign as the math mode indicator, enter:

```
\plaintexmathon
```

\autoendnote{*text*}

Abbreviation: \aen

Parameters: *text*

Description: The \autoendnote markup adds notes to the end of a document or the end of a chapter. It has one parameter, the text of the endnote, which it places in working storage to be printed when called by \printendnotes. An endnote reference number is placed in the text where the markup occurred. By default this reference number is surrounded by square brackets. The endnote number will be automatically incremented by one for each use of \autoendnote.

Example:

```
There is a well-marked division of
labor.\autoendnote{Such as it is. Things could be
different in the geological world, but they are not.}
Details of organization have evolved by an
optimization...
```

There is a well-marked division of labor.[1] Details of organization have evolved by an optimization...

The endnote printed following the next \printendnotes markup would look like:

1. Such as it is. Things could be different in the geological world, but they are not.

Example: If you want to refer to an endnote number later on in your document, you can use the \set markup. In this example, the first endnote number is to be used later in the document. It will be refered to later as "coeffONE."

```
One way to define such a coefficient is:\aen{The relation of this
definition is, nevertheless, ammendable.}
\set{coeffONE}{\endnotenumber}
$$I_c={\prod^n_{i=1}C_{ci}\over\prod^n_{j=1}C_{dj}}$$
where:

$I_c$ --- the artificial coefficient of quality;

$C_{dj} --- the same as above but contributing to the improvement
of the product quality by diminishing its
price.\aen{Theoretically, it is important to be able to define
a quality coefficient.} Refer to endnote \coeffONE.
```

This prints as:

One way to define such a coefficient is:[6]

$$I_c = \frac{\prod_{i=1}^{n} C_{ci}}{\prod_{j=1}^{n} C_{dj}}$$

where:

I_c — the artificial coefficient of quality;

C_{dj} — the same as above but contributing to the improvement of the product quality by diminishing its price.' Refer to endnote 6.

Note: You cannot use `\autoendnote` within `\settabs`, `\vbox`, `\hbox`, `\asisbegin`, `\drawbox`, `\paragraphbox`, `\label`, `\part`, `\chapter`, `\centerline`, `\halign`, `\rightlinesbegin`, or `\centerlinesbegin`.

Note: The endnote number is reset to 1 at the beginning of each part. To reset the endnote number outside of a `\part`, use the `\setendnotenumber` markup.

Note: Use the `\endnoteformat` markup to change the `\autoendnote` style.

Note: There are occasions when you need to include a very long endnote. On some systems (such as CMS), if the endnote exceeds 2,048 characters in length, you will need to split the note into two parts as follows. First, at the beginning of your document you will need to include a special definition for a new markup. You may give it any name you choose. For this example, we'll define a markup called `\continue`. Enter these three lines at the top of the document:

```
\catcode'*=11
\let\continue=\en*w
\catcode'*=12
```

Next, break the endnote into paragraphs of not more than 2,048 characters each. In the source below, the sentence beginning "`First paragraph`" is the first paragraph with not more than 2,048 characters, and the second paragraph beginning "`Second paragraph`" is the last paragraph of the endnote.

```
line containt the note.\autoendnote{First paragraph
of a very long endnote ...}
\continue{Second paragraph of the long endnote,
which will print in the \printendnotes after
the first paragraph}
Sentence following the word ``note.''
```

\autofootnote{*text*}

Abbreviation: \afn

Parameters: *text*

Description: The \autofootnote markup adds footnotes to a page. The footnote can be placed anywhere within text, without interrupting formatting. When the document is formatted, the place of the footnote is marked with a number. The text of the note is put at the bottom of the page. The footnote number will be automatically incremented by one for each use of \autofootnote.

Example:

```
communicate most important things --- hunger, alarm, rank, and
sexual desire --- among themselves by means of nonsyntactical
signals\autofootnote{such as crashing together}.
```

communicate most important things — hunger, alarm, rank, and sexual desire — among themselves by means of nonsyntactical signals[1].

The footnote would print as follows at the bottom of the page:

1. such as crashing together

Example: There are times you may wish to refer to a particular footnote later in a document. You can use the \set markup to do this. In the following example, the value of the first footnote is placed into "melville" and used later in the document.

```
The question arises of how Melville became acquainted with Thoreau's
literary preoccupation with roosters, since ``Walking'' had not yet
been published in December 1853, when ``Cock-A-Doodle-Doo!'' first
appeard in print.\afn{In ``\thinspace`Cock-A-Doodle-Doo!' and Some
Legends in Melville Scholarship,'' Sidney Moss insists upon the
unlikelihood of Melville's having had sufficient knowledge of
Thoreau's writings to satirize him in print.} ...
\set{melville}{\footnotenumber}
The episode suggests that both authors were familiar with Thoreau's
{\it Week on the Concord and Merrimack Rivers}.\afn{Melville
was known to have borrowed a copy of {\it A Week}
on several occasions.}
⋮
As previously mentioned in footnote \melville, Mellville did not
likely have sufficient knowledge of Thoreau to ...
```

This would print as:

The question arises of how Melville became acquainted with Thoreau's literary preoccupation with roosters, since "Walking" had not yet been published in December 1853, when "Cock-A-Doodle-Doo!" first appeard in print.[17] The episode suggests that both authors were familiar with Thoreau's *Week on the Concord and Merrimack Rivers*.[18]

:

As previously mentioned in footnote 17, Mellville did not likely have sufficient knowledge of Thoreau to ...

At the bottom of the page the footnotes would look like:

---

17. In "'Cock-A-Doodle-Doo!' and Some Legends in Melville Scholarship," Sidney Moss insists upon the unlikelihood of Melville's having had sufficient knowledge of Thoreau's writings to satirize him in print.
18. Melville is known to have borrowed a copy of *A Week* on several occasions.

Note: The text of the note **must** be enclosed with curly braces, otherwise following text will be taken as footnote text, until all available space for footnotes is exhausted.

Note: You cannot use `\autofootnote` within `\settabs`, `\vbox`, `\hbox`, `\drawbox`, `\paragraphbox`, `\label`, `\part`, `\chapter`, `\centerline`, `\rightlinesbegin`, `\halign`, or `\centerlinesbegin`.

Note: The footnote number is reset to 1 at the beginning of each part. To reset the footnote number outside of a `\part`, use the `\setfootnotenumber` markup.

Note: To change the footnote style, use the `\footnoteformat` markup.

```
\bibentry
```

Abbreviation: `\bie`

Parameters: none

Description: The `\bibentry` markup is used to separate each entry in a bibliography with a vertical skip; an entry is in the form of a hanging paragraph.

Example:

```
\bibliography{Bibliography}
\bibentry
Illite, Ivan. 1911. ``Picking the Philosopher's
Stone.'' {\it Mining Truth}. 11:455--601.
\bibentry
\sameauthor
1978. ``Pet rocks as therapy tools.''
{\it Geopsychology Today}. 10:71--78.
\bibentry
Salt, Jean-Paul. 1958. {\it Gravel and Nothingness:
An Existential Theory}. Dayton: Gabbro Press.
\par
```

Bibliography

Illite, Ivan. 1911. "Picking the Philosopher's Stone." *Mining Truth.* 11:455–601.

———1978. "Pet rocks as therapy tools." *Geopsychology Today.* 10:71–78.

Salt, Jean-Paul. 1958. *Gravel and Nothingness: An Existential Theory.* Dayton: Gabbro Press.

Note: The series is ended with a `\par` markup. Without the `\par` an error results.

Note: You may use the `\sameauthor` markup to indicate that the author of one citation is the same as the previous author.

Note: To disable the double spacing which normally follows punctuation, use the `\frenchspacing` markup. The example illustrated for the `\bibliography` markup was done using `\frenchspacing`.

Note: If you need to print your bibliography with a format different than the one illustrated above, refer to the discussion of the `\bibliographyformat` markup.

bibliography

\bibliography{*title*}

Abbreviation: \bib

Parameters: *title*

Description: The \bibliography markup starts the bibliography on a new page, centers and prints the title in bold face, and enters the title in contents.

Example:

```
\bibliography{References}
\frenchspacing
\bibentry
Grabens, Gruss M. 1970. {\it Mechanical Processes
in the Human Geomechanism}. Winston: Geomedical
Publications, International.
\bibentry
Illite, Ivan. 1911. ``Picking the Philosopher's
Stone.'' {\it Mining Truth}. 11:455--601.
\par
```

References

Grabens, Gruss M. 1970. *Mechanical Processes in the Human Geomechanism.* Winston: Geomedical Publications, International.

Illite, Ivan. 1911. "Picking the Philosopher's Stone." *Mining Truth.* 11:455–601.

Note: If you need to print your bibliography with a format different than the one illustrated above, refer to the discussion of the \bibliographyformat markup.

Note: If you have text you want included in the biliography title in the document, but not to be printed in the table of contents, you can exclude it with the \notintoc markup. Refer to the \figure markup for an example on how to use \notintoc.

Note: The \toclinebreak May be used to have a line in the Table of Contents break differently than the way it is printed in the document. Refer to the \figure markup for an example on how to use \toclinebreak.

bibliographyformat

```
\bibliographyformat{\incontents{yes}
        \titleformat{\dumpinsertsejject
                     \cl{\twelvept\bd \bibtitle}
                     \vs{\bl}}
    \everybibentry{\vs{1\bl}\goodbreak\hp\nin}
    \sameauthorrulesize{width3em height.6ex
                        depth-.5ex}}
```

Abbreviation: `\bif`

Parameters: submarkup

Submarkup: `\incontents`, `\titleformat`, `\everybibentry`, `\sameauthorrulesize`

Description: The `\bibliographyformat` markup controls the style of the entire bibliography. The following submarkup is only valid within `\bif`.

`\incontents` by default adds the title text to the contents. The default is `yes`; to keep the title from appearing enter "no":

```
\bibliographyformat{\incontents{no}}
```

`\titleformat`{*Nested Markup*} controls the format of the bibliography title. The default skips to a new page, centers the title in bold, and skips one line. You may use markup such as `\newpage`, `\verticalspace`, and `\centerline` within `\titleformat` as *Nested Markup*. Other markup you may use within or outside of `\bibliographyformat`:

- `\bibtitle` prints the title entered with the `\bibliography` markup.

`\everybibentry`{*Nested Markup*} controls the format of each bibliographic entry. The default permits breaking between entries and creates a hanging paragraph for the entry. You may use markup such as `\verticalspace`, `\hangingparagraph`, `\item`, `\goodbreak`, `\noindent`, `\label`, `\leftindent` within `\everybibentry` as *Nested Markup*. Other markup you may use within or outside of `\bibliographyformat`:

- `\bibnumber` prints the current `\bibentry` number.

`\sameauthorrulesize` sets the height, width, and depth of a horizontal line used to indicate a repeat of an author's name.

Example: The following markup produces entries similar to the default but numbered. A period and a tie (tilde, for a connecting space) join the number to the text.

```
\bibliographyformat{\incontents{yes}
        \titleformat{\np
                     \cl{\bd \bibtitle}
                     \vs{\bl}
                     }
    \everybibentry{\goodbreak\hp\nin\bibnumber.~}
    \sameauthorrulesize{width3em height.6ex depth-.5ex}
}
```

Then when you use `\bibentry`, you would get:

8. Grabens, Gruss M. 1970. *Mechanical Processes in the Human Geomechanism.* Winston: Geomedical Publications, International.
9. Illite, Ivan. 1911. "Picking the Philosopher's Stone." *Mining Truth.* 11:455–601.
10. Moraine, Esker. 1978. "Pet rocks as therapy tools." *Geopsychology Today.* 10:71–78.
11. Salt, Jean-Paul. 1958. *Gravel and Nothingness: An Existential Theory.* Dayton: Gabbro Press.

Example: This example also numbers entries, but it uses labels instead of hanging paragraphs. The `\labelformat` is changed under `\titleformat` to accommodate numbers. This layout is useful for bibliographies that use identifiers in place of numbers.

```
\bibliographyformat{\incontents{yes}
        \titleformat{\np\vsk{1in}
                     \cl{\bd \bibtitle}
                     \vs{\bl}
                     \labelformat{\labelwidth{22pt}}}
    \everybibentry{\goodbreak\label{\bibnumber}}
    \sameauthorrulesize{width3em height.6ex depth-.5ex}}
```

Then when you use `\bibliography`, you would get:

References

1. Grabens, Gruss M. 1970. *Mechanical Processes in the Human Geomechanism.* Winston: Geomedical Publications, International.
2. Salt, Jean-Paul. 1958. *Gravel and Nothingness: An Existential Theory.* Dayton: Gabbro Press.

Example: You can specify in the `\everybibentry` markup that the bibentry number is to be surrounded by parenthesis or square brackets.

```
\everybibentry{\goodbreak\label{(\bibnumber)}}
```

References

(1) Grabens, Gruss M. 1970. *Mechanical Processes in the Human Geomechanism.* Winston: Geomedical Publications, International.

(2) Salt, Jean-Paul. 1958. *Gravel and Nothingness: An Existential Theory.* Dayton: Gabbro Press.

Example: You could also use `\label` to indicate citations that carry an alphanumeric label by omitting the parameter to `\label` in the `\everybibentry` markup.

```
\bibliographyformat{\titleformat{\np\cl{\bd \bibtitle}
                        \vs{\bl}
                        \labelformat{\labelwidth{50pt}}}
   \everybibentry{\goodbreak\label}
   \sameauthorrulesize{width3em height.6ex depth-.5ex}}
```

Then use the `\bibentry` markup as though it had a parameter:

```
\bibliography{Citations}\frenchspacing
\bibentry {Grabe70}
Grabens, Gruss M. 1970. {\it Mechanical Processes
in the Human Geomechanism}. Winston: Geomedical
Publications, International.
\bibentry{Illit11}
Illite, Ivan. 1911. ``Picking the Philosopher's
Stone.'' {\it Mining Truth}. 11:455--601.
\bibentry{Morai78}
Moraine, Esker. 1978. ``Pet rocks as therapy tools.''
{\it Geopsychology Today}. 10:71--78.
```

and the citations will look like:

Citations

Grabe70 Grabens, Gruss M. 1970. *Mechanical Processes in the Human Geomechanism.* Winston: Geomedical Publications, International.

Illit11 Illite, Ivan. 1911. "Picking the Philosopher's Stone." *Mining Truth.* 11:455–601.

Morai78 Moraine, Esker. 1978. "Pet rocks as therapy tools." *Geopsychology Today.* 10:71–78.

Example: Another popular style groups all of an author's citations together. This can be accomplished in a similar manner as previously defined. The difference being that the `\rt` markup is used.

```
\bibliographyformat{\titleformat{\np\vsk{1in}
                        \cl{\bd \bibtitle}
                        \vs{\bl}
                        \labelformat{\labelwidth{50pt}}}
   \everybibentry{\goodbreak\label}
   \sameauthorrulesize{width3em height.6ex depth-.5ex}}
\bibliography{Citations}\frenchspacing
\vs{.5\bl}
\nin OSBORNE, J.S.
\bie{\rt{1971.}}
{\it Introduction to Aesthetic Anthropology}. Boston, Ma:
Addison-Wesley Pub. Co.
\bie{\rt{1978.}}
A survey of tribal masks used by Brazilian tribes.
Pages 160--169 in {\it Cultural Anthropology}.
M. Zateh and F. Grange, eds. New York: Harper and Row.
\vs{.5\bl}
\nin OTTEN, C.M.
\bibentry{\rt{1971.}}
{\it Anthropology and Art: Readings in Cross Cultural
Aesthetics}. Garden City, N.Y.:
The Natural History Press.
```

and the citations will look like:

Citations

OSBORNE, J.S.

1971. *Introduction to Aesthetic Anthropology.* Boston, Ma: Addison-Wesley Pub. Co.

1978. A survey of tribal masks used by Brazilian tribes. Pages 160–169 in *Cultural Anthropology.* M. Zateh and F. Grange, eds. New York: Harper and Row.

OTTEN, C.M.

1971. *Anthropology and Art: Readings in Cross Cultural Aesthetics.* Garden City, N.Y.: The Natural History Press.

Example: This final style makes use of an **\everybibentry** similar to the default. In this example, the paragraph and hanging indents are set to different values (by default they are equal). The other difference is that **\noindent** is omitted.

```
\bibliographyformat{\titleformat{\np\cl{\bd \bibtitle}
                        \vs{\bl}
                        \psk{\bl}\pin{10pt}\hin{20pt}}
   \everybibentry{\par\goodbreak\hp\indent}
   \sameauthorrulesize{width3em height.6ex depth-.5ex}}
\bibliography{Bibliography}\frenchspacing
\vs{\bl}  \nin Asher67
\bie
Asherson, G. L., and S. H. Stone. 1967.\linebreak
Dessensitization {\it in vitro}. {\it Immunology}.
13:469. {\it Cultural Anthropology}. M. Zateh and
F. Grange, eds. New York: Harper and Row.
\vs{\bl}
\nin Cinad68
\bie
Cinader, B., editor. 1968.\lbr
Regulation of the Antibody Response. Charles C. Thomas,
Publisher, Springfield, Ill.
```

and the citations will look like:

Bibliography

Asher67
Asherson, G. L., and S. H. Stone. 1967.
Dessensitization *in vitro*. *Immunology*. 13:469. *Cultural Anthropology*.
M. Zateh and F. Grange, eds. New York: Harper and Row.

Cinad68
Cinader, B., editor. 1968.
Regulation of the Antibody Response. Charles C. Thomas, Publisher,
Springfield, Ill.

blockquotebegin

```
\blockquotebegin
```

Abbreviation: `\bqb`

Parameters: none

Description: The `\blockquotebegin` markup ends a paragraph and forces the following text into a quote format. Additional space is added before and after the quote, and the quote is indented on the left and right.

Example:

```
Salt (1958) names the process:
\blockquotebegin
This loss of fluids and cooling is known as aging.
Most metamorphosis occurs in ocean trenches, but it
can also occur in forms in trenchcoats.
\paragraph
The lithosphere---dermosphere in humans---wrinkles over time.
The process is one-way, as rehydration will not
unwrinkle the surface.
\blockquoteend
As far as general surface alteration, only the
time scale differs between the human ...
```

Salt (1958) names the process:

> This loss of fluids and cooling is known as aging. Most metamorphosis occurs in ocean trenches, but it can also occur in forms in trenchcoats.
>
> The lithosphere—dermosphere in humans—wrinkles over time. The process is one-way, as rehydration will not unwrinkle the surface.

As far as general surface alteration, only the time scale differs between the human ...

Note: Every `\blockquotebegin` must have a matching `\blockquoteend`. If the quote is not ended with `\blockquoteend`, all following text is formatted as a block quote, and a warning message appears at the end of formatting which says:

```
(\end occurred inside a group at level 1)
Output written on TEXT1$$.dvi (1 page, 436 bytes).
Transcript written on TEXT1$$.texlog.
```

Note: Refer to the `\blockquoteformat` for instructions on how to change the block quote style.

blockquoteend

```
\blockquoteend
```

Abbreviation: `\bqe`

Parameters: none

Description: The `\blockquoteend` markup ends the quote and returns text to the normal margins and sizes. Text following is formatted as a new paragraph.

Example:

```
Salt (1958) names the process:
\blockquotebegin
\rightragged
This loss of fluids and cooling is known as aging.
Most metamorphosis occurs in ocean trenches, but it
can also occur in forms in trenchcoats.
\paragraph
The lithosphere --- dermosphere in humans ---
wrinkles over time.
The process is one-way, as rehydration will not
unwrinkle the surface.
\blockquoteend
As far as general surface alteration, only the
time scale differs between the human...
```

Salt (1958) names the process:

> This loss of fluids and cooling is known as aging. Most metamorphosis occurs in ocean trenches, but it can also occur in forms in trenchcoats.
>
> The lithosphere — dermosphere in humans — wrinkles over time. The process is one-way, as rehydration will not unwrinkle the surface.

As far as general surface alteration, only the time scale differs between the human ...

Note: none.

blockquoteformat

```
\blockquoteformat{\skipbefore{6pt}
    \everyblockquote{\tenpt\leftindent{24pt}
                     \rightindent{24pt}
                     }
    \skipafter{6pt}
}
```

Abbreviation: `\bqf`

Parameters: submarkup

Submarkup: `\skipbefore, \everyblockquote, \skipafter`

Description: The `\blockquoteformat` markup controls the formatting of block quotes. The following submarkup are effective only within block quotes.

`\skipbefore` indicates how much space is to be skipped *before* printing a block. This amount is in addition to any paragraph skips.

`\everyblockquote`{*Nested Markup*} determines how the text of the quote is formatted. You can specify justification or raggedness, single or double spacing, left or right indentation, paragraph spacing and indentation, and any font change needed within block quotes. You may use any markup such as `\tenpt`, `\interlineskip`, `\leftindent` or `\rightindent` within `\everyblockquote`.

`\skipafter` indicates how much space is to be skipped *after* printing a block. This amount is in addition to any paragraph skips.

Example: The indentation has been changed in this sample. The text for the block quote is to be printed right ragged in 9 point Computer Modern. Paragraphs within the block quote, and *only* within, have a 1 pica paragraph indent and zero paragraph skip. The skips before and after the quotation have been set to zero.

```
\blockquoteformat{\skipbefore{0pt}
    \everyblockquote{\pin{1pc}\psk{0pt}\ninepoint
            \leftindent{1pc}\rightindent{1pc}\rr}
    \skipafter{0pt}}
```

The example illustrated for `\blockquotebegin` would then begin:

Salt (1958) names the process:

This loss of fluids and cooling is known as aging. Most metamorphosis occurs in ocean trenches, but it can also occur in forms in trenchcoats.

Example: This sample is printed with a small interlineskip, normal paragraph values and zero indentation. The text is in 9 point italics with an interlineskip of 9.5 points.

```
\blockquoteformat{\skipbefore{0pt}
     \everyblockquote{\ssp\ninept\it\isk{9.5pt}
             \leftindent{0pt}\rightindent{0pt}}
     \skipafter{0pt}}
```

Salt (1958) names the process:

This loss of fluids and cooling is known as aging. Most metamorphosis occurs in ocean trenches, but it can also occur in forms in trenchcoats.

bold

```
\bold
```

Abbreviation: `\bd`

Parameters: none

Description: The `\bold` markup sets the typeface to wide strokes, giving a heavy impression.

Example: This example changes "Parallels" bold. It is changed back with the `\roman` markup.

```
lowest common denominator.
\par
\bold\nin Parallels. \roman Consider for a
moment rocks and deer ...
```

lowest common denominator.
Parallels. Consider for a moment rocks and deer ...

Example: The effects of the `\bold` markup can also be limited by curly braces.

```
lowest common denominator.
\par
\nin{\bd Parallels}. Consider for a
moment rocks and deer ...
```

lowest common denominator.
Parallels. Consider for a moment rocks and deer ...

Note: Note in the last example the period follows the right curly brace (`}.`). This is necessary to enable the extra spacing which normally follows punctuation.

Note: Bold is often used for display titles or special emphasis.

bolditalic

```
\bolditalic
```

Abbreviation: `\bi`

Parameters: none

Description: The `\bolditalic` markup sets the typeface to wide strokes and an italic slant, giving a heavy impression.

Example: This example changes "Parallels" to bold italic. It is changed back with the `\roman` markup.

```
lowest common denominator.
\par
\bolditalic\nin Parallels. \roman Consider for a
moment rocks and deer ...
```

lowest common denominator.
Parallels. Consider for a moment rocks and deer ...

Note: All font sets have `\bolditalic` defined as a valid type face. Not all font sets, however, have bolditalic available. Those font sets that do not have bolditalic will give the following warning message when you try to use `\bolditalic` or `\bi`:

```
<TEXT1> Warning. No bold italic font in CM12.
                          Will print italic font .)
```

break

```
\break
```

Abbreviation: none

Parameters: none

Description: If you want to force *TEXT1* to break between lines at a certain point in the middle of a paragraph use the markup `\break`.

Example:

```
To everything there is a season, and a time
to every purpose under the
heaven: A time to be born, and a time to
pluck up {\it that which is}\break
planted; A time to kill, and a time to heal;
a time to break down, and
a time to build up; A time to weep,
and a time to laugh;
```

To everything there is a season, and a time to every purpose under the heaven: A time to be born, and a time to pluck up *that which is*
planted; A time to kill, and a time to heal; a time to break down, and a time to build up; A time to weep, and a time to laugh;

Note: To avoid having the white space between the words as is illustrated in the third line in the above example, use the `\linebreak` markup.

Note: For more on the `\break` markup, refer to *The TEXbook*.

bullet

```
\bullet
```

Abbreviation: `\bul`

Parameters: none

Description: The `\bullet` markup produces a raised centered dot as an identifier for an item in a list.

Example:

```
the following necessary trace elements:
\listbegin
\bul Copper
\bul Manganese
\bul Selenium
\bul Zinc
\listend
\nin The mineral content of the body ...
```

the following necessary trace elements:

- Copper
- Manganese
- Selenium
- Zinc

The mineral content of the body ...

Note: A list of bullets **must** be placed within the `\listbegin` and `\listend` markup. The bullets are indented 5 characters, like the first level of an ordered list. Bullets may also be used in outline lists where they are indented 5 characters from the previous level by default. Refer to the `\listformat` markup to change the amount of indentation.

Note: When in math mode, the `\bullet` markup is used in the same fashion as described in *The TEXbook*.

bye

```
\bye
```

Abbreviation: none

Parameters: none

Description: The `\bye` markup ends *TEXT1* formatting immediately at the place the `\bye` appears. In the following example, formatting will end at the end of the first sentence. The sentence beginning "At these meetings . . ." will not be printed.

Example:

```
Plan to have regular meetings with this evaluation group.
\bye
At these meetings, go through a rigorous examination of
each vendor,
```

Note: For more on the `\bye` markup, refer to *The TEXbook*.

Note: If you are using the CMS *TEXT1* interface, you do not need to supply the `\bye`.

```
\caps
```

Abbreviation: \cc

Parameters: none

Description: The \caps markup sets the typeface to "caps/small caps".

Example: This example changes "Parallels" to caps/small caps. It is changed back with the \roman markup.

```
lowest common denominator.
\par
\nin\caps Parallels. \roman Consider for a
moment rocks and deer ...
```

lowest common denominator.
PARALLELS. Consider for a moment rocks and deer ...

Note: Caps/small caps are often used for display titles or special emphasis. It should not be used for the body of text. Not all font sets have small caps available. Those font sets that do not have small caps will give the following warning message when you try to use \caps or \cc:

```
<TEXT1> Warning. No small caps font in CMSAN8.
                              Will print roman font .)
```

centerline

```
\centerline{text}
```

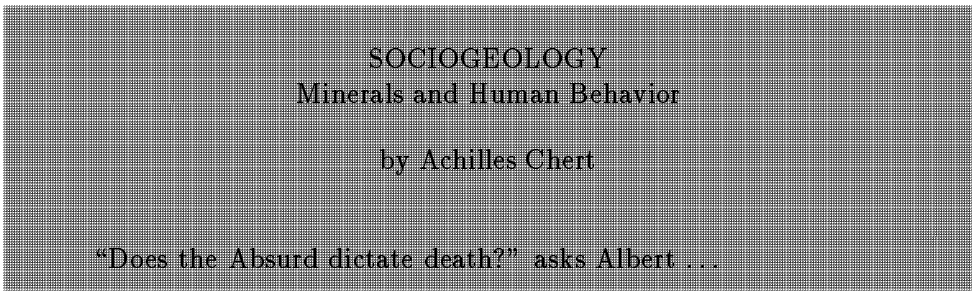
Abbreviation: `\cl`

Parameters: text

Description: The `\centerline` markup ends the previous paragraph and places equal blank spaces on both sides of a word or phrase on a single line. This markup is useful for titles and emphasis. The only parameter for this markup is the text to be centered.

Example:

```
\centerline{SOCIOGEOLOGY\lbr
Minerals and Human Behavior}
\vs{12pt}
\centerline{by Achilles Chert}
\vs{24pt}
``Does the Absurd dictate death?'' asks Albert ...
```



Note: You may use `\linebreak` within `\centerline`.

```
\centerlinesbegin
```

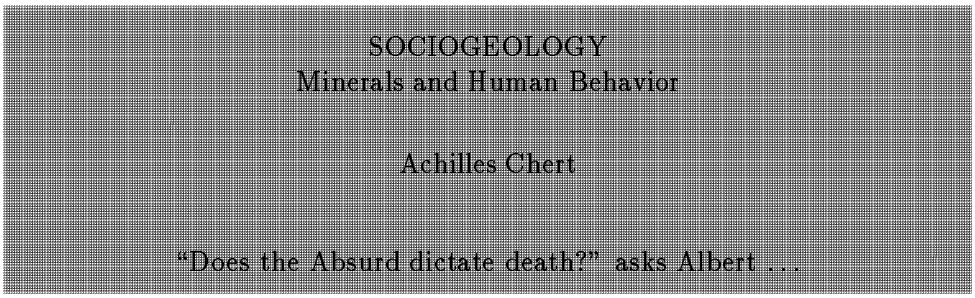
Abbreviation: `\clb`

Parameters: none

Description: The `\centerlinesbegin` markup ends the previous paragraph and starts a series of centered lines. This markup is useful for titles and emphasis. There are no parameters.

Example:

```
\centerlinesbegin
SOCIOGEOLOGY
Minerals and Human Behavior
\vs{18pt}
Achilles Chert
\centerlinesend
\vs{24pt}
``Does the Absurd dictate death?'' asks Albert ...
```



Note: Each `\centerlinesbegin` must be followed by a matching `\centerlinesend`.

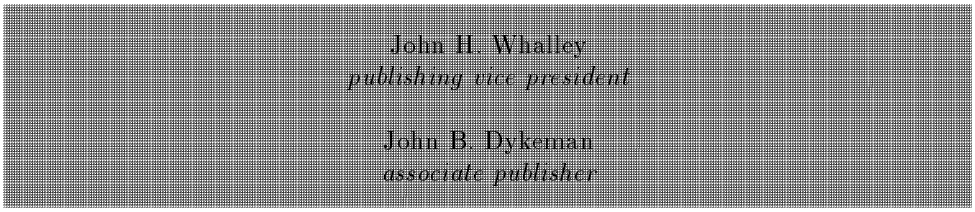
Note: You can also use `\centerlinesbegin` **before** a `\drawbox` or `\paragraphbox`, but not within either markup.

Note: You cannot use `\centerlinesbegin` within any of the following markup: `\appendix`, `\autofootnote`, `\bibliography`, `\centerline`, `\chapter`, `\drawbox`, `\figure`, `\footnote`, `\item`, `\label`, `\marginnote`, `\paragraphbox`, `\part`, `\preface`, `\rightline`, `\runningheadformat`, `\runningfootformat`, `\subheada`, `\subheadb`, `\subheadc`, `\subheadd`, or `\tabletitle`.

centerlinesbegin

Example:

```
\centerlinesbegin
\paragraphbox{John H. Whalley
{\it publishing vice president}
\vs{\bl}
John B. Dykeman
{\it associate publisher}}
\centerlinesend
```



centerlinesend

```
\centerlinesend
```

Abbreviation: `\cle`

Parameters: none

Description: The `\centerlinesend` markup ends a series of centered lines and returns to a paragraph mode. There are no parameters.

Example:

```
The prerequisites to operate this hardware are:
\vs{2\bl}
\clb
6085 Professional Computer System
ViewPoint Software
VP Document Editor Software
Signed Software License Agreement
\cle
```

The prerequisites to operate this hardware are:

6085 Professional Computer System
ViewPoint Software
VP Document Editor Software
Signed Software License Agreement

Note: none.

cents

```
\cents
```

Abbreviation: none

Parameters: none

Description: This markup is used to print a cent sign.

Example:

```
This machine takes 35\cents\ instead of 25\cents.
```

This machine takes 35¢ instead of 25¢.

Note: The `\cents` markup must be followed either by a backslash-space (\␣), or by a tilde (~).

\chapter{*title*}

Abbreviation: \chap

Parameters: *title*

Description: The \chapter markup starts a new page, centers the title in bold face, and enters it in the table of contents. The text of a title is the only parameter.

Example:

```
Anything less is more realistic.
\chapter{Nationalism}
Nationalism is directly related to war.
Lord Acton observed that nationalism aims solely ...
```

Chapter 1
Nationalism

Nationalism is directly related to war. Lord Acton observed that nationalism aims solely ...

Example: If you want to force *TEXT1* to split a long chapter title at a place of your choosing, use \linebreak. Also, there may be times when you want to refer to a chapter later in the document. You can save this chapter number and reference it later by using the \set markup. In this example, the chapter number is saved in "concordance".

```
\chapter{Subject Index\linebreak
and\lbr
Concordance}
\set{concordance}{\chapternumber}
```

Chapter 1
Subject Index
and
Concordance

Note: Refer to \chapterformat on the next page to change the chapter style.

Note: Each time you use \chapter it resets the subhead numbers to zero.

Note: If you have text you want included in the appendix title in the document, but not to be printed in the table of contents, you can exclude it with the \notintoc markup. Refer to the \figure markup for an example on how to use \notintoc.

Note: The `\toclinebreak` May be used to have a line in the Table of Contents break differently than the way it is printed in the document. Refer to the `\figure` markup for an example on how to use `\toclinebreak`.

Note: It is possible to carry the chapter title in the running head. Refer to `\chapterformat` for an example of how to do this.

```
\chapterformat{\numberingstyle{1}
  \titleformat{\dumpinsertseject
      \cl{\twelvept\bd Chapter \chapternumber}
      \cl{\twelvept\bd \chaptertitle}
      \vs{1\bl}
      \setsubheadanumber{0}
      \setsubheadbnumber{0}
      \setsubheadcnumber{0}
      \setsubheaddnumber{0}}
  \incontents{yes}}
```

Abbreviation: `\chf`

Parameters: submarkup

Submarkup: `\numberingstyle, \titleformat, \incontents`

Description: The `\chapterformat` markup allows you to modify the defaults that controls the appearance of the chapter title. The submarkup is described.

`\numberingstyle` allows you to change the style from Arabic numerals, the default, to letters {`A`} or roman numerals {`I`}.

```
\chapterformat{\numberingstyle{A}}
```

`\titleformat{`*Nested Markup*`}` controls the appearance of the chapter title banner. You may use markup such as `\newpage`, `\verticalspace`, and `\centerline` within `\titleformat` as *Nested Markup*. Other markup you may use within or outside of `\chapterformat`:

- `\chapternumber` prints the most recent chapter number.
- `\chaptertitle` prints the most recent chapter title.

`\incontents` places the chapter title in contents (if one is printed). Printing can be suppressed by changing to "no."

```
\chapterformat{\incontents{no}}
```

Example: When you enter,

```
\chapter{Introduction}
```

you get the default chapter style which looks like:

Chapter 1
Introduction

Example: In the following example this default style has been modified such that each chapter starts on a new page, the title is centered in bold (no chapter number printed), and one line is skipped after the chapter title.

```
\chapterformat{\numberingstyle{1}
  \titleformat{\newpage
    \cl{\bd \chaptertitle}
    \vs{1\bl}}}
```

Then each time you specify `\chapter` you will get:

Introduction

Example: Some documents require a chapter to begin on an odd page, instead of an even page. You can do this by checking the page number with the TEX markup `\ifeven` and printing an `\emptypage` if you are on an even page. In this example, each chapter title is prefaced by the chapter number. As before, the title is centered in bold, and one line is skipped before text.

```
\chapterformat{\numberingstyle{1}
  \titleformat{\newpage
    \ifeven\count0\emptypage\fi
    \cl{\bd\chapternumber.~\chaptertitle}
    \vs{1\bl}}
  \incontents{yes}}
```

The chapter begins by skipping to a new page. The value held in `\count0` is the current page number. If it is even, then print an additional `\emptypage` before going on to print the title. The `\fi` simply ends the check for an even page number. The chapter title would look like:

1. Introduction

Example: If you want to carry the chapter title at the top of each page, you may use the `\mark` markup to save the value of the chapter title. You would then specify the `\firstmark` markup in the `\runningheadformat`. In this example, the chapter title is carried on the left side and the page number on the right side of each page.

```
\chapterformat{\titleformat{\dumpinsertseject\mark{\chaptertitle}
               \centerline{\twelvept\bold Chapter \chapternumber}
               \centerline{\twelvept\bold\chaptertitle}
               \vs{1\bl}}}
⋮
\chapter{Waterfalls Near Pullman}
\runningheadformat{\bothpages{\lft{\firstmark}\rt{\pn}}}
```

countinglines

```
\countinglines{status}
```

Abbreviation: `\coul`

Parameters: *status*

Description: This markup is used to start counting lines for line numbering in the margin of a document. *Status* is `true` or `false`.

Example: To start line numbering you enter

```
\countinglines{true}
```

Note: Line numbering is only available on the phototypesetter. This markup is ignored for all other printers.

doublespace

```
\doublespace
```

Abbreviation: `\dsp`

Parameters: none

Description: The doublespace markup leaves alternate line spaces blank. This markup causes a break in text. There are no parameters. Double spacing will be in effect until changed with a `\singlespace` markup.

Example:

```
\singlespace
All things considered, Camus has derived
a solid conglomerate of grail theories
for us.
\doublespace
Let me close with another penetrating insight from
Camus: The rock should be left at the bottom,
because of the inevitability of entropic direction.
```

All things considered, Camus has derived a solid conglomerate of grail theories for us.

Let me close with another penetrating insight from Camus: The rock should be left at the bottom, because of the inevitability of entropic direction.

Note: none.

drawbox

\drawbox{*text*}

Abbreviation: \db

Parameters: *text*

Description: A box is a grouping of rules into a square or rectangle. You can draw a box with the \drawbox markup. The parameter for this markup is the material to be put inside the box. Any grouping less than a paragraph can be boxed, including letters, sentences, figures, or tables.

Example: To draw a box around an "a", you would enter:

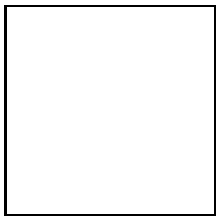
```
Draw a box around \drawbox{a}
```

Draw a box around a

Example: If you want to draw an empty 1 inch square (plus the box "rule size" and "mat size") you could enter,

```
\db{\vrule width 0pt height 1in
\vrule width 1in height 0pt depth 0pt}
```

which prints:



Note: Paragraphs cannot be boxed with \drawbox unless each one is put in a vertical box (see \vbox). Use the \paragraphbox markup instead.

Note: Refer to \drawboxformat on the next page to change the box style, do screening, shadows, etc.

drawboxformat

```
\drawboxformat{\screen{0}
     \boxmat{3pt}
     \boxrule{.4pt]}
     \boxshadow{0pt}
     \outerboxmat{0pt}
     \outerboxrule{0pt}}
```

Abbreviation: `\dbf`

Parameters: submarkup

Submarkup: `\screen`, `\boxmat`, `\boxrule`, `\boxshadow`, `\outerboxmat`, `\outerboxrule`

Description: The `\drawboxformat` markup is used in determining the mat, rule size, shadow, and screening level for all boxes, with the exception of paragraph boxes. The `\paragraphboxformat` is used in determining these values for paragraphs. The submarkup for the `\drawboxformat` is described below.

`\screen` allows you to set a level of screening to be done in the boxed area. The value is given in a level from 0–64. They range from white to black as illustrated below;

By default, there is no screening done (level 0).

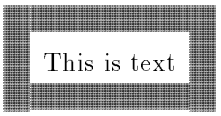
Example: If you wanted to have a level 20 screen and no rule, you could enter:

```
\dbf{\screen{20}\boxrule{0pt}}
\cl{\db{This is a level 20 screen}}
```

Which prints something like:

The font DT must be available to accomplish the screening. The DT font is Knuth's "dithered" font as described in *TUGboat* 8#2 pp 135–160. This font is provided with the *TEXT1* distribution.

`\boxmat` The `\boxmat` submarkup determines the amount of space between the rule and the text. This is the area that has been shaded in the following illustration.



The default mat is 3 points.

Example: If you wanted to change the mat, the distance between the rule and the text from the default 3pt to 20pt, you would enter:

```
Here is the default mat \drawbox{a}\par
\drawboxformat{\boxmat{20pt}}
Draw a box around \drawbox{a}
```

This would look like the following illustration.

Here is the default mat [a]

Draw a box around [a]

\boxrule The \boxrule submarkup determines the thickness of the rule drawn around the text. By default, .4pt is the rule thickness.

Example: If you wanted to change the rule thickness to 3pt, you would enter:

```
\dbf{\boxrule{3pt}}
\db{A 3pt Rule}
```

A 3pt Rule

\boxshadow The \boxshadow submarkup determines the thickness of shadow which is drawn around the outside of the box. By default, there is no shadow.

Example: If for example, you wanted a 10pt shadow, you could enter something like:

```
\dbf{\boxshadow{10pt}\boxmat{20pt}}
\rl{\db{This is a shadow box}}
```

This is a shadow box

\outerboxmat It is possible to draw a box around a box. This is done with the \outerboxmat and \outerboxrule markup. See the following example under \outerboxrule on how to use this feature.

drawboxformat

`\outerboxrule` It is possible to draw a box around a box. This is done with the \outerboxmat and \outerboxrule markup. By default, both of these are zero.

Example: If you wanted to create an outer box with a 4pt rule and a 2pt mat, you could enter:

```
\drawboxformat{\outerboxrule{4pt}\outerboxmat{2pt}}
\drawbox{\bi Corrections Made}
```

dumpinsertseject

```
\dumpinsertseject
```

Abbreviation: `\die`

Parameters: none

Description: This markup is used to dump (print) all accumulated figures and tables (inserts) entered with `\figure`, `\topinsert` or `\midinsert`. After printing the figures and other inserts, a new page is started. If no inserts had been accumulated, a new page is still started. This markup appears in many of the format markup, such as `\chapterformat`.

Example:

```
\chapterformat{\numberingstyle{1}
  \titleformat{\dumpinsertseject
      \cl{\twelvept\bd Chapter \chapternumber}
      \cl{\twelvept\bd \chaptertitle}
      \vs{1\bl}
      \setsubheadanumber{0}
      \setsubheadbnumber{0}
      \setsubheadcnumber{0}
      \setsubheaddnumber{0}
      }
  \incontents{yes}
   }
```

Note: The `\topinsert` and `\midinsert` markup are discussed in *The TEXbook*.

ellipsis

```
\ellipsisn
```

Abbreviation: `\el`

Parameters: *n*

Description: Ellipsis points indicate any omission of a word, line, or paragraph from a quoted passage. Three points are used when the omission occurs with a sentence or fragment. Four points are used when the omission is a whole sentence or more, including whole paragraphs.

In using the `\ellipsis` markup, *n* may be "3" or "4". The `\ellipsis3` markup inserts three points, surrounded by appropriate spacing. (. . .) The `\ellipsis4` markup inserts four points, immediately after a sentence, with space after the last point. (. . . .)

Example: The following quote has been shortened with ellipses.

```
names the process:
\blockquotebegin
This loss of fluids is known as aging\ellipsis4
The lithosphere\ellipsis3 wrinkles over time.
The process is one-way, as rehydration will not
unwrinkle the surface.
\blockquoteend
As far as general surface alteration, only the ...
```

names the process:

> This loss of fluids is known as aging. . . . The lithosphere . . . wrinkles over time. The process is one-way, as rehydration will not unwrinkle the surface.

As far as general surface alteration, only the . . .

Note: No additional space is required around the ellipsis markup, since space is included.

```
\emptypage
```

Abbreviation: `\ep`

Parameters: none

Description: The `\emptypage` markup advances the page count, leaving an "empty" page, which can be placed with custom figures or diagrams. There is no break in text. There are no parameters for this markup.

Example: To float an empty page, enter the sequence:

```
same proportions (Figure 2, on the following page).
\par
\emptypage
This suggests parallels in evolution.
Generally speaking, there are three
possible solutions  ...
```

Example: To have an empty page print immediately between the sentence ending "page)." and the one beginning "This suggests ..." you would enter follow the `\emptypage` with a `\newpage`:

```
same proportions (Figure 2, on the following page).
\par
\emptypage
\newpage
This suggests parallels in evolution.
Generally speaking, there are three
possible solutions  ...
```

Note: Unlike `\newpage`, if you enter two `\emptypage` markup in a row, you will get two empty pages when the page is ejected.

endnoteformat

```
\endnoteformat{\skipbefore{4pt}
        \textreferenceposition{down}
        \textreferencefont{\rm}
        \textreferencestyle{[1]}
        \notereferenceposition{down}
        \notereferencefont{\tenpt}
        \notereferencestyle{1.}
        \notereferencegutter{1em}
        \everyendnote{\tenpt\pin{0pt}\lin{1.2em}}}
```

Abbreviation: `\enf`

Parameters: submarkup

Submarkup: `\skipbefore`, `\textreferenceposition`, `\textreferencefont`, `\textreferencestyle`, `\notereferenceposition`, `\notereferencefont`, `\notereferencestyle`, `\notereferencegutter`, `\everyendnote`

Description: The `\endnoteformat` markup allows you to modify the shape and presentation of endnotes generated with `\autoendnote`.

`\skipbefore` indicates how much space is to be skipped *before* printing a block. This amount is in addition to any paragraph skips.

`\textreferenceposition` determines if the endnote reference number is superscripted or not. By default, the reference is not superscripted. If you want the endnote reference number to be superscripted, then change the parameter to "up".

`\textreferencefont` lets you change the face or size. By default the endnote reference number is always printed in the standard font.

`\textreferencestyle` determines the numbering style at the end of a chapter or the end of the document (wherever the `\printendnotes` appears). There are five possible values:

1. "`1`" for numbered endnotes
2. "`(1)`" for numbered endnotes with parentheses
3. "`[1]`" for numbered endnotes with square brackets
4. "`a`" for lettered endnotes
5. "`(a)`" for lettered endnotes with parentheses

The default is Arabic numerals in square brackets.

`\notereferenceposition` determines if the endnote reference number is superscripted or not when it is printed at the end of a chapter or the end of a document. By default, the reference is not superscripted. If you want the endnote reference number to be superscripted, then change the parameter to "up".

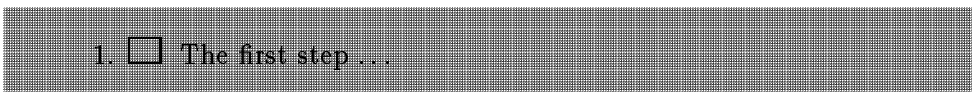
\notereferencefont lets you change the face or size. By default the endnote reference number printed at the end of a chapter (or end of a document, wherever \printendnotes occurs) is always printed in the standard font.

\notereferencestyle determines the numbering style. There are five possible values:

1. "1." for numbered endnotes
2. "(1)" for numbered endnotes with parentheses
3. "[1]" for numbered endnotes with square brackets
4. "a" for lettered endnotes
5. "(a)" for lettered endnotes with parentheses

The default is numbered endnotes.

\notereferencegutter specifies the amount of space between the endnote number and the endnote text. The gutter is illustrated here as the shaded portion between "1." and "The first step":



\everyendnote lets you modify the shape of the notes. You can change the type face, the paragraph parameters, and the right and left indentation.

Example: This example shows an endnote style with a superscripted endnote number; the body of the endnote in a 9 point Computer Modern set; the endnote at the end of the document (or chapter) indented half an inch from the left and half an inch from the right of the rest of the body of the text; the endnote body right ragged; and the text of the document right justified and in 10 point Computer Modern. The endnote "text" reference at the end of the chapter will retain the default style ("1." not superscripted).

Note that 9 point was specified within both the "notereferencefont" and "everyendnote" markups. The "notereferencefont" determines the font that the endnote reference number is to be printed in. The "everyendnote" markup determines the font that the endnote text is to print in at the end of the document or end of chapter, wherever the next \printendnotes markup appears.

endnoteformat

```
\endnoteformat{\skipbefore{12pt}
         \textreferenceposition{up}
         \textreferencefont{\ninepoint\rm}
         \textreferencestyle{1}
         \notereferenceposition{down}
         \notereferencefont{\ninepoint\rm}
         \notereferencestyle{1.}
         \everyendnote{\rightragged
           \pin{0pt}\psk{12pt}\ninepoint
           \leftindent{.5in}\rightindent{.5in}}
          }
⋮
... automatically sets an interline skip 2 points greater
than the font size.\autoendnote{This extra space is
referred to as leading.} The default font size is  ...
```

The endnote in the document would look like:

... automatically sets an interline skip 2 points greater than the font size.[1] The default font size is ...

The endnote printed after the \printendnotes markup would look like:

1. This extra space is referred to as leading.

evenpagemargin

```
\evenpagemargin{50.8pt}
```

Abbreviation: `\epm`

Parameters: *measurement*

Description: This markup is used to indicate where a document's line numbering is to be printed on even pages. The default is 50.8 points from the left edge on even pages.

Example: To indicate that you want line numbering to start at 1 inch from the left edge you would enter at the beginning of your document:

```
\evenpagemargin{1in}
```

Note: Line numbering is only available on the phototypesetter. This markup is ignored for all other printers.

Valid values for `\evenpagemargin` are $0 - (2^{32} - 1)$ points, practical values are $5 - 860$ points.

extension

```
\extension
```

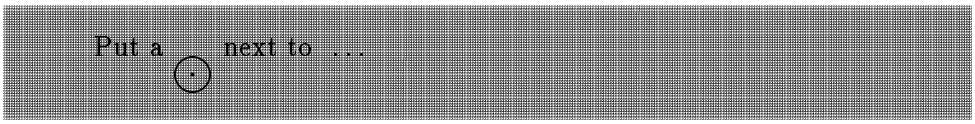
Abbreviation: `\ex`

Parameters: none

Description: The `\extension` markup sets the face to the Computer Modern Math Extension face. Refer to *The TEXbook*, Appendix F, for a complete list of the characters available in the Extension face.

Example: This example uses `\extension` to print an "O dot":

```
Put a {\extension\char'113} next to  ...
```



Note: For more on the use of the `\char` markup, refer to *The TEXbook*.

figure

\figure{*markup*}{*title*}

Abbreviation: \fig

Parameters: first parameter = *markup*
second parameter = the figure *title*

Description: A figure is a representation or illustration. The \figure markup can leave space for a figure, number it, print the figure title, and ensure that the title gets placed in the contents. The figure markup has two parameters: markup and the title of the figure.

The "markup" can be a \verticalspace markup, \fullpage, \halfpage, or text such as a table, etc. The "*title*" is the title of the figure which will print at the bottom of the figure and in the table of contents.

If you want a figure on an entire page, enter \fullpage as the first parameter. If you want a figure to fill half of the page, enter \halfpage as the first parameter.

Example: If you want to use \asisbegin, it must go outside of the figure and the title cannot be more than one line long.

```
\aib
\figure{\tt
           clay
                                  Human
  pressure
                   parent rock
                                   temperature
}{Origin of the Stone Species}
\aie
```

Refer to the sample output on the next page.

figure

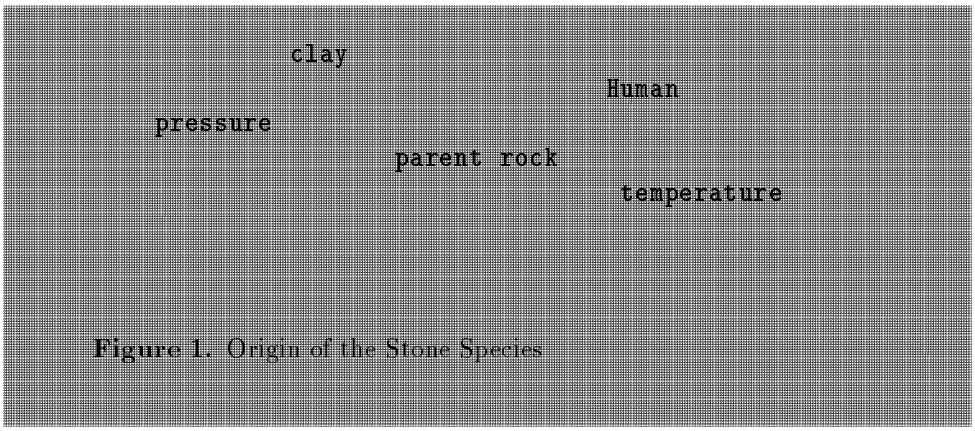


Figure 1. Origin of the Stone Species

Example: This figure leaves half an inch of space above the title, "Size data of a ...".

```
the same proportions.
\db{\figure{\vs{.5in}}{Size data of a Yellow
Transparent fruit during the period of July 23 to August 9,
1977. (fruit No. IV$_b$)}
This suggests parallels ...}
```

Figure 2. Size data of a Yellow Transparent fruit during the period of July 23 to August 9, 1977. (fruit No. IV_b)

Example: This figure leaves an entire empty page for the figure. The title would print at the bottom of the figure.

```
the same proportions.
\figure{\fullpage}{Origins of the Human Species}
This suggests parallels  ...
```

Example: This figure leaves a half page empth for the figure. The title would print at the bottom of the figure.

```
the same proportions.
\figure{\halfpage}{Origins of the Human Species}
This suggests parallels  ...
```

Note: By default, text "floated" is text that is moved in front of a figure. The figure is moved to the top of the current page if there is room left. If not enough room remains, then the figure is printed at the top of the next page. To disable this floating process, refer to the `\figureformat` markup.

For both `\halfpage` and `\fullpage`, the figure title is included in determining how much space to leave.

By default, each new `\part` will start numbering figures over again at 1. Use `\setfigurenumber` to reset the figurenumber outside of parts.

When figures are using the default "float" method of placing figures, you cannot use `\twocolumns` or `\threecolumns` in parameter 1. If you are using the `\nofloat` option specified in `\figureformat` you may use the multiple column specifications.

Use the `\figureformat` markup to modify the figure style.

You can not use `\settabs` within `\figure`.

Note: You may also use the `\notintoc` markup within the igure title if you have text that you want printed with the figure, but you do not want that text to print in the Table of Contents.

Example: Look at this example where you have a very long figure title. You could use the `\notintoc` markup in this fashion:

```
\fig{\fullpage}{Examples of interactive
raster-scan application programs. \notintoc{(a) an
interactive programming system using multiple
windows and menus, and (b) an interactive
illustration program. Note the menu
in the upper right.}}
```

In the body of the document, the figure would print as:

Figure 17. Examples of interactive raster-scan application programs. (a) an interactive programming system using multiple windows and menus, and (b) an interactive illustration program. Note the menu in the upper right.

However, in the List of Figures the entry would simply be:

17. Examples of interactive raster-scan application programs....75

Note: If you want an entry in your Table of Contents to end at a particular spot, you can use the `\toclinebreak` in the same way you would use `\linebreak`, except that the break will occur in the Table of Contents, but not in the body of the document.

Example: For example, you could enter a figure such as:

```
\fig{\vs{1.5in}}{The incidence of damping-off
of radish caused by {\it Rhizoctonia solani} in
soil \toclinebreak
that was planted to radish every week for
five successive weeks. \notintoc{(Reprinted
with permission from Henis et al, 1979b.)}}
```

In the body of the document in chapter 12, there would not be a break after "soil." For example:

Figure 12-7. The incidence of damping-off of radish caused by *Rhizoctonia solani* in soil that was planted to radish every week for five successive weeks. (Reprinted with permission from Henis et al, 1979b.)

However, in the Table of Contents there would be a break after "soil" such as:

12-7. The incidence of damping-off of radish caused by *Rhizoctonia solani* in soil
that was planted to radish every week for five successive weeks....124

figureformat

```
\figureformat{\skipbefore{1\bl}
              \position{\float}
              \titleformat{\bqb\hp\tenpt
                   \bd Figure \figurenumber.
                   \rm\figuretitle \bqe}
              \incontents{yes}
              \skipafter{1\bl}
         }
```

Abbreviation: `\fif`

Parameters: submarkup

Submarkup: `\skipbefore`, `\position`, `\titleformat`, `\incontents`, `\skipafter`

Description: The `\figureformat` markup allows you to modify the defaults that control the appearance of the figure. The submarkup is described.

`\skipbefore` indicates how much space is to be skipped *before* printing a figure block. This amount is in addition to any paragraph skips.

`\position` By default, text is floated around a figure and the figure printed at the top of the next page if not enough room remains on the current page to print the figure. If you do not want text to float around the figure, and you want the figure to print exactly where you place it, use `\position{\nofloat}`.

```
\figureformat{\position{\nofloat}}
```

You may also use `\keep` and `\midfloat` within the `\position` submarkup. The `\keep` option is similar to `\nofloat` except that it will keep the contents on the same page. The `\midfloat` option is similar to `\float` except that it will try and float the figures into the middle of the page.

`\titleformat{`*Nested Markup*`}` controls the appearance of the figure title. You may use markup such as `\blockquotebegin`, `\hangingparagraph`, `\verticalspace`, and `\centerline` within `\titleformat` as *Nested Markup*. Other markup you may use within or outside of `\figureformat`:

- `\figurenumber` prints the most recent figure number.
- `\figuretitle` prints the most recent figure title.

`\skipafter` indicates how much space is to be skipped *after* printing the figure title. This amount is in addition to any paragraph skips.

figureformat

`\incontents` places the figure title in contents (if one is printed). Printing can be suppressed by changing to "no."

Example: The amount of space skipped before and after has been reduced to 6 points (half a line with 12 point interline space), the figure number is placed in `\label` and the figure title is printed in italics.

```
\figureformat{\skipbefore{6pt}
        \titleformat{\label{\bd Figure \figurenumber.}
                                \it\figuretitle}
        \skipafter{6pt}
        \incontents{yes}
   }
⋮
\figure{\halign{\ctr{#}&&\hs{1em}\ctr{#}\cr
July 23&July 27&July 31&August 5&August 9\cr
32&67&44&47&18\cr}{Size data of a Yellow
Transparent fruit during the period of July 23 to August 9,
1977. (fruit No. IV$_b$)}
```

July 23	July 27	July 31	August 5	August 9
32	67	44	47	18

Figure 3. *Size data of a Yellow Transparent fruit during the period of July 23 to August 9, 1977. (fruit No. IV_b)*

fixedformat

```
\fixedformat
```

Abbreviation: `\fixf`

Parameters: none

Description: *TEXT1* offers two multiple column formats that have different text handling capabilities. The normal (default) style is called "flexibleformat". This is described with `\twocolumns` and `\threecolumns` markup. There is an optional style you can use called "fixedformat." The flexible format can be changed to the fixed format by inserting the markup `\fixedformat` before the first two or three column markup appears.

The Fixed format makes each column act as if it were a single page. Inserts and footnotes will appear in each column just as they would in the single column format. Only the running head and running foot will print across the full width of the page.

Note: Since each column is handled like a normal single column page, the columns **may not be balanced**. A short right hand column will remain short when formatting is completed.

The Fixed format **cannot** be used to format combinations of single, double, and triple columns on the same page. The two column and three column markup can be used in conjunction with one another, but not on the same page. If both format markup appear on the same page, *TEXT1* will fill the bottom of the current column on the current page with white space and change to the new format on the following page.

Once the fixed format has been specified, it will remain in force for the remainder of the document. The Fixed format **cannot** be changed to the Flexible format again within the same document.

font

\font *user markup name* = *font name*

Abbreviation: `none`

Parameters: *user markup name* and *font name*

Description: The `\font` markup can be used to allow you to make use of a specific font available on your printer. You should always consult the font catalog for the fonts available on your printer. The name given in the font catalog goes where *font name* is with the `\font` markup. The *user markup name* you must provide. It should be a unique name.

Example: To use the fourteen point Computer Modern Roman, you can assign it to the markup name `\bigfont` by entering,

```
\font \bigfont = cmr14
⋮
\bigfont Palouse Region:
```

and you will get:

Palouse Region:

Example: To use the ten point Computer Modern Sanserif Demibold Condensed you can assign it to a markup name `\demifont` by entering,

```
\font \demifont = cmssdc10
⋮
\demifont Palouse Region:
```

you will get:

Palouse Region:

Note: The `\font` markup does not change the interline skip. A font established with `\selectspecificfont` does.

This markup is described further in *The TEXbook*.

footnote

\footnote{*mark*}{*text*}

Abbreviation: `none`

Parameters: first parameter = *reference mark*
second parameter = *footnote text*

Description: The \footnote markup can be used to create marked footnotes. There are two parameters; the first is the reference mark, and the second is the text of the note itself. Each parameter is surrounded with curly braces ({}). If more than one reference mark is used on the same page, they should appear in the prescribed order:

- asterisk (*)
- dagger (\dagger)
- double dagger (\ddagger)
- section sign (\S)

Refer to the example on the next page.

Example: Using the above prescribed order, the second footnote on a page would be entered with `\footnote` as:

```
by Achilles Chert\footnote{\dagger}{pH.d., Litmus Sci.
The author is with the School of Pyroclastic
Philosophy at the University of Piedmont.}.
\par
\nin ``Does the Absurd dictate death?'' asks Albert
Camus, a novelist who lionized the labors of
Sisyphus in moving the igneous concretion up the
declivitous landmass.
```

In the document, the text would print as:

by Achilles Chert†.
"Does the Absurd dictate death?" asks Albert Camus, a novelist who lionized the labors of Sisyphus in moving the igneous concretion up the declivitous landmass.

At the bottom of the page the footnote would print as:

† pH.d., Litmus Sci. The author is with the School of Pyroclastic Philosophy at the University of Piedmont.

Note: The `\footnoteformat` **has no effect** on `\footnote`. `\footnoteformat` is used to change the style of the `\autofootnote` markup.

You cannot use `\footnote` within `\settabs`, `\vbox`, `\hbox`, `\drawbox`, `\paragraphbox`, `\label`, `\part`, `\chapter`, `\centerline`, `\halign`, `\rightlinesbegin`, or `\centerlinesbegin`.

Refer to the *The TEXbook* for more on the `\footnote` markup.

footnoteformat

```
\footnoteformat{\skipbeforedivider{12pt}
               \skipafterdivider{2.6pt}
               \footnotedivider{144pt}
               \textreferenceposition{up}
               \textreferenceplacement{after}
               \textreferencefont{\tenpt}
               \textreferencestyle{1}
               \notereferenceposition{down}
               \notereferencefont{\tenpt}
               \notereferencestyle{1.}
               \notereferencegutter{1em}
               \everyfootnote{\tenpt\pin{20pt}
                              \lin{0pt}}
               }
```

Abbreviation: `\fnf`

Parameters: submarkup

Submarkup: `\skipbeforedivider`, `\skipafterdivider`, `\footnotedivider`, `\textreferenceposition`, `\textreferenceplacement`, `\textreferencefont`, `\textreferencestyle`, `\textreferencegutter`, `\everyfootnote`, `\notereferenceposition`, `\notereferencefont`, `\notereferencestyle`, `\notereferencegutter`

Description: To change the footnote style and any of the other footnote formatting options of the `\autofootnote` markup, use the `\footnoteformat` markup. The default footnote format is:

`\skipbeforedivider` determines the distance between the last line of text on a page and the footnote divider rule which is printed just before the footnotes. The default for this markup is 12 points.

`\skipafterdivider` determines the distance between the footnote divider rule and the first footnote. The default for this markup is 2.5 points.

`\footnotedivider` determines the length of a short rule that separates the footnotes from text. The default value is 144 points (2 inches).

`\textreferenceposition` determines if the footnote reference number is a superscript or not. By default, the reference is superscripted (up). If you want the footnote reference number to be on the baseline, change the parameter to "down".

footnoteformat

\textreferenceplacement determines if the footnote reference number precedes or follows the word being noted. By default, the reference will follow the noted word. If you want the footnote reference number to be placed before the word being noted, then change the parameter to "before".

\textreferencefont lets you determine how to print the footnote number. The default is the roman face at 10 point.

\textreferencestyle determines the numbering style. There are four possible values:

1. "1" for numbered superscripted footnotes
2. "(1)" for numbered footnotes surrounded with parentheses
3. "a" for lettered footnotes
4. "(a)" for lettered footnotes surrounded with parentheses

The default is \textreferencestyle{1} for composing printers.

\notereferenceposition determines whether the footnote reference number in the note is a superscript or not. By default, the reference is on the baseline. If you want the footnote reference number to be superscripted, change the parameter to "up".

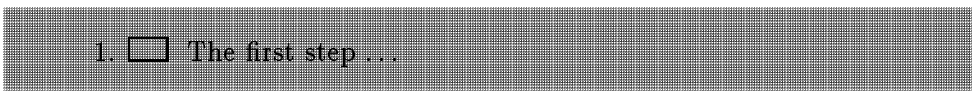
\notereferencefont lets you determine what font to print the footnote number in. The default is standard face at 10 point.

\notereferencestyle determines the numbering style for the notes. There are four possible values:

1. "1" for numbered superscripted footnotes
2. "(1)" for numbered footnotes surrounded with parentheses
3. "a" for lettered footnotes
4. "(a)" for lettered footnotes surrounded with parentheses

The default is \textreferencestyle{1.}.

\notereferencegutter sets the distance between the footnote number and the first word of text of the note. The gutter is illustrated here as the shaded portion between "1." and "The first step":



The default is one em space, \notereferencegutter{1em}.

\everyfootnote{*Nested Markup*} sets the style for everyfootnote. You can change the type face, the paragraph parameters, and the right and left indentation. The default text size is 10 point; each note is in paragraph format, with an indent of 20 points.

Example: The following example uses a footnote style that prints a superscripted footnote number in the text and the note, the body of the footnote in nine-point Computer Modern set, the footnote at the bottom of the page indented 36 points from the left and 36 points from the right of the rest of the body of the text of the document, the footnote body right ragged, and the text of the document right justified and in 10 point Computer Modern. The **\footnoteformat** block is modified thus:

```
\footnoteformat{\skipbeforedivider{18pt}
        \footnotedivider{144pt}
        \textreferencefont{\ninepoint\rm}
        \notereferenceposition{up}
        \notereferencefont{\ninepoint\rm}
        \everyfootnote{\rightragged\pin{0pt}
             \psk{12pt}\ninepoint
             \leftindent{36pt}\rightindent{36pt}}}
```

Note that **\ninepoint** was specified within both the **\textreferencefont** and **\everyfootnote** markups. The **\textreferencefont** determines the font that the footnote reference number is to be printed in. The **\everyfootnote** markup determines the font that the footnote text is to print in at the bottom of the page. Most often the fonts specified in **\textreferencefont** and **\everyfootnote** are the same font.

Note: This markup modifies the style of the **\autofootnote** markup, **not** the **\footnote** markup.

You can use the **\set** markup to set a variable to print the footnote number in another part of your document.

fraction

\fraction*numerator/denominator*

Abbreviation: \frac

Parameters: *numerator/denominator*

Description: The \fraction markup is another method of specifying a fraction. If you enter "$1\over2$" you get "$\frac{1}{2}$". Entering "1/2" will give you "1/2". To get "½" you specify "\fraction1/2 ~".

Example: Consider my favorite breakfast recipe:

```
\tabskip 3em plus 2em minus 2em
\halign{\lft{#}&\lft{#}\cr
\multispan2\ctr{\bd Muckles}\cr
3 eggs&beaten\cr
1 cp&cream\cr
1 cp&flour\cr
\fraction1/4 t&baking powder\cr
1 T&sugar\cr
\multispan2\lft{pinch of salt}\cr
\multispan2\lft{bacon (optional)}\cr}
Heat butter or bacon in frying pan.
Pour all of
the batter into the pan. Cook $\approx$
10 minutes at 375$¬\circ$. Cut into pieces
and serve hot with plenty of syrup.
```

Muckles

3 eggs	beaten
1 cp	cream
1 cp	flour
¼t	baking powder
1 T	sugar
pinch of salt	
bacon (optional)	

Heat butter or bacon in frying pan. Pour all of the batter into the pan. Cook ≈ 10 minutes at 375°. Cut into pieces and serve hot with plenty of syrup.

Note: There **must** be a space following the fraction as you enter it. In the above example there had to be a space before the "t&baking powder\cr".

```
\frenchspacing
```

Abbreviation: none

Parameters: none

Description: By default, *TEXT1* will double space after hard punctuation, unless the letter prior to the punctuation is a capital letter. To make all interword spacing the same, regardless of punctuation, you can enter the **\frenchspacing** markup. This will turn off the extra spacing following punctuation for the rest of a document or until *TEXT1* sees a **\nonfrenchspacing** markup.

Example: Consider this bibliographic entry:

```
\bibentry
Grabens, Gruss M. 1970. {\it Mechanical Processes
in the Human Geomechanism}. Winston: Geomedical
Publications, International.
```

Without **\frenchspacing** it might print as:

Grabens, Gruss M. 1970. *Mechanical Processes in the Human Geomechanism.* Winston: Geomedical Publications, International.

If you had specified **\frenchspacing**,

```
\frenchspacing
\bibentry
Grabens, Gruss M. 1970. {\it Mechanical Processes
in the Human Geomechanism}. Winston: Geomedical
Publications, International.
```

it would print as:

Grabens, Gruss M. 1970. *Mechanical Processes in the Human Geomechanism.* Winston: Geomedical Publications, International.

Note: none.

goodbreak

```
\goodbreak
```

Abbreviation: none

Parameters: none

Description: The `\goodbreak` markup indicates a good place for page or line breaks. *TEXT1* will then break there only if necessary. This markup must be preceded by a `\par` or vertical skip for a page break.

Example: This example will break the page before the last paragraph beginning "The comparison may seem", if it comes close to the bottom of the page.

```
\par
\nin{\bd Parallels.}
\par
Consider for a moment rocks and deer.
Both form cooperative groups that furnish the
landscape...
The fruits of cooperation depend on conditions of
the environment.
\par
\goodbreak
The comparison may seem facile, but from deliberate
oversimplification...
```

Note: Refer to *The TEXbook* for more on this markup.

```
\halign{ preamble\cr
         tabular text\cr}
```

Abbreviation: `none`

Parameters: preamble, tabular text, submarkup

Submarkup: `\lft, \ctr, \rt, \cr, \noalign, \tabskip, \omit, \multispan, \phantom, &&` (column repeat)

Description: The `\halign` markup is a way of making tables without tabbing. A preamble, or sample line, is included immediately after `\halign` to act as a template for the text in each column. Each successive column in a row begins with an ampersand (&). Column descriptions may contain horizontal spaces, indents, quads, and horizontal fills. Each column description must have a pound sign (hash mark, #) which acts as a reference variable, so that text can be substituted.

The halign is read in its entirety. Every column is treated as a box whose width is equal to the largest entry.

Besides horizontal mode markup such as `\indent`, you can use the following submarkup in the `\halign`.

`\lft` in the preamble will left justify each entry in a column.

`\ctr` in the preamble will center each entry in a column.

`\rt` in the preamble will right justify each entry in a column.

`\cr` marks the end of the preamble, and the end of each row.

`\noalign` is used outside of the preamble. It allows you to enter vertical mode text into a table. You must not end a `\noalign` with a `\cr`. For example, if you wanted to skip a blank line between two row entries, you would use `\noalign{\vs{\bl}}`:

```
⋮
1000&32\cr
\noalign{\vs{\bl}}
2000&43\cr
⋮
```

`\tabskip` puts an equal amount of space (glue) between columns. A specification of

```
\tabskip 20pt plus 15pt minus 10pt
```

indicates that the each column is set 20 points apart. If after the initial try it is determined that the table is still narrower than the width of the page, up to an additional 15 points of space is put between columns to try and get the table to spread across the entire page. If after the initial try of 20 points between each

column it is determined that the table is too wide to fit on the page, up to 10 points is subtracted from the space between each column to try and get the table to fit on the page.

\omit can be used to disable to preamble specification for that column and row. \omit only works for one column of one row. For example, if a preamble

```
\halign{\lft{#}&\rt{#}\cr
```

was specified, then to center a header over a column, you could enter

```
\omit\ctr{Header 1}&\omit\ctr{Header 2}\cr
1000&2000\cr
⋮
```

\multispan is used to permit spanning of several columns. For example, if you had a preamble of

```
\halign{\rt{#}&\rt{#}&\rt{#}\cr
```

and you wanted to center a title over the second and third columns, you would enter:

```
first column&\multispan2\ctr{Spanned title}\cr
```

\phantom is used in decimal alignment. For example,

```
00.1234&12.231\cr
72.8\phantom{000}&1.2\phantom{00}\cr
```

would print the partial table:

00.1234	12.231
72.8	1.2

&& is used to indicate that the following column preamble is to be repeated for each of the remaining of columns. For example, if you wanted the first column centered, the second column left justified, and the next five columns right justified, you could enter

```
\halign{\ctr{#}&\lft{#}&\rt{#}&\rt{#}&
      \rt{#}&\rt{#}&\rt{#}\cr
```

Using the column repeat indicator (&&) you can simplify this to

```
\halign{\ctr{#}&\lft{#}&&\rt{#}\cr
```

This specification then says that columns 3, 4, etc. all use the same preamble, "\rt{#}".

Example: This example illustrates \omit, \qquad and \tabskip.

```
\tabskip .5in plus .4in minus .3in
\halign{\rt{#}&\qquad\lft{#}\cr
\omit\ctr{Case}&\omit\qquad\ctr{Blast}\cr
\noalign{\vs{2pt}\hrule\vs{2pt}}
5000 MT&500\cr
10000 MT&845--1050\cr }
```

Case	Blast
5000 MT	500
10000 MT	845-1050

Example: This example makes use of \multispan, \indent, \horizontalspace, \noalign and column repeat (&&).

```
\tabletitle{Surface Land Temperature (degrees C)\lbr
Changes after Exchanges}
\vs{10pt}
\halign{\indent\lft{#}&\hs{2em}\rt{#}
       &&\hs{1em}\rt{#}\cr
Case&\multispan4\ctr{Post Detonations (Days)}\cr
Megatonnage&20&100&200&300\cr
\noalign{\vs{10pt}}
1000&-22&8&7&13\cr
3000&9&6&8&10\cr
5000&-7&-26&-20&-11\cr
10000&-24&-45&-26&-9\cr}
```

halign

Table 1
Surface Land Temperature (degrees C)
Changes after Exchanges

Case	Post Detonations (Days)			
Megatonnage	20	100	200	300
1000	-22	8	7	13
3000	9	6	8	10
5000	-7	-26	-20	-11
10000	-24	-45	-26	-9

Note: `\halign` takes less computer time than `\settabs` because it is a basic TEX command. The advantages to `\halign` over `\settabs` are:

- maximum column widths are calculated automatically; you must measure the longest entry with `\settabs`.
- templates are more versatile than `\settabs`; repeatable information can be included in the preamble.
- greater flexibility.

Refer to *The TEXbook* for more about `\halign`, `\cr`, `\noalign`, `\tabskip`, `\phantom`, `\omit`, `\multispan`, or `&&` (column repeat).

You can use `\autofootnote`, `\autoendnote`, and `\footnote` inside of an `\halign`, so long as they are **not** also inside an `\hbox` or `\vbox`.

Refer to the description of `\leader` for an example of using `\halign` with dot leadering.

See `\strut` for row alignment.

Do not put a `\cr` on the same line as `\noalign`.

hangingindent

```
\hangingindent{24pt}
```

Abbreviation: `\hin`

Parameters: units of measure

Description: The `\hangingindent` markup sets the amount of space each line in a hanging paragraph is indented after the first. The parameter must be a numerical value with valid units of measure.

Example: The first and second hanging paragraph use a hanging indent of 18 points. The third paragraph uses a hanging indent of 38 points.

```
\psk{12pt}
\hangingindent{18pt}
\hangingparagraph
BASE. Can mean 'bedrock' in geological terms;
or 'gross' as a description of human behavior.
\hangingparagraph
CLEAVAGE. Refers to the tendency to split along faults;
or to the position of the female bosom in a low-cut
dress.
\hangingindent{38pt}
\hangingparagraph
DOMEHEAD. Is material pushing through a formation;
or an informal epithet for hairless academics.
\par
```

BASE. Can mean 'bedrock' in geological terms; or 'gross' as a description of human behavior.

CLEAVAGE. Refers to the tendency to split along faults; or to the position of the female bosom in a low-cut dress.

DOMEHEAD. Is material pushing through a formation; or an informal epithet for hairless academics.

Note: The hanging indent will remain in effect until changed with another `\hangingindent` markup.

hangingparagraph

```
\hangingparagraph
```

Abbreviation: `\hp`

Parameters: none

Description: The `\hangingparagraph` markup creates hanging paragraphs, which are the reverse of normal paragraphs. In a normal paragraph, the first line is indented but following lines are full measure wide; in a hanging paragraph the first line is a full measure and the runover lines are indented. Hanging paragraphs are used for lists, glossaries, and bibliographies. The `\hangingparagraph` markup is placed *before* each item in the text; a `\par` finishes the series.

Example:

```
\psk{5pt}
\hangingparagraph
BASE. Can mean 'bedrock' in geological terms;
or 'gross' as a description of human behavior.
\hangingparagraph
CLEAVAGE. Refers to the tendency to split along faults;
or to the position of the female bosom in a low-cut
dress.
\hangingparagraph
DOMEHEAD. Is material pushing through a formation;
or an informal epithet for hairless academics.
\par
```

BASE. Can mean 'bedrock' in geological terms; or 'gross' as a description of human behavior.

CLEAVAGE. Refers to the tendency to split along faults; or to the position of the female bosom in a low-cut dress.

DOMEHEAD. Is material pushing through a formation; or an informal epithet for hairless academics.

Note: The default indentation for `\hangingparagraph` is 24 points. Use the `\hangingindent` markup to change this indentation.

hbox

\hbox{*horizontal mode text*}

Abbreviation: none

Parameters: *horizontal mode text*

Description: The \hbox is a TEX markup which, among several uses, can be used to keep a word together, preventing hyphenations. For example,

```
\hbox{low-cut}
```

would prohibit hyphenation of "low-cut". It can also be used in math mode to switch to the roman font. For example,

```
$x¬{34}+\hbox{lower order terms}$
```

prints as:

$x^{34} + \text{lower order terms}$

Note: You cannot use \autoendnote, \autofootnote, or \footnote within an \hbox.

You can also specify an \hbox to take up a certain size. For example,

```
\hbox to 1in{}
```

would create a box one inch wide. Refer to the discussion of \leader for more on this option of \hbox.

For more on this markup refer to *The TEXbook*.

horizontalspace

\horizontalspace{*units of measure*}

Abbreviation: \hs

Parameters: *units of measure*

Description: The amount of blank space in a line can be varied by the \horizontalspace markup. This markup works only within the current line; no space will be carried over if too little remains at the end of the line.

Example:

```
Our barbecues are brick. Our poetry is concrete:
\bqb\nin
\horizontalspace{84pt}pillow tectonics
\hs{48pt}during sleep
\hs{18pt}pillows come together
\hs{24pt}and move apart
\hs{18pt}like continental plates
\hs{36pt}mountain ranges
\hs{18pt}rise and fall
\hs{24pt}oceans
\hs{18pt}rise and fall
\bqe
\nin Like Gypsum Lee Ooze, art mimics geology.
\par
```

Our barbecues are brick. Our poetry is concrete:

pillow tectonics during sleep pillows come together and move apart like continental plates mountain ranges rise and fall oceans rise and fall

Like Gypsum Lee Ooze, art mimics geology.

Note: \horizontalspace can be used in \settabs and \halign.

hrule

```
\hrule dimension
```

Abbreviation: none

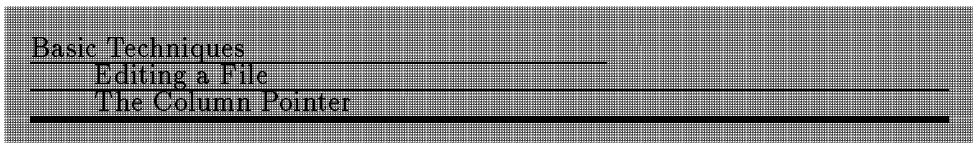
Parameters: *dimension*

Description: The `\hrule` markup draws a horizontal rule across the width of the page. It is a native TEX markup, and the usage is different in that the parameter is not surrounded with curly braces. If you do not supply a dimension, *TEXT1* will print the rule across the entire width of the text. By default, the rule drawn has a thickness (height) of .4pt.

Example: If you wanted to draw a three inch rule across the page, followed later with a rule across the entire width of the page and ending with a thicker rule across the width of the page you could specify:

```
\nin Basic Techniques
\hrule width 3in
Editing a File
\hrule
The Column Pointer
\vs{2pt}
\hrule height 2pt
```

You would get:



Note: Refer to *The TEXbook* for more on `\hrule` and how to use the "depth" parameter with the "height" and "width" parameters.

hsize

```
\hsize=dimension
```

Abbreviation: none

Parameters: *dimension*

Description: The `\hsize` markup is a native TEX markup that can be used to change the width of the text on the printed page. This markup does not use delimeters.

Example: If you were entering text in a `\vbox` and you wanted it printed in a 3 inch column instead of the default column width you could specify "`\hsize=3in`". For example,

```
Forms for reader's comments are provided at the back
of this publication. You can help us continue to improve
the quality of our documentation, and we welcome all
comments and suggestions.
\vs{\bl}
\vbox{\hsize=3in
Forms for reader's comments are provided at the back
of this publication. You can help us continue to improve
the quality of our documentation, and we welcome all
comments and suggestions.}
```

will print as:

Forms for reader's comments are provided at the back of this publication. You can help us continue to improve the quality of our documentation, and we welcome all comments and suggestions.

Forms for reader's comments are provided at the back of this publication. You can help us continue to improve the quality of our documentation, and we welcome all comments and suggestions.

Note: Refer to *The TEXbook* for more on this markup.

hyphenoff

```
\hyphenoff
```

Abbreviation: `\hof`

Parameters: none

Description: By default, *TEXT1* will do hyphenation if necessary to achieve nice line breaks. The `\hyphenoff` markup can be used to disable hyphenation. It will remain this way until a `\hyphenon` is encountered.

Example: By default, hyphenation begins this example,

```
Direct Access Storage Device (DASD) is a term for long
term file and program storage devices. A more common
term for the same thing is {\it disk}, since the
actual storage components look like platters or disks.
\par
\hyphenoff
The CP Directory entry for each user indicates what
virtual disks his machine will include. Each disk
is known by its {\it virtual address}. In general,
users will have one 191 virtual disk.
\par
\hyphenon
```

will print as:

Direct Access Storage Device (DASD) is a term for long term file and program storage devices. A more common term for the same thing is *disk*, since the actual storage components look like platters or disks.

The CP Directory entry for each user indicates what virtual disks his machine will include. Each disk is known by its *virtual address*. In general, users will have one 191 virtual disk.

Note: Compare this output to that of the `\hyphenon` markup on the next page.

hyphenon

```
\hyphenon
```

Abbreviation: `\hon`

Parameters: none

Description: By default, *TEXT1* will do hyphenation if necessary to achieve nice line breaks. The `\hyphenoff` markup can be used to disable hyphenation. It will remain this way until a `\hyphenon` is encountered.

Example: First print a paragraph without hyphenation and then turn hyphenation on.

```
\hyphenoff
Direct Access Storage Device (DASD) is a term for long
term file and program storage devices. A more common
term for the same thing is {\it disk}, since the
actual storage components look like platters or disks.
\par
\hyphenon
The CP Directory entry for each user indicates what
virtual disks his machine will include. Each disk
is known by its {\it virtual address}. In general,
users will have one 191 virtual disk.
```

will print as:

Direct Access Storage Device (DASD) is a term for long term file and program storage devices. A more common term for the same thing is *disk*, since the actual storage components look like platters or disks.

The CP Directory entry for each user indicates what virtual disks his machine will include. Each disk is known by its *virtual address*. In general, users will have one 191 virtual disk.

Note: Compare this output with the example for `\hyphenoff` on the previous page.

include

\include{*page segment name*}

Abbreviation: \incl

Parameters: page segment name

Description: The \include markup will *include* external page segment files, into a *TEXT1* document. Page segments come from graphics generating programs such as those produced by GDDM, SAS and MEGACALC. Refer to the *GDDM Page Segment Generation for the IBM 3820* User Note, U-419, for details on how to create a page segment.

The format for the \include markup is:

\include{*fn*}

Where *fn* is the filename of the file to be included into the text document. It must have a filetype of "PSEG3820". You must leave space after the page segment to prevent the image from overprinting the following text of the document.

Note: none.

indent

```
\indent
```

Abbreviation: none

Parameters: none

Description: The `\indent` markup creates an empty box of horizontal space whose width is the current value of `\paragraphindent`. This markup is useful in tabular work.

Example:

```
\tabletitle{Flea Deaths (in millions)}
\halign{\indent\rt{#}&\qquad\lft{#}\cr
Case&Blast\cr
5000 MT&500\cr
10000 MT&845--1050\cr }
\rule
\vs{\bl}
These statistics are fairly conclusive. Note,
however, that inconsistencies occurred at  ...
```

Table 2
Flea Deaths (in millions)

Case	Blast
5000 MT	500
10000 MT	845–1050

These statistics are fairly conclusive. Note, however, that inconsistencies occurred at ...

Note: Refer to *The TEXbook* for more on this markup.

```
\indexn{title text}
```

Abbreviation: `\ix`

Parameters: title text

Submarkup: `\subentry, \blindentry, \uspn, \bdpn, \itpn`

Description: The `\index` markup builds index entries which can be sorted and printed at the end of a document. The `\index` markup has the format

`\index`*n*{*entry*}

where "*n*" is the index number (1, 2, or 3), and "*entry*" is the index entry. The page number you are on when the `\index` markup is inserted will be printed with the "entry". You must use the `\printindex` markup to sort and print the index. It comes at the end of the document. Refer to the documentation of `\printindex` for details on this markup.

Example: Consider this index example:

```
The files you create and change have a filemode of A.
This means that they are all kept in a collection of
files called your A-disk. The FILELIST command
displays a list of all
\index1{A-disk}
the files on your A-disk.
```

In the document, the following would print where the index markup occurred,

> The files you create and change have a filemode of A. This means that they are all kept in a collection of files called your A-disk. The FILELIST command displays a list of all the files on your A-disk.

If this occurred on page 32, the entry in the index printed with `\printindex1` would print as illustrated on the next page.

> A-disk, 32

Note: You cannot use `\index` within a `\settabs` or `\halign`.

Lower Level or Sub entries

If you want to record a subentry to a main index entry you use the `\subentry` markup within the `\index` markup.

Note: The `\subentry` markup is only valid when used within `\index`.

Example: If you had a main entry called "reader list" and you wanted sub entries for "receiving a file" and "replacing a file" you could enter the \index markup as illustrated here:

```
\sha{Receiving a File}
To receive a file, move the cursor to the line that
describes the file you want to receive.
\index1{reader list \subentry1{receiving a file}}
Then press PF9. A notice will appear on that line
telling you that the file has been received, . . .
\sha{Replacing or Renaming a File}
What happens if the file in your reader has the same file
label as one you already have on your disk?
There are two ways to handle this.
\lib\lil1
If you want the file in your reader to replace the file
\index1{reader list \subentry1{replacing a file}}
on your disk, type the command ``receive / (replace''.
\lil1
If you want to keep the file on your disk, then rename
the file in your reader with the command ``receive / newname
\index1{reader list\subentry1{renaming a file}}
newtype'' where ``newname'' is the new file name and
``newtype'' is the new filetype.
\lie
```

This would produce the following paragraph in a document:

Receiving a File

To receive a file, move the cursor to the line that describes the file you want to receive. Then press PF9. A notice will appear on that line telling you that the file has been received, ...

Replacing or Renaming a File

What happens if the file in your reader has the same file label as one you already have on your disk? There are two ways to handle this.

1. If you want the file in your reader to replace the file on your disk, type the command "receive / (replace".
2. If you want to keep the file on your disk, then rename the file in your reader with the command "receive / newname newtype" where "newname" is the new file name and "newtype" is the new filetype.

If list level #2 printed at the top of page 33, the index entries would look like:

reader list
receiving a file, 32
renaming a file, 33
replacing a file, 32

Excluding Text from the Sort

There are occasions when you will want text to print in an indexed item, but you do not want that text to be a part of the sorting process. For example, you may want to index the title "Consumer Guides" including the quotes, but you want it sorted with the C's and not sorted with the double quote marks. Also, you probably would want to sort `\par` with the p's, and not with the backslashes. Both can be accomplished using the `\sortas`markup which can *only* be used within the `\index` markup.

Example: Using the input,

```
Please get a copy of the article ``Consumer Guides'' and
\index1{``Consumer Guides''\sortas{Consumer Guides}}
refer to the illustration on page 5.
\par
Be sure to index the paragraph command ``\\par''
\index1{\\par\sortas{par}}
somewhere in the document.
```

you would get the following two paragraphs in your document.

> Please get a copy of the article "Consumer Guide References" and refer to the illustration on page 5.
>
> Be sure to index the paragraph command "\par" somewhere in the document.

The index entries would print like:

> "Consumer Guides", 45
> contour Maps, 23
> :
> \par, 45
> Paragraphs, long, 16

Example: Prepositions in a subentry may not be part of the sort, but are to be printed in the index. For example, to get the index to look like,

> vacations
> on boats, 32
> at the Olympian, 21

you would use the `\index`, `\subentry`, and `\sortas` commands illustrated on the next page.

```
Some people spend their vacations at older
hotels like the Olympian.
\index1{vacations \subentry1{at the
Olympian\sortas{Olympian}}}
⋮
Another popular vacation is travelling the
Pacific in a boat.
\ix1{vacations\subentry1{on
      boats\sortas{boats}}}
```

Example: As another example, "10 Downing Street" is typically sorted with the T's and not prior to the 2's. This can also be accomplished using the **\sortas** markup. For example, the Prime Minister's address mentioned earlier would be entered as:

```
Taxi, please take me to 10 Downing Street.
\index1{10 Downing Street\sortas{ten Downing Street}}
```

Highlighted Page Numbers

For those applications which require some of the page numbers to be printed in bold, some in italics, and others underscored, there are three markup available to do this. They are **\bdpn**, **\itpn**, and **\uspn**. They are all used within the **\index** markup, and indicate to *TEXT1* that a page number other than the standard page number is to be used.

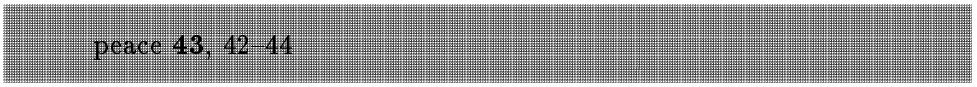
We recommend that important references be noted in bold (**\bdpn**). Fleeting references be printed with italics (**\itpn**). And primary references be indicated by being underscored (**\uspn**). Of course, you are free to use these three markup as you see fit.

The bold page number will always come prior to a standard face reference to the same page.

Example: If you had an **\bdpn** on page 43 and **\index**'s on pages 42–44 for "peace."

```
\index1{peace}              % Located on page 42
⋮
\index1{peace}              % Located on page 43
\index1{peace\bdpn}   % Located on page 43
⋮
\index1{peace}              % Located on page 44
```

the index printed with **\printindex** would look like:



Example: If you have an underscored page number and it falls in the same range as a standard face entry, the underscored entry would follow the standard face entry. For example, if you had a \uspn on page 66 and \index's on pages 66–72 for "nationalism",

```
\index1{nationalism\uspn} % On page 66
\index1{nationalism}              % On page 66
\index1{nationalism}              % On page 67
\index1{nationalism}              % On page 72
```

the index sequence would print like:

Quick Programming Language 66–72, 66

Example: If you have an index reference in italics and it falls in the same range as a standard face entry, the italics entry will not be printed. For example, if you had an italics entry using \itpn on pages 45 and 56, and you had standard face entries on pages 54–60 for "In Search of Excellence", the printed index would look like:

In Search of Excellence *45*, 54–60

Cross References

Often it is desirable to have a cross reference to another index entry. You can do this using the \blindentry markup within the \index markup. You cannot use both \blindentry and \subentry within the same \index markup. The \blindentry markup has the format,

\blindentry{*blind entry*}

where "*blind entry*" is the text you want associated with that index entry.

Example: For example, to get an index entry to print like

Flow of control, see Control Structures

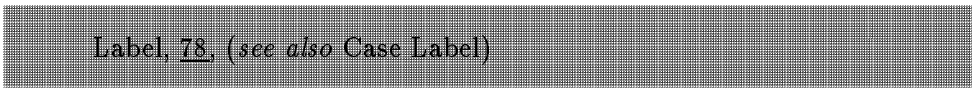
you would enter

```
\index1{Flow of control\blindentry{see Control
Structures}}
```

Example: It is also possible to have a blind entry printed with an index entry, and still have it indexed with page numbers. For example, if you were to enter

```
\index1{Label\uspn}
\index1{Label\blindentry{({\it see also} Case Label)}}
```

on page 78 you would get an index entry printed as:



Note: If you have page numbers and a blind entry, then the blind entry will follow the last page number as illustrated here.

Multiple Indexes

You can have multiple indexes by changing the "1" in `\index1` to "2" or "3". For example,

```
\index1{entry in first index}
\index2{entry in second index}
\index3{entry in third index}
```

will generate one entry in each of three indexes. See `\printindex` for instructions on how to print out each of the three indexes.

Note: If you have text you want included in the index title in the document, but not to be printed in the table of contents, you can exclude it with the `\notintoc` markup. Refer to the `\figure` markup for an example on how to use `\notintoc`.

Note: The `\toclinebreak` May be used to have a line in the Table of Contents break differently than the way it is printed in the document. Refer to the `\figure` markup for an example on how to use `\toclinebreak`.

indexformat

```
\indexformat n{\respectcase{no}
    \style{indent}
    \leadering{no}
    \everyletterbreak{\vs{1\bl}}
    \indentsubentry1{1em}
    \indentsubentry2{2em}
    \everyhang{1.5em}
    \everyindex{\tenpt}
```

Abbreviation: `\ixf`

Parameters: submarkup

Submarkup: `\respectcase, \style, \leadering, \everyhang, \everyletterbreak, \indentsubentry, \everyindex`

Description: The defaults listed above for each markup applies initially to each of the three indexes. One or more indexes' defaults can all be changed by modifying the `\indexformat` markup. The complete description of the `\indexformat` markup and its related submarkup is:

`\indexformat`*n*{*format*}

where *n* is the index (1, 2, or 3) and *format* is the submarkup.

`\respectcase` ignores the case of an index entry. This markup can only be used within the `\indexformat` markup. If you wanted case respected and have the lower case letters sorted before the upper case entries (i.e., "boat" sorted before "Bed") then enter

`\respectcase{yes}`

Note: Respecting case applies to **all** letters. If `\respectcase{yes}` has been specified, then "boat" and "cat" will **both** be sorted before "Bed". The default value is `\respectcase{no}` for each of the 3 indexes.

`\style` regulates the general index format. `\style{indent}`, the default, indents each index entry. This style is illustrated on the next page.

Constantinople, 12, *See also* Istanbul
  alien rule of, 20
  Arab invasion of, 19, 31
  Crusades and, 22, 57
  Ottoman conquest of, 29–31

There are two other styles to choose from: "paragraph" and "dash". The style "paragraph" is a run-on hanging paragraph. You get it by specifying:

```
\indexformat1{\style{paragraph}}
```

With this style, the above index would look like:

Constantinople, 12, alien rule of, 20, Arab invasion of, 19, 31, Crusades and, 22, 57, Ottoman conquest of, 29–31, *See also* Istanbul

Note that with this style, the blind entry from the `\blindentry` submarkup comes after the subentry, instead of after the main entry as was done for the "indent" style.

The third style is "dash", an em-dash style, is specified with:

```
\indexformat1{\style{dash}}
```

It is very similar to the default "indent" style, except subentries are prefaced with an em dash following the initial indent of space.

Constantinople, 12, *See also* Istanbul
—alien rule of, 20
—Arab invasion of, 19, 31
—Crusades and, 22, 57
—Ottoman conquest of, 29–31

`\leadering` turns on/off dot leadering. The default is "off". You can change this default only within the `\indexformat` markup. To have dot leadering, enter:

```
\ixf1{\leadering{yes}}
```

If you are using `\style{indent}` and `\leadering{yes}` you get:

Constantinople, *See also* Istanbul 12
alien rule of 20
Arab invasion of 19, 31
Crusades and 22, 57
Ottoman conquest of 29–31

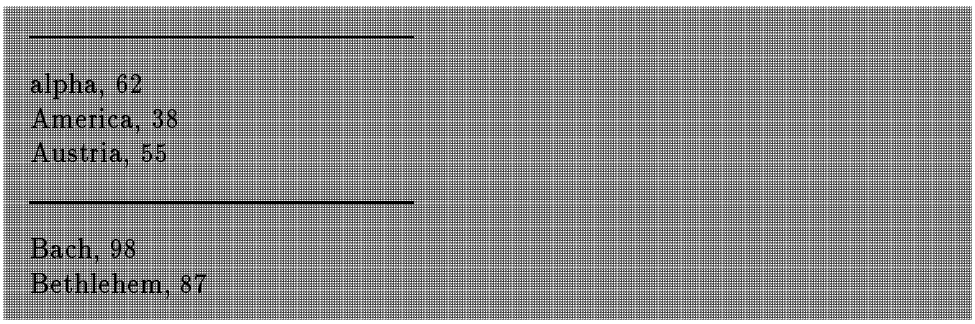
Note: Do not use dot leadering with `\style{paragraph}`.

\everyletterbreak is what will be printed between each letter break, (i.e. between "A" and "B"). By default, one blank line is skipped when starting a new letter (at each letter break). The \everyletterbreak markup can only appear within the \indexformat markup.

Example: You could modify the default to place a rule and skip between breaks:

```
\ixf1{\everyletterbreak{\vs{\bl}
                        \hrule width 2in
                        \vs{\bl}}}
```

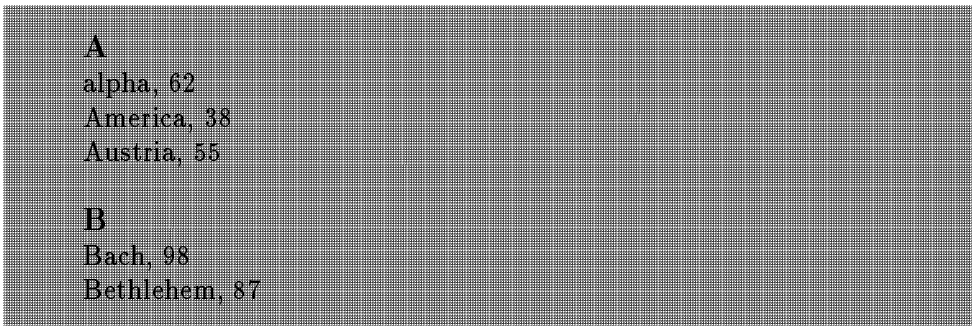
This would look something like:



Example: Something else you can do with indexes is to make use of the "\nextletter" submarkup, which gives you the next uppercase character about to be listed in the sorted index list. For example, between "apple" and "boat" the value of "\nextletter" would be "B". One application would be to print the "\nextletter" in a large type. This could be accomplished by changing the default for "\everyletterbreak" to:

```
\indexformat{\everyletterbreak{\vs{\bl}
     \noindent{\twelvepoint\bd\nextletter}\par}}
```

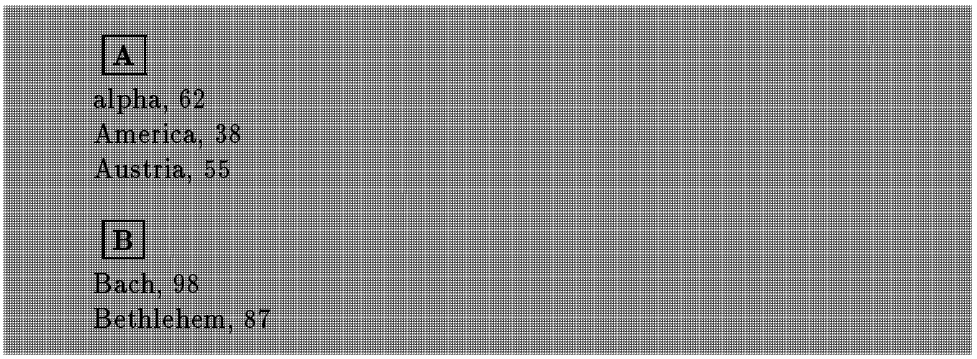
The resulting index would look like:



Example: Another variation of the above would be to draw a box around the next letter. You could do this by adding \drawbox to \everyletterbreak:

```
\ixf1{\everyletterbreak{\vs{\bl}
        \drawbox{\bd\nextletter}\par}}
```

and you will get an index that prints as illustrated on the next page.



Note: The "\nextletter" is always an uppercase letter.

Only letters, not numbers or special characters such as the backslash (\) are used as **\nextletter**.

\indentsubentry There are two levels of subentries available. The amount of distance they are indented when you are using the "indent" or "dash" styles is controlled by the **\indentsubentry** submarkup. If you are using the "paragraph" style for the index, the **\indentsubentry** is ignored. The definition of this markup is,

```
\ixf1{\indentsubentry n{amt}}
```

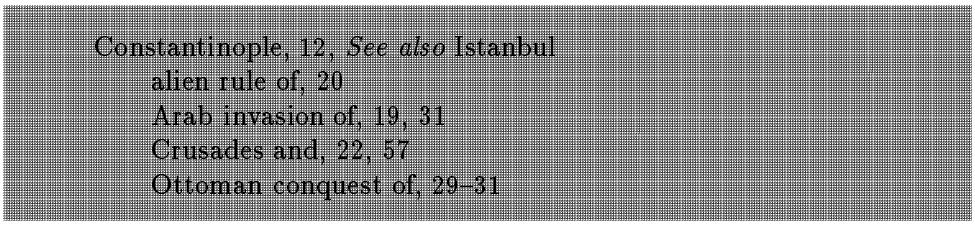
where *n* is the subentry level, 1 or 2, and *amt* is the amount to be indented. The default indent for these two subentry levels is:

```
\ixf1{\indentsubentry1{1em}
      \indentsubentry2{2em}}
```

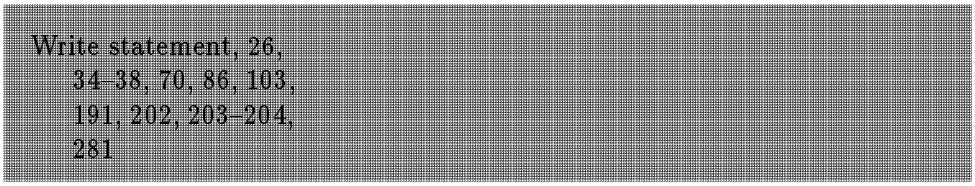
If, for example, you were using the "indented" style and wanted each subentry level indented two em's from the previous level, you would enter,

```
\ixf1{\indentsubentry1{2em}
      \indentsubentry2{4em}}
```

which would print the index illustrated on the next page.



`\everyhang` controls the hanging indent for the primary index level and each of the two subentry levels. If you had an index entry with many page numbers,

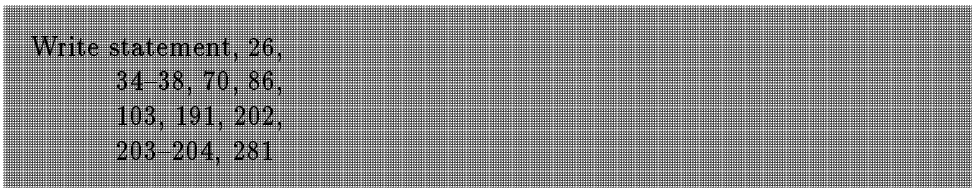


The hangingindent would be 1.5em by default.

Example: If you wanted to increase that value to 3em, you would enter,

```
\ixf1{\everyhang{3em}}
```

and you would get:



`\everyindex` is a list of one or more commands to be executed before printing the sorted index. By default, `\tenpt` is the value of `\everyindex`.

input

\input *filename*

Abbreviation: none

Parameters: *filename*

Description: The \input markup indicates a file to be included in the source. The parameter, a CMS file name with a filetype of TEX, follows \input and a separator space; no curly braces are used.

Usually the \input markup is used in a "driver" file, which calls parts, chapters, etc. to create (or drive) the entire document, such as a thesis. At the top of such a driver file is where you would put modifications to default format blocks, additional font specifications, and your own markup definitions.

Example: In this example, the file is to have a filename of "DRIVER". It calls all of the various parts of a 2 chapter document. When formatting, specify DRIVER as the filename.

```
\chapterformat{\numberingstyle{1}
  \titleformat{\newpage
    \cl{\bd \chaptertitle}
    \vs{1\bl}}
  \incontents{yes}}
\selectfontset{cm9}{ninepoint}{default}
\input preface
\input abstract
\input chapter1
\input chapter2
\input bibliog
\input append-a
\input append-b
\input index
```

Note: If you want to input a file with a filetype other than TEX, you can do so by adding the filetype after the filename and placing a period between the two. For example, to input a filename of DATA and a filetype of LISTING, enter

```
\input data.listing
```

Refer to *The TEXbook* for more on this markup.

interlineskip

\interlineskip{*unit of measure*}

Abbreviation: \isk

Parameters: *unit of measure*

Description: The spacing between lines (from one baseline to the next, not "single" or "double spacing") can be changed using the \interlineskip markup. *TEX T1* automatically sets an interline skip usually 2 points greater than the font size when you use \selectfontset.[4] The default font size is 12 points and the default interline skip is 14 points. This may be particularly helpful when using some of the smaller fonts. In general, the shorter the line or smaller the type, less interline skip is needed.

Example:

```
\interlineskip{11pt}
The definition of Sociogeology is the study of the
geological basis of all social behavior.
It explains human behavior by empirical description
of the attributes of mineral composition.
\par
\interlineskip{13pt}
It is most successful when it provides detailed
description of particulate phenomena and first-order
correlations with features...
```

The definition of Sociogeology is the study of the geological basis of all social behavior. It explains human behavior by empirical description of the attributes of mineral composition.

It is most successful when it provides detailed description of particulate phenomena and first-order correlations with features...

Note: \singlespace and \doublespace are dependent on the current setting of \interlineskip. For example, the \doublespace leading when \interlineskip{12pt} is 24pt.

4. This extra space is referred to as leading, pronounced lĕding (from the days when lead was used).

```
\italic
```

Abbreviation: `\it`

Parameters: none

Description: The `\italic` markup sets an Italianate typeface, used for showing emphasis, conveying a message, attracting attention, or even creating a mood. Italic type is also good for contrast, and it is also hard to read over large areas. For printers that do not have italics, underscoring will be used instead.

Example:

```
earlier;
\italic Japan \roman in Southeast Asia (previously in
China, now in the Philippines,
```

earlier; *Japan* in Southeast Asia (previously in China, now in the Philippines,

Example:

```
members communicate important things---{\it
hunger, alarm, rank, and sexual desire}---among
themselves by means of nonsyntactical signals.
```

members communicate important things—*hunger, alarm, rank, and sexual desire*—among themselves by means of nonsyntactical signals.

item

\item{*identifier*}

Abbreviation: none

Parameters: *identifier*

Description: The \item markup creates unique indented items. The parameters for this markup is an identifier, such as an Arabic number or letter, supplied by you. This offers more flexibility.

Example:

```
militarily for thousands of years.
Reasons for this continued behavior include:
\item{*} the rapaciousness of society
(as shown by the accumulation of wealth and the
indifference to the poor and nonaggressive)
\item{**} the acceptance of war
\item{***} the economic advantages of large-scale
operations (as shown in industrial applications)
\par
\noindent
The cultures of industrial nations are based on
unethical ...
```

militarily for thousands of years. Reasons for this continued behavior include:

* the rapaciousness of society (as shown by the accumulation of wealth and the indifference to the poor and nonaggressive)

** the acceptance of war

*** the economic advantages of large-scale operations (as shown in industrial applications)

The cultures of industrial nations are based on unethical ...

Note: The indentation for \item is determined by the current setting of paragraph indent. Each \item forms a hanging paragraph after the identifier. There is no extra space between items.

Refer to *The TEXbook* for more on this markup.

justify

```
\justify
```

Abbreviation: `\ju`

Parameters: none

Description: The `\justify` markup makes each line exactly the same length and aligns both left and right margins vertically. *TEXT1* automatically sets pages with full justification by default. The `\justify` markup is used to reset justification after using `\rightragged` or `\leftragged`.

Example:

```
\rightragged
Setting: Continuation of the narrative of Nehemiah
(c. 420 {\caps b.c.}).
Supplies information on an important epoch in ancient
Jewish history---the return to Judea after seventy
years of captivity in Babylon.
\justify
Consists of two parts separated by several years:
Chapters 1 to 6, the return of the first caravan under
leadership of Zerubbabel; chapters 7 to 10, an
expedition, sixty years later, conducted by Ezra.
```

Setting: Continuation of the narrative of Nehemiah (c. 420 B.C.). Supplies information on an important epoch in ancient Jewish history—the return to Judea after seventy years of captivity in Babylon.

Consists of two parts separated by several years: Chapters 1 to 6, the return of the first caravan under leadership of Zerubbabel; chapters 7 to 10, an expedition, sixty years later, conducted by Ezra.

Note: When you specify `\justify`, text will be justified until *TEXT1* sees a `\rightragged` or `\leftragged`.

label

```
\label{text}
```

Abbreviation: `\la`

Parameters: *text*

Description: The `\label` markup creates labelled paragraphs. Labels will appear to the left of the paragraph described, in a 72 point (one inch) zone. A label is similar to a hanging paragraph, except that the first line is aligned with the indented portion and the label is separated by a gutter of 1 em space. The skip between labels is one blank line. To begin a new paragraph at the same indentation as the previous label, enter "`\label{}`" with no entry in the parameter field of the `\label`.

Example:

```
origin of rock provides clues.
\label{Sedimentary} rock is recemented from
particles of older rock that has been broken down
by physical and chemical weathering.
\label{Metamorphic}
rock is igneous or sedimentary that has been
altered by temperature and pressure.
\la{}
Human cells act in a manner like sedimentary rock.
```

origin of rock provides clues.

Sedimentary rock is recemented from particles of older rock that has been broken down by physical and chemical weathering.

Metamorphic rock is igneous or sedimentary that has been altered by temperature and pressure.

Human cells act in a manner like sedimentary rock.

Note: The label indent and the gutter width can be modified with the `\labelformat` markup

```
\labelformat{\skipbefore{1\bl}
                    \labelwidth{72pt}
                    \gutter{1em}
                    \everylabel{\rm}
                    }
```

Abbreviation: `\laf`

Parameters: submarkup

Submarkup: `\skipbefore`, `\labelwidth`, `\gutter`, `\everylabel`

Description: The `\labelformat` markup controls the appearance of labelled paragraphs.

`\skipbefore` indicates how much space is to be skipped *before* printing a block. This amount is in addition to any paragraph skips.

`\labelwidth` sets the amount of space to contain the label to the left of the paragraph. The shaded portion illustrated here is the "label width" area:

```
SCALE, nmin,    nmin and nmax are integers between -255 and 510 (-511
nmax            and 1022 for halfword data.) Since pixel differences can
                range between -255 and +255 (-511 and ...
```

The default label width is 72 points (one inch). To change to a label width of $\frac{1}{2}$ inch you would enter,

```
\labelformat{\labelwidth{.5in}}
```

`\gutter` keeps a small amount of space between the label and the paragraph. The shaded portion illustrated on the next page is the "label gutter" area.

```
SCALE, nmin,    nmin and nmax are integers between -255 and 510 (-511
nmax            and 1022 for halfword data.) Since pixel differences can
                range between -255 and +255 (-511 and ...
```

The default amount is 1 em space. To change to a label gutter of 5 points you would enter,

```
\labelformat{\gutter{5pt}}
```

labelformat

\everylabel determines the type face and size of the label itself. The default is roman face and right ragged.

Example: The sample markup reduces the skipbefore amount, increases the labelwidth (to suit a larger format), and changes the font for labels to 9 point bold. Note the use of displayed math mode.

```
\selectfontset{cm9}{ninepoint}{default}
\labelformat{\skipbefore{6pt}
             \labelwidth{108pt}
             \gutter{1em}
             \everylabel{\ninepoint\bd}}
\label{HALF}
specifies that both input datasets are halfword
(maximum 511 DN) (default is byte data).
\la{ADD} specifies that the sum of the two input
datasets is to be computed (default is the
computation of the difference image).
\la{SCALE, nmin, nmax}
nmin and nmax are integers between -255 and 510
(-511 and 1022 for halfword data.) Since  ...
\la{}
If N(I,J) is less than nmin, the OUTPUT=0.\lbr
If N(I,J) is greater than nmax, the OUTPUT=K.\lbr
If N(I,J) is between or equal to nmin and nmax then
$$OUTPUT = K*{N(I,J)-nmin\over nmax-nmin}$$
where N(I,J) = IN1(I,J) - IN2(I,J) or if ``ADD'' has
been specified, N(I,J) = IN1(I,J) + IN2(I,J)
and K = 255 (511 for halfword data).
\la{TRANS\lbr sl1, ss1, sl2, ss2}sl1 and ss1 are
line and sample
coordinates for a point in IN1, and sl2 and ss2 are the
corresponding coordinates for the point in IN2. If HALF
has been specified, ss1 and ss2 refer to {\it bytes}
(not sample) in IN1 and In2, respectively.
```

HALF	specifies that both input datasets are halfword (maximum 511 DN) (default is byte data).
ADD	specifies that the sum of the two input datasets is to be computed (default is the computation of the difference image).
SCALE, nmin, nmax	nmin and nmax are integers between -255 and 510 (-511 and 1022 for halfword data.) Since .... If N(I,J) is less than nmin, the OUTPUT=0. If N(I,J) is greater than nmax, the OUTPUT=K. If N(I,J) is between or equal to nmin and nmax then $$OUTPUT = K * \frac{N(I,J) - nmin}{nmax - nmin}$$ where N(I,J) = IN1(I,J) - IN2(I,J) or if "ADD" has been specified, N(I,J) = IN1(I,J) + IN2(I,J) and K = 255 (511 for halfword data).
TRANS sl1, ss1, sl2, ss2	sl1 and ss1 are line and sample coordinates for a point in IN1, and sl2 and ss2 are the corresponding coordinates for the point in IN2. If HALF has been specified, ss1 and ss2 refer to *bytes* (not sample) in IN1 and In2, respectively.

Note: none.

leader

```
\leader
```

Abbreviation: none

Parameters: none

Description: The `\leader` markup is most often used in the `\tableofcontentsformat` in conjunction with a page number. It produces dot leadering. You can also use `\leader` in an `\halign`.

Example: This example using leaders also illustrates the use of `\indent` in `\halign`.

```
The average annual costs of owning buildings in terms of
{\it taxes, insurance, maintenance,} and
{\it depreciation} are:
\halign{\indent\indent\hbox to 13pc {#\leader}&
        \rt{#}\ \%\cr
Taxes&1.00\cr
Insurance&.75\cr
Maintenance repairs&2.00\cr
Depreciation&4.00\cr
Miscellaneous&.25\cr
\indent\bd Total&8.00\cr}
```

Will print:

The average annual costs of owning buildings in terms of *taxes, insurance, maintenance,* and *depreciation* are:

Taxes	1.00 %
Insurance	.75 %
Maintenance repairs	2.00 %
Depreciation	4.00 %
Miscellaneous	.25 %
Total	8.00 %

Note: Notice in the last line the the ampersand (&) acted as a font delimiter for the `\bd` which printed "**Total**".

leftindent

\leftindent{*unit of measure*}

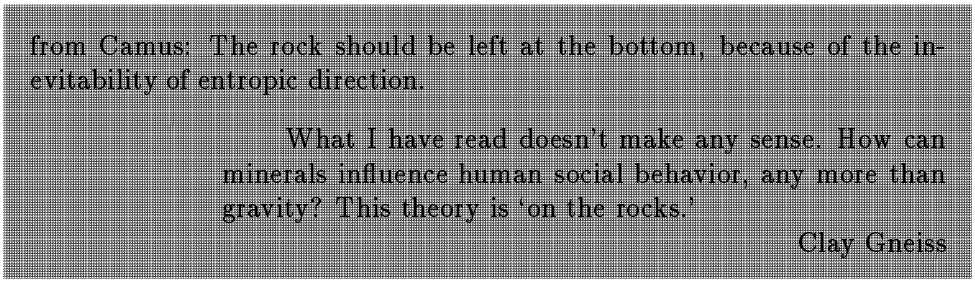
Abbreviation: \lin

Parameters: *unit of measure*

Description: The \leftindent markup indents text from the left margin. The value may be relative, e.g., {+.5in}, which adds (or subtracts) the amount from the current left margin or current indent (if one is in effect). The default for left indent is zero. The indentation remains until another \leftindent overrides it. This markup causes a break in text.

Example:

```
from Camus: The rock should be left at the bottom,
because of the inevitability of entropic direction.
\vs{9pt}
\leftindent{+1in}
What I have read doesn't make any sense. How can
minerals influence human social behavior, any more
than gravity? This theory is 'on the rocks.'
\par
\leftindent{-1in}
\rightline{Clay Gneiss}
```



Note: You can also use grouping to limit the effects of the \leftindent. If you do, be sure that the last paragraph to be indented is followed by a \par. The above illustration could also have been accomplished with grouping as illustrated on the next page.

leftindent

```
from Camus: The rock should be left at the bottom,
because of the inevitability of entropic direction.
\vs{9pt}
{\leftindent{+1in}
What I have read doesn't make any sense. How can
minerals influence human social behavior, any more
than gravity? This theory is `on the rocks.'
\par
}
\rightline{Clay Gneiss}
```

from Camus: The rock should be left at the bottom, because of the inevitability of entropic direction.

What I have read doesn't make any sense. How can minerals influence human social behavior, any more than gravity? This theory is 'on the rocks.'

Clay Gneiss

```
\leftragged
```

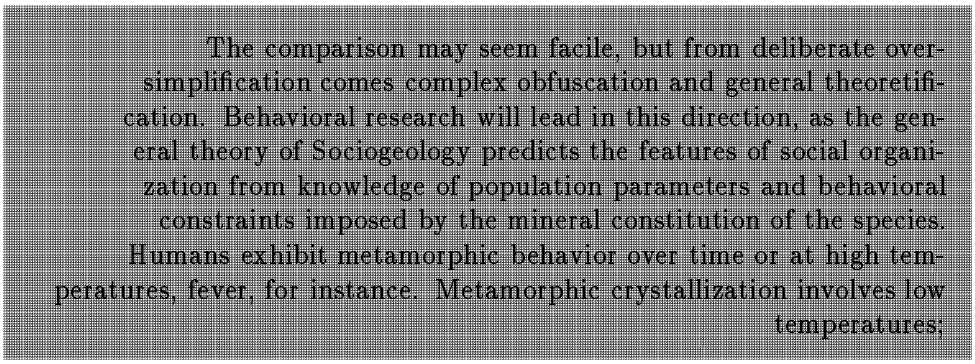
Abbreviation: `\lr`

Parameters: none

Description: The `\leftragged` markup leaves the left margin uneven after formatting. This markup is used only with unusual text, for instance, introductory quotes for chapters.

Example:

```
\leftragged
The comparison may seem facile, but from deliberate
oversimplification comes complex obfuscation and general
theoretification.
Behavioral research will lead in this direction, as the
general theory of Sociogeology predicts the features of
social organization from knowledge of population
parameters and behavioral constraints imposed by
the mineral constitution of the species.
\par
Humans exhibit metamorphic behavior over time or at high
temperatures, fever, for instance.
Metamorphic crystallization involves low temperatures;
\justify
```



Note: Use `\justify` to turn the justification back on again.

line

```
\line
```

Abbreviation: none

Parameters: none

Description: The `\line` markup is used most often in the `\runningheadformat` and `\runningfootformat` running title markup.

Example: If you wanted to left justify "Chapter 1" and right justify "page 2" (where "2" is actually the page number, `\pagenumber`), enter:

```
\rhf{\bothpages{
   \line{\lft{Chapter 1}\rt{page \pagenumber}}}}
```

Chapter 1 page 122

Note: A construct such as,

```
\rhf{\bothpages{
        \line{\lft{page \pn}\ctr{\today}
            \rt{PNW Waterfalls}}}}
```

will **not** print the date centered on the page:

page 122 June 28, 1996 PNW Waterfalls

To accomplish this, you should print the left and right justified text with `\line`, then space backwards one line (`\verticalspace{-\bl}`), then center the date:

```
\rhf{\bothpages{\line{\lft{page \pn}
              \rt{PNW Waterfalls}}}
          \vs{-\bl}
          \line{\ctr{\today}}
```

page 122 June 28, 1996 PNW Waterfalls

Refer to *The TEXbook* for more on this markup.

```
\linebreak
```

Abbreviation: `\lbr`

Parameters: none

Description: The `\linebreak` markup causes a line to finish without interrupting a paragraph. Occasionally it is necessary to break a line in a precise place within a paragraph, as opposed to letting *TEXT1* decide where to break the line. This markup does not end a paragraph, it simply starts the following text of the paragraph on a new line instead of concatenating it to the end of the previous line.

Example:

```
This article is an outline of the codification of
Sociogeology into a branch of evolutionary geology.
The subject has an aggregate of self-sufficient
concepts that with such disciplines as cosmetology
and astrology. Figure 1 shows a
schema borrowed from my previous book,\linebreak
{\it The Intact Societies: Vestals and Volcanoes},\lbr
which suggests how the amalgam can be achieved.
Geologists have always been intrigued by comparisons
between societies of rocks and those of vertebrates,
between two kingdoms.
```

This article is an outline of the codification of Sociogeology into a branch of evolutionary geology. The subject has an aggregate of self-sufficient concepts that with such disciplines as cosmetology and astrology. Figure 1 shows a schema borrowed from my previous book,
The Intact Societies: Vestals and Volcanoes,
which suggests how the amalgam can be achieved. Geologists have always been intrigued by comparisons between societies of rocks and those of vertebrates, between two kingdoms.

Note: See `\break` for the difference between these two markup.

lineinterval

```
\lineinterval{5}
```

Abbreviation: `\lint`

Parameters: *interval*

Description: When `\printingnumbers{yes}` and `\countinglines{yes}` have both been specified, this markup is used to specify when a line number is to be printed for line numbering in the margin of a document. It need only be specified once at the top of a document. The default is every fifth line counted will be numbered.

Example: If you wanted every tenth line counted to be numbered, you would specify:

```
\lineinterval{10}
```

Note: Line numbering is only available on the phototypesetter. This markup is ignored for all other printers.

You may specify an interval from 0-255. Practically speaking, you should specify an interval from 1-150.

linenumberfont

```
\linenumberfont{etsc 8}
```

Abbreviation: `\lnf`

Parameters: *font*

Description: When `\printingnumbers{yes}` and `\countinglines{yes}` have both been specified, this markup is used to specify what font the line number is to be printed in the margin of a document. It need only be specified once at the top of a document. The default is font "`etsc 8`", which is English Times Small Caps at 8 point.

Example: If you wanted to use Plantin Roman, you would specify:

```
\linenumberfont{plr 10}
```

Note: Line numbering is only available on the phototypesetter. This markup is ignored for all other printers.

See the Font Catalog to determine what fonts to use.

listbegin

```
\listbegin
```

Abbreviation: `\lib`

Parameters: none

Description: The `\listbegin` markup starts a series of items set off with numbers, letters, or bullets (raised dots). The `\listbegin` markup ends the previous paragraph.

Example:

```
Some nations have historically dominated others.
\par
\listbegin
\bul United States in Latin America (and the Pacific)
\bul Europe in Africa (especially England, France,
Germany, the Netherlands---perhaps Portugal and Spain)
\bul Japan in Southeast Asia (earlier in China, now
in the Philippines, Borneo, and others)
\bul Russia in Eastern Europe (and attempts in South
America and the Caribbean)
\bul China in Tibet (and most lately in Southeast
Asia---Campuchea, and Vietnam)
\listend
\noindent
Countries have tried to dominate each other  ...
```

Some nations have historically dominated others.

- United States in Latin America (and the Pacific)
- Europe in Africa (especially England, France, Germany, the Netherlands—perhaps Portugal and Spain)
- Japan in Southeast Asia (earlier in China, now in the Philippines, Borneo, and others)
- Russia in Eastern Europe (and attempts in South America and the Caribbean)
- China in Tibet (and most lately in Southeast Asia—Campuchea, and Vietnam)

Countries have tried to dominate each other ...

Note: none.

listend

```
\listend
```

Abbreviation: `\lie`

Parameters: none

Description: The `\listend` markup finishes a series of items set off with numbers, letters, or bullets (raised dots). The `\listend` returns text to paragraph mode.

Example:

```
Reasons for this continued behavior include:
\par
\listbegin
\lil1 armaments (in the form of tanks, bombers, weapons
and troop carriers, and personnel vehicles)
\lil1 military forces (the troops and support personnel
necessary to impose policy by force)
\listend
\noindent
The cultures of industrial nations are based on ...
```

Reasons for this continued behavior include:

1. armaments (in the form of tanks, bombers, weapons and troop carriers, and personnel vehicles)
2. military forces (the troops and support personnel necessary to impose policy by force)

The cultures of industrial nations are based on ...

Note: none.

listformat

```
\listformat{\skipbefore{0\bl}
    \liststyle{1.,a.,i.,1),a),i),(1)}
    \everylistlevel1{\rm\lin{36pt}\gutter{1em}}
    \everylistlevel2{\rm\lin{58pt}\gutter{1em}}
    \everylistlevel3{\rm\lin{79pt}\gutter{1em}}
    \everylistlevel4{\rm\lin{101pt}\gutter{1em}}
    \everylistlevel5{\rm\lin{122pt}\gutter{1em}}
    \everylistlevel6{\rm\lin{144pt}\gutter{1em}}
    \everylistlevel7{\rm\lin{166pt}\gutter{1em}}
    \everybullet{\rm\lin{+36pt}\gutter{1em}}
    \skipafter{0\bl}}
```

Abbreviation: `\lif`

Parameters: submarkup

Submarkup: `\skipbefore`, `\everylistlevel`*n*, `\everybullet`, `\skipafter`, `\liststyle`

Description: The `\listformat` markup permits changes to the *TEXT1* ordered list style, list indentation, or other formatting of an outline list.

`\skipbefore` indicates how much space is to be skipped *before* printing a list. This amount is in addition to any paragraph skips.

`\liststyle` sets the order of identifiers for the seven levels of a list. Up to seven list styles may be entered in the `\liststyle` markup, each separated by commas. The complete collection of possible list level styles is:

"1.", "a.", "A.", "i.", "I.", "1)", "a)", "A)", "i)", "I)", "(1)", "(a)", "(A)", "(i)", "(I)", "1]", "a]", "A]", "i]", "I]", "[1]", "[a]", "[A]", "[i]", "[I]"

Example: Note that every listlevel does not have to be changed or entered.

```
\listformat{\skipbefore{0pt}
            \liststyle{1.,a),(1)}}
```

If your terminal does not have square brackets, you can use the `\leftsquarebracket` and `\rightsquarebracket` markup within the `\liststyle` markup. For example:

```
\liststyle{\lsb1.\rsb, a.}
```

`\everylistlevel`*n*`{`*Nested Markup*`}` The "*n*" indicates the list level number, from 1 to 7. Each of the seven list levels has its own `\everylistlevel` markup. The default indentation increases for each level down. You may use *Nested Markup* such as font changes, `\leftindent`, `\rightindent`, and `\gutter`.

• `\leftindent` is the distance from the left margin to the start of the text of the item. The left indent is the shaded portion illustrated below:

a. The "computer on a chip" has made it possible to extend automation to the office place.

• `\gutter` is the distance between the list level indicator and the text of the item. The gutter is the shaded portion illustrated below:

a. The "computer on a chip" has made it possible to extend automation to the office place.

`\everybullet{`*Nested Markup*`}` Bullets can be used by themselves in a list or after any level. If you wanted to change this default to have a right ragged bullet with 36-point left and right indents, you would specify:

```
\listformat{\skipbefore{0pt}
    \everybullet{\rightragged\lin{36pt}\rin{36pt}}
    \skipafter{0pt}}
```

`\skipafter` indicates how much space is to be skipped *after* printing a list. This amount is in addition to any paragraph skips.

Example: Assuming you wanted the text to be right justified and double spaced in a 10 point Computer Modern font and the list levels to be right ragged and single spaced in a 9 point Computer Modern font, the `\listformat` could be entered as illustrated on the next page.

listformat

```
\sfs{cm9}{ninept}{default}
\listformat{\skipbefore{0pt}
    \liststyle{1.,a.,i.,1),a),i),(1)}
    \everylistlevel1{\rr\ninept\pin{.5in}\lin{24pt}}
    \everylistlevel2{\rr\ninept\pin{.5in}\lin{.8in}}
    \everylistlevel3{\rr\ninept\pin{.5in}\lin{1.1in}}
    \everylistlevel4{\rr\ninept\pin{.5in}\lin{1.4in}}
    \everylistlevel5{\rr\ninept\pin{.5in}\lin{1.7in}}
    \everylistlevel6{\rr\ninept\pin{.5in}\lin{2.0in}}
    \everylistlevel7{\rr\ninept\pin{.5in}\lin{2.3in}}
    \skipafter{0pt}}
⋮
... bridge specifications:
\lib\lil1 Falsework under all spans shall be completely
released before forms are constructed and concrete is
placed in rail bases and traffic and pedestrian barriers.
\lil1 In order to determine the condition of column concrete,
forms shall always be removed from columns before releasing
supports from beneath beams and girders.
\lie
```

... bridge specifications:

1. Falsework under all spans shall be completely released before forms are constructed and concrete is placed in rail bases and traffic and pedestrian barriers.
2. In order to determine the condition of column concrete, forms shall always be removed from columns before releasing supports from beneath beams and girders.

Note: none.

```
\listlevel n
```

Abbreviation: `\lil`*n*

Parameters: *n*, 1 to 7

Description: *TEXT1* provides seven levels of list enumeration. The levels in a list are each designated with a `\listlevel` markup; each level is differentiated with a list level number *n*, 1 to 7. To specify an outline list, start with the `\listbegin` markup followed by `\listlevel`, and ending with a `\listend`. Each `\listlevel` will indent an absolute amount from the left margin. The default indentation for level 1 is 36 points ($\frac{1}{2}$ inch); level 2 is 58 points; and each level increases.

Example:

```
\lib
\lil1 Humans vs. rocks.
\lil2 Rocks are food source for humans.
\lil3 Igneous
\lil3 Metamorphic
\lil2 Humans are food source for rocks.
\lil1 Rocks vs. humans.
\lie
\nin Only more research can dig up facts for solving ...
```

1. Humans vs. rocks.
    a. Rocks are food source for humans.
        i. Igneous
        ii. Metamorphic
    b. Humans are food source for rocks.
2. Rocks vs. humans.

Only more research can dig up facts for solving ...

Note: Each `\listlevel` **must** have a beginning `\listbegin` and an ending `\listend`.

listresume

```
\listresume
```

Abbreviation: `\lir`

Parameters: none

Description: `\listresume` is used to end a lower listlevel and return to the next higher listlevel without starting a new point.

Example:

```
\lib
\lil1 All fixed time controllers shall be equipped with
indicating switches and wiring to provide local control
of the following functions:
\lil2 Transfer from automatic to manual operation,
\lil2 Transfer from normal operation to flashing,
\listresume
Combined master and intersection controllers shall have
indicating switches for functions (b) and (c), above,
for interconnected system.
\par
Combined master and intersection controllers shall also
have provisions for time switch control.
\lil1 All fixed-time controllers shall be  ...
\listend
```

1. All fixed time controllers shall be equipped with indicating switches and wiring to provide local control of the following functions:
   a. Transfer from automatic to manual operation,
   b. Transfer from normal operation to flashing,

   Combined master and intersection controllers shall have indicating switches for functions (b) and (c), above, for interconnected system.

   Combined master and intersection controllers shall also have provisions for time switch control.
2. All fixed-time controllers shall be ...

Note: none.

```
\marginnote{text}
```

Abbreviation: \mn

Parameters: note text

Description: Margin notes can be added to either the left or right side of a page with the \marginnote markup. As the name indicates, margin notes are outside the defined margin. They are produced, by default, right ragged in a 10 point Computer Modern font in the left margin with a width of 60 points and a gutter of 12 points.

Example:

```
... a General Systems Theory of geological change.
\marginnote{IV.7.4}
No theory, however, has unified diverse sciences of  ...
```

IV.7.4

... a General Systems Theory of geological change. No theory, however, has unified diverse sciences of ...

Note: Refer to the description of the \marginnoteformat markup to find out how to change the \marginnote defaults.

marginnoteformat

```
\marginnoteformat{\position{left}
                  \notewidth{54pt}}
                  \notegutter{6pt}
                  \everymarginnote{\tenpt\rr}}
```

Abbreviation: `\mnf`

Parameters: submarkup

Submarkup: `\position`, `\notewidth`, `\notegutter`, `\everymarginnote`

Description: The defaults for the `\marginnote` markup can be modified with `\marginnoteformat`.

`\position` by default places the margin note in the margin. You can have it placed in the right margin by specifying:

```
\marginnoteformat{right}
```

`\notewidth` is the width of the area in the margin used for printing the margin note. The shaded area illustrated below is the note width:

Well, there *will* be lots of exercises eventually.

This chapter explains the fundamental steps in preparing a file containing ordinary English text. Numerous exercises have been interspersed throughout the text, to clarify certain points, or just to provide practice.

`\notegutter` is the width of the area between the margin note and the left margin of the text. The shaded area illustrated below is the note gutter:

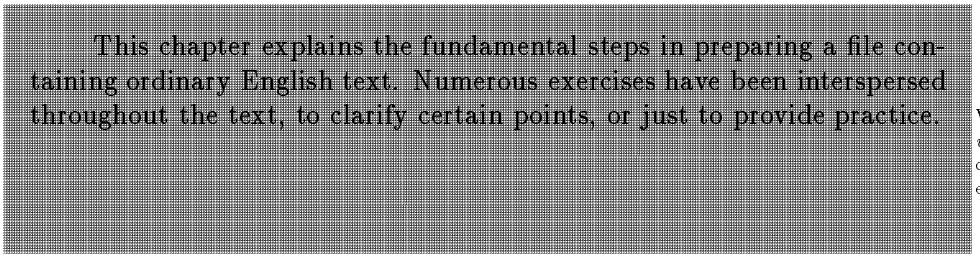
Well, there *will* be lots of exercises eventually.

This chapter explains the fundamental steps in preparing a file containing ordinary English text. Numerous exercises have been interspersed throughout the text, to clarify certain points, or just to provide practice.

`\everymarginnote{`*Nested Markup*`}` can be vertical mode markup such as `\raggedright`, `\leftragged`, `\justify`, and font changes.

Example: Change the margin notes so they print in the right margin in a 7 point font with a margin note width of 46 points.

```
\sfs{cm7}{sevenpt}{default}
\marginnoteformat{\position{right}
       \notewidth{46pt}}
       \notegutter{1em}
       \everymarginnote{\sevenpt\rm} }
⋮
This chapter explains the fundamental steps in preparing
a file containing ordinary English text. Numerous
exercises have been interspersed throughout the
\marginnote{Well, there {\it will} be lots of exercises
eventually.}
text, to clarify certain points,
or just to provide practice.
```



Note: none.

mathdefault

```
\mathdefault
```

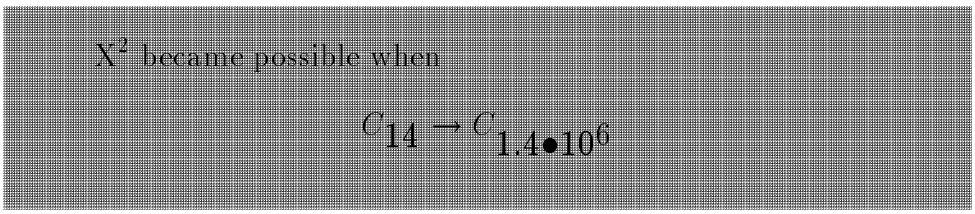
Abbreviation: none

Parameters: none

Description: By default, *TEXT1* establishes a 9 point font for math mode superscripts, and a 7 point font for math mode supersuperscripts. This is the value of `\mathdefault`. You can establish other math mode font combinations than 9/7 by using the `\selectmathset` markup.

Example: You can establish a larger math set called `\bigmath` which can be used for display math and you can switch back to `\mathdefault` for the text math.

```
\selectmathset{cm1412m}{bigmath}
\twelvept
\mathdefault
X$¬2$ became possible when
\bigmath
$$C_{14}\to C_{1.4 \bullet 10| 6}$$
\mathdefault
```



Note: none.

mathitalic

```
\mathitalic
```

Abbreviation: `\mi`

Parameters: none

Description: The `\mathitalic` markup is a font change much the same as `\roman` or `\italic`. The behavior of the math italic font is quite different from the italic. For example, the sequence "`This lengthy succession`" will print as "*This lengthy succession*" with `\italic` and "*Thislengthysuccession* with `\mathitalic`. This markup is usually used in math mode.

Example:

```
Control sequences with {\it several
arguments} require even more {\mi precautions
than control sequences with one argument.}
```

Control sequences with *several arguments* require even more *precautionsthancontrolsequenceswithonearguments*.

Note: `\mathitalic` does not honor interword spacing (the space between words) in a sentence.

multicolumnformat

```
\multicolumnformat{
        \twocolumnwidth{.48\galleywidth}
        \threecolumnwidth{.31\galleywidth}
        \twocolumngutter{.04\galleywidth}
        \threecolumngutter{.035\galleywidth}
        \columnrulewidth{0.0pt}
        \skipbefore{6pt plus3pt minus2pt}
        \skipafter{6pt plus3pt minus2pt}
                }
```

Abbreviation: `\mcf`

Parameters: submarkup

Submarkup: `\twocolumnwidth`, `\threecolumnwidth`, `\twocolumngutter`, `\threecolumngutter`, `\columnrulewidth`, `\skipbefore`, `\skipafter`

Description: The column and gutter widths can be changed by modifying the `\multicolumnformat` markup. Column widths are specified in a percentage of the `\galleywidth`, the width of the text area on the page as specified in the `\pageformat` markup. If the default "flexibleformat" is being used a skip before and a skip after the multiple column format may also be specified. These skips are ignored if you are using `\fixedformat`.

`\twocolumnwidth` is the width of each column when you specify `\twocolumns`. Each column will be exactly the same width. This width is the shaded area illustrated below:

Greek manuscripts of the Bible fall into 3 groups (1) *Papyri*, covering the period from the third century B.C. to the fourth century A.D. (2) *Vellum uncials*—a form of majuscule (large letter)—of various dates from the fourth to the ninth centuries, beginning with the *Codex Vaticanus* and the *Codex Sinaiticus*; (3) *Vellum miniscules*, from the ninth century to the invention of printing, there are well over 4,000 manuscripts.

`\threecolumnwidth` is the width of each column when you specify `\threecolumns`. Each column will be exactly the same width. This width is the shaded area illustrated below:

Greek manuscripts of the Bible fall into 3 groups: (1) *Papyri*, covering the period from the third century B.C. to the fourth century A.D. (2) *Vellum uncials*—a form of majuscule (large letter)—of various dates from the fourth to the ninth centuries, beginning with the *Codex Vaticanus* and the *Codex Sinaiticus*; (3) *Vellum miniscules*, from the ninth century to the invention of printing, there are over 4,000 manuscripts.

`\twocolumngutter` is the distance between each column when you specify `\twocolumns`. The gutter is the shaded area illustrated below:

Greek manuscripts of the Bible fall into 3 groups (1) *Papyri*, covering the period from the third century B.C. to the fourth century A.D. (2) *Vellum uncials*—a form of majuscule (large letter)—of various dates from the fourth to the ninth centuries, beginning with the *Codex Vaticanus* and the *Codex Sinaiticus*; (3) *Vellum miniscules*, from the ninth century to the invention of printing, there are well over 4,000 manuscripts.

`\threecolumngutter` is the distance between each column when you specify `\threecolumns`. Each gutter will be exactly the same width. The gutter is the shaded area illustrated on the next page:

multicolumnformat

Greek manuscripts of the Bible fall into 3 groups: (1) *Papyri*, covering the period from the third century B.C. to the fourth century A.D. (2) *Vellum uncials*—a form of majuscule (large letter)—of various dates from the fourth to the ninth centuries, beginning with the *Codex Vaticanus* and the *Codex Sinaiticus*. (3) *Vellum miniscules*, from the ninth century to the invention of printing, there are over 4,000 manuscripts.

\columnrulewidth when set to a non zero value will print a rule between each column.

\skipbefore is the distance between the one column text and the multiple column text when you are using the flexible method of setting multiple columns. The skip is ignored if you are using \fixedformat.

\skipafter is the distance between the multiple column text and the one column text when you are using the flexible method of setting multiple columns. The skip is ignored if you are using \fixedformat.

Example: You can also specify the column widths in units of measure, instead of a percentage of the \galleywidth.

```
\multicolumnformat{
     \twocolumnwidth{10pc}
     \twocolumngutter{3pc}
     \columnrulewidth{.25pt}
     \skipbefore{6pt plus3pt minus2pt}
     \skipafter{6pt plus3pt minus2pt}}
⋮
\twocolumns
Greek manuscripts of the Bible fall into 3 groups
(1) {\it Papyri}, covering the period from the third century
{\caps b.c} to the fourth century {\caps a.d}.
(2) {\it Vellum uncials}---a form of majuscule (large
letter)---of various dates from the fourth to the ninth
centuries, beginning with the {\it Codex Vaticanus} and
the {\it Codex Sinaiticus};
(3) {\it Vellum miniscules}, from the ninth century to
the invention of printing, there are well over
4,000 manuscripts.
\onecolumn
```

Greek manuscripts of the Bible fall into 3 groups (1) *Papyri*, covering the period from the third century B.C. to the fourth century A.D. (2) *Vellum uncials*—a form of majuscule (large letter)—of various dates from the fourth to the ninth centuries, beginning with the *Codex Vaticanus* and the *Codex Sinaiticus*; (3) *Vellum miniscules*, from the ninth century to the invention of printing, there are well over 4,000 manuscripts.

Note: The rule between the columns **will not** print as long as the column rule width is zero.

The skip before and skip after **are ignored** in the optional fixed column method. The fixed column format (`\fixedformat`) always fills the remainder of the current page with white space and changes to the new format on the following page. Columns may not be balanced in `\fixedformat`.

The `\newcolumn` markup while in the flexible format estimates the remaining space on the page at the time it is entered. If a footnote or other insert is placed on the same page after the newcolumn markup the length of the blank column **cannot** be estimated properly. In this case, *TEXT1* will issue a warning,

```
overfull \vbox 12pt while \output active
```

You can compensate for the footnote or insert by subtracting twice the amount of the overfull box in two columns or three times this amount in triple columns immediately before the newcolumn markup. For example, if the box is overfull by 12 points and you are in two columns, enter,

```
\advance\vsize by-24pt
\newcolumn
text
```

or in three columns before a `\newcolumn` enter,

```
\advance\vsize by-36pt
\newcolumn
text
```

This reduces the height of the current page enough to allow space for the insert. The height of each column must be reduced by the amount of the overfull box warning, or twice the amount for two columns and three times the amount for three columns. See *The TEXbook* for more on `\advance`.

If the newcolumn markup appears on the final page of the document it may cause the balance columns routine to fail because one column is the full height of the page. Do not change to `\fixedformat` after entering `\newcolumn`.

multicolumnformat

Certain line breaking penalties have been altered in the multiple column formats. These penalties, in combination or separately, may cause a short column if there are not a sufficient number of places specified to add extra space, "glue."

Single Column Penalties

\brokenpenalty=100 \clubpenalty=150
\exhyphenpenalty=50 \hyphenpenalty=50
\widowpenalty=150 \hbadness=1000
\tolerance=200

Two Columns Penalties

\brokenpenalty=0 \clubpenalty=0
\exhyphenpenalty=0 \hyphenpenalty=0
\widowpenalty=0 \hbadness=6400
\tolerance=6400

Three Columns Penalties

\brokenpenalty=0 \clubpenalty=0
\exhyphenpenalty=0 \hyphenpenalty=0
\widowpenalty=0 \hbadness=9600
\tolerance=9600

The penalties may be reinstated in the multiple column formats by entering each markup with a new value in the text stream immediately after the first call for the double or triple column markup. Refer to *The TEXbook* for a discussion of the above penalties.

When formatting multiple column text and other large formatting tasks, the user may run into trouble by calling for so many format changes that the available memory space is overrun. If this happens reduce the number of markup used on the page that fails to format. The numbers enclosed in angle brackets <1><2><3> show how many pages have been completed and are printed on the terminal screen as each page is completed. If the macro memory was exceeded when <3> was the last number in the sequence you would know that the memory was exceeded while formatting page four. Your file will not print with this error condition.

To find the point in your document that exceeded the memory use the markup `\bye` at different places in your file. This markup stops text processing. At the point `\bye` doesn't prevent the error condition you know that you have passed page 4 where the error occurred. You may then examine the markup before the `\bye` for possible elimination or find other markup that will format properly without overrunning the memory. See *The TEXbook* for more on `\bye`.

newcolumn

```
\newcolumn
```

Abbreviation: `\nc`

Parameters: none

Description: When using `\twocolumns` or `\threecolumns`, there may be times when an author wants to force *TEXT1* to break a column at a point other than at the bottom of a page. This can be done by entering the `\newcolumn` markup. Any column in the double or triple column formats can be broken by inserting the `\newcolumn (\nc)` markup.

Example: This was accomplished by entering the `\newcolumn` markup between the desired list entries while in `\twocolumns`

```
\twocolumns
\hangingparagraph
Ehrlich, P. et al. 1984. {\it Cold and the Dark}.
New York: W.~Norton.
\hangingparagraph
Osborn, E. 1962. (personal message).
\newcolumn
\hangingparagraph
Roszak, T. 1972. {\it Where the Wasteland Ends}.
New York: Harper & Row.
```

Ehrlich, P. et al. 1984. *Cold and the Dark.* New York: W. Norton.

Osborn, E. 1962. (personal message).

Roszak, T. 1972. *Where the Wasteland Ends.* New York: Harper & Row.

Note: This markup has the same effect as `\newpage` if you are in a printing in one column instead of multiple columns.

If you are in multiple columns and you want to go to the next page, use `\newpage` instead of `\newcolumn`.

newpage

```
\newpage
```

Abbreviation: `\np`

Parameters: none

Description: The `\newpage` markup stops formatting the current page, leaving the remainder blank (footnotes or bottom titles will print as expected), and starts a new page with the text following the markup.

Example: The following example would print "**Bibliography**" at the top of the next page.

```
The rock should be left at the bottom, because of
the inevitability of entropic direction.
\par
\newpage
\centerline{\bd Bibliography}
\hp
Grabens, G. 1970. {\it Mechanical Processes in
the Human Geomechanism}. Winston: Geomedical
Publications International.
\hp
Illite, I. 1911. ``Picking the Philosopher's
Stone.'' {\it Mining Truth}. 11:455--601.
```

Note: If you are in `\twocolumns` and you specify `\newpage` while in the first column, the second column will be left blank. If you are in `\threecolumns` and you specify `\newpage` while in the first column, the second and third columns will be left blank.

```
\nobreak
```

Abbreviation: none

Parameters: none

Description: You can discourage *TEXT1* from breaking a page at a certain point by using `\nobreak`. It should be preceded either by a `\verticalspace` or a `\paragraph`.

Example: This example tells *TEXT1* to keep the title "**Leached Samples**" on the same page as "Table 6 gives ...".

```
\cl{\bd Leached Samples}
\vs{\bl}
\nobreak
Table 6 gives the compositions of the leached
samples as reported by x-ray fluorescence analysis
(XRF).  Using silica content as an internal standard,
the relative amounts of each element removed can be
calculated.  These too are shown in Table 6.
```

Leached Sample

Table 6 gives the compositions of the leached samples as reported by x-ray fluorescence analysis (XRF). Using silica content as an internal standard, the relative amounts of each element removed can be calculated. These too are shown in Table 6.

Note: Refer to *The TEXbook* for more on this markup.

noindent

```
\noindent
```

Abbreviation: `\nin`

Parameters: none

Description: Paragraph indentation can be suspended for the following paragraph by placing a `\noindent` markup at the beginning of the first line. A paragraph following a block quote or following a title is often not indented.

Example:

```
\lib
\lil1 the economic advantages of large-scale operations
(as shown in industrial applications)
\listlevel2 armaments (in the form of tanks, bombers,
weapons and troop carriers, and personnel vehicles)
\listlevel2 military forces (the troops and support
personnel necessary to impose policy by force)
\listend
\noindent
The cultures of industrial nations are based on
accumulations of materials.
\par
Questions about defining  ...
```

1. the economic advantages of large-scale operations (as shown in industrial applications)
    a. armaments (in the form of tanks, bombers, weapons and troop carriers, and personnel vehicles)
    b. military forces (the troops and support personnel necessary to impose policy by force)

The cultures of industrial nations are based on accumulations of materials.

Questions about defining ...

Note: Refer to *The TEXbook* for more on this markup.

```
\nonfrenchspacing
```

Abbreviation: none

Parameters: none

Description: By default, *TEXT1* will double space after punctuation, unless the letter prior to the punctuation is a capital letter. To make all interword spacing the same, regardless of punctuation, you can enter the `\frenchspacing` markup. This will turn off the extra spacing following punctuation for the rest of a document or until *TEXT1* sees a `\nonfrenchspacing` markup.

Example: If you had specified `\nonfrenchspacing` to turn off french spacing,

```
\nonfrenchspacing
\bibentry
Grabens, Gruss M. 1970. {\it Mechanical Processes
in the Human Geomechanism}. Winston: Geomedical
Publications, International.
```

it might print as:

Grabens, Gruss M. 1970. *Mechanical Processes in the Human Geomechanism.* Winston: Geomedical Publications, International.

Compare this to the same bibliography entry printed with `\frenchspacing`:

Grabens, Gruss M. 1970. *Mechanical Processes in the Human Geomechanism.* Winston: Geomedical Publications, International.

Note: none.

nopagenumbers

```
\nopagenumbers
```

Abbreviation: none

Parameters: none

Description: You may use the `\nopagenumbers` to turn off all running head and running foot markup. This is effectively the same as entering the `\runningheadformat` and `\runningfootformat` markup like this:

```
\rhf{\bothpages{}}
\rff{\bothpages{}}
```

Example: If you entered the `\nopagenumbers` markup anywhere in your document, from that point on, all running head and running foot markup would be turned off. You would need to enter another `\runningheadformat` or `\runningfootformat` to enable printing that text again.

\notintoc{*text*}

Abbreviation: `none`

Parameters: text

Description: The `\notintoc` markup is used when you have text that you want to appear in a document and you do not want that text to appear in the Table of Contents. This can be used with any markup that prints in the Table of Contents, such as a figure, table, chapter, subhead, appendix, etc.

Example: To use this markup, you surround the text to be printed like this:

```
\figure{\fullpage}}{Diagrammatic representation
of the low soil water
potential on colonization of roots. \notintoc{The water
potential, being too low for root colonization
by the bacteria but not too low for root
elongation, may favor establishment of
native soil organisms on the root,
when the soil is again wet.}}
```

will print a full page figure and its figure title like this:

Figure 23. Diagrammatic representation of the low soil water potential on colonization of roots. The water potential, being too low for root colonization by the bacteria but not too low for root elongation, may favor establishment of native soil organisms on the root, when the soil is again wet.

However, in the Table of Contents only the first portion of the figure title (prior to the `\notintoc` markup) will print. Something like this:

23. Diagrammatic representation of the low soil water potential on colonization of roots. 64

Note: none.

notitlepage

```
\notitlepage
```

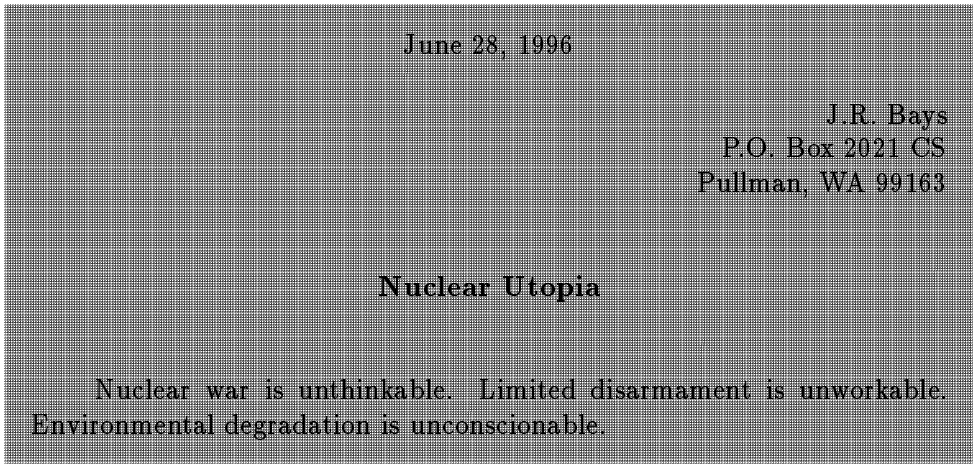
Abbreviation: `\ntp`

Parameters: none

Description: By default, you always get a title page as the first page of your document. If you want running titles on the first page, put the `\notitlepage` markup at the top of the source. Then the first line of the `\runningheadformat` will be the first line to appear at the top of the first and subsequent pages.

Example:

```
\rhf{\bothpages{\line{\ctr{\today}}}}
\notitlepage
\rightlinesbegin
J.R. Bays
P.O. Box 2021 CS
Pullman, WA 99163
\rightlinesend
\vs{2\bl}
\centerline{\bd Nuclear Utopia}
\vs{2\bl}
Nuclear war is unthinkable.
Limited disarmament is unworkable.
Environmental degradation is unconscionable.
```


June 28, 1996

J.R. Bays
P.O. Box 2021 CS
Pullman, WA 99163

Nuclear Utopia

Nuclear war is unthinkable. Limited disarmament is unworkable. Environmental degradation is unconscionable.

numberinglines

```
\numberinglines{status}
```

Abbreviation: `\numl`

Parameters: *status*

Description: This markup is used to start numbering lines for line numbering in the margin of a document. *Status* is `true` or `false`.

Example: To start line numbering you enter

```
\numberinglines{true}
```

Note: Line numbering is only available on the phototypesetter. This markup is ignored for all other printers.

oddpagemargin

```
\oddpagemargin{407.7pt}
```

Abbreviation: `\opm`

Parameters: *measurement*

Description: This markup is used to indicate where a document's line numbering is to be printed on odd numbered pages. The default is 407.7 points from the left edge of the paper on odd pages.

Example: To indicate that you want line numbering to start at 1 inch from the left edge, you would enter at the beginning of your document:

```
\oddpagemargin{1in}
```

Note: Line numbering is only available on the phototypesetter. This markup is ignored for all other printers.

Valid values for `\oddpagemargin` are $0 - (2^{32} - 1)$ points, practical values are $5 - 860$ points.

```
\onecolumn
```

Abbreviation: `\oc`

Parameters: none

Description: If you have specified `\twocolumns` or `\threecolumns`, single column text can be formatted again by entering the `\onecolumn` markup. For example, if an author wants to change from a single column to two columns he enters the `\twocolumns` markup where the two column text begins and `\onecolumn` or `\oc` markup where the single column text begins again.

Example: The `\twocolumns` markup places the bullets in two columns. And `\onecolumn` returns text to a single column.

```
\twocolumns\listbegin
\bul {\it Russia} in Eastern Europe (and in
South America and the Caribbean)
\nc
\bul {\it China} in Tibet (and most lately in Southeast
Asia---Campuchea, and Vietnam)
\listend
\onecolumn
\noindent
Countries have tried to dominate each other
economically and militarily for thousands of years.
Reasons for this continued behavior include  ...
```

- *Russia* in Eastern Europe (and in South America and the Caribbean)
- *China* in Tibet (and most lately in Southeast Asia—Campuchea, and Vietnam)

Countries have tried to dominate each other economically and militarily for thousands of years. Reasons for this continued behavior include ...

Note: `\onecolumn` has no effect if you are already in one column.

If you are in `\fixedformat`, `\onecolumn` will do a `\newpage` before starting one column formatting.

pageformat

```
\pageformat{\pagelength{11in}
                    \pagewidth{8.5in}
                    \topmargin{1in}
                    \bottommargin{1in}
                    \leftmargin{1.2in}
                    \rightmargin{1in}
                    \bindingadjust{0pt}
                    \cropmarks{no}
                    }
```

Abbreviation: `\pf`

Parameters: submarkup

Submarkup: `\pagelength`, `\pagewidth`, `\topmargin`, `\bottommargin`, `\leftmargin`, `\rightmargin`, `\bindingadjust`, `\galleywidth`, `\cropmarks`

Description: The `\pageformat` markup specifies the page size and margins. The dimensions and margins for the pages of a document are set with page formatting markup. These submarkup are valid only within the `\pageformat` markup. Its seven submarkup are described below.

`\pagelength` specifies the length of the page to be used. The default page length, 11 inches is maximum for most printers.

`\pagewidth` specifies the width of the page to be used. The default page width, 8.5 inches, is maximum for most printers. The `\pagewidth` and `\rightmargin` submarkup may optionally be replaced with the `\galleywidth` submarkup.

`\topmargin` sets the distance from the top of the paper to the first line of text, excluding the top title(s). The default value is 1 inch.

`\bottommargin` sets the distance from the bottom of the paper to the last line of the text, excluding the bottom title(s). The default value is 1 inch.

`\leftmargin` sets the distance from the left edge of the page to the left edge of the text. The default value is 1.2 inches.

`\rightmargin` sets the distance from the right edge of the page to the right edge of the text. The default value is 1 inch. The `\pagewidth` and `\rightmargin` submarkup may optionally be replaced with the `\galleywidth` submarkup.

`\bindingadjust` is used to offset left and right margins, which is useful for *duplex printing* (on both sides). The value given the `\bindingadjust` submarkup will increase the left margin on odd pages and decrease the left margin on even pages. The page text width is not shortened, only the margin. The default value is {`0pt`}.

\galleywidth may be substituted for \pagewidth and \rightmargin to determine the width of the text. The \galleywidth has the same dimension as \hsize. You cannot use \galleywidth in the same fashion, however, as \hsize.

\cropmarks may be included for each page of your document. To enable cropmarks, simply include the parameter "yes".

Example: This custom source has 90 point (1 1/4 inch) left and right margins and includes cropmarks.

```
\pageformat{\leftmargin{90pt}
            \rightmargin{90pt}
    \cropmarks{yes}}
```

Example: This custom source sets up a 9 inch by 6 inch page size. The margins have been decreased accordingly. A binding adjust value has been added.

```
\pageformat{\pagelength{9in}
            \topmargin{.5in}
            \bottommargin{.5in}
            \leftmargin{.6in}
            \galleywidth{4.9in}
            \bindingadjust{.2in}
            }
```

Note: Do note include \pagewidth and \rightmargin in the \pageformat markup if you use the \galleywidth submarkup.

pagenumber

```
\pagenumber
```

Abbreviation: `\pn`

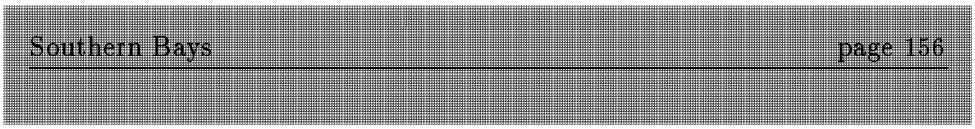
Parameters: none

Description: The `\pagenumber` markup merely places the current page number wherever the markup appears.

Example: In running heads, `\pagenumber` numbers the pages.

```
\runningheadformat{\bothpages{\line{\rm
        \lft{Southern Bays}\rt{page \pagenumber}}
    \vs{2pt}
    \hrule
    \vs{1\bl}
    }
  }
```

The running head would look like:



Example: If you want no page numbers, then enter the following:

```
\runningheadformat{\bothpages{}}
```

Note: none.

paragraph

```
\paragraph
```

Abbreviation: `\par`

Parameters: none

Description: A paragraph is a composition consisting of a group of sentences dealing with a single topic. A paragraph is commonly indicated by beginning on a new line and indenting the first line.

The *TEXT1* program is paragraph-oriented, that is, it reads an entire paragraph before breaking it into lines. Because *TEXT1* reads by paragraphs, the `\paragraph` markup comes at the end of a paragraph, instead of the beginning. Thus, to end a paragraph, enter the `\paragraph` markup (or a blank line) on the last line of text or on a line by itself, which makes it easier to spot paragraphs in the source.

Example: This sample shows the relation of text to markup.

```
\psk{5pt}\pin{10pt}
I raised it in order to characterize the
essence of Sociogeology. Will Durant recognized that
civilization existed by consent of geology---subject
to change without notice.
\paragraph
The definition of Sociogeology is the study of the
geological basis of all social behavior.
It explains human behavior by empirical description
of the attributes of mineral composition.
It is most successful when it provides detailed
description of particulate phenomena and first-order
correlations with features of the physical
environment.

One of its primary functions is to reformulate the
shaky foundations of social sciences in a way that
draws them into a modern synthesis with the hard
sciences.
\par
This article is an outline of the codification of
Sociogeology into a branch of evolutionary geology.
The subject has an aggregate of self-sufficient...
```

paragraph

I raised it in order to characterize the essence of Sociogeology. Will Durant recognized that civilization existed by consent of geology—subject to change without notice.

The definition of Sociogeology is the study of the geological basis of all social behavior. It explains human behavior by empirical description of the attributes of mineral composition. It is most successful when it provides detailed description of particulate phenomena and first-order correlations with features of the physical environment.

One of its primary functions is to reformulate the shaky foundations of social sciences in a way that draws them into a modern synthesis with the hard sciences.

This article is an outline of the codification of Sociogeology into a branch of evolutionary geology. The subject has an aggregate of self-sufficient...

Note: A blank line also ends a paragraph. For this reason, blank lines may be used in place of `\paragraph` markup.

Paragraphs are not permitted in math mode; they cause errors. Blank lines will also cause errors in math mode.

The distance between paragraphs is determined by the `\paragraphskip` markup. The default value for `\paragraphskip` is "0 points plus 3 points minus 0 points". The "plus/minus" specification allows up to 3 additional points to be added between paragraphs to get the bottom of each page to line up properly is you are using `\normalbottom`.

The indent at the beginning of each paragraph is determined by the `\paragraphindent` markup. The default value for indentation is 24 points.

For a complete discussion of how paragraphs are read in and formatted, refer to *The TEXbook*.

\paragraphbox{*text*}

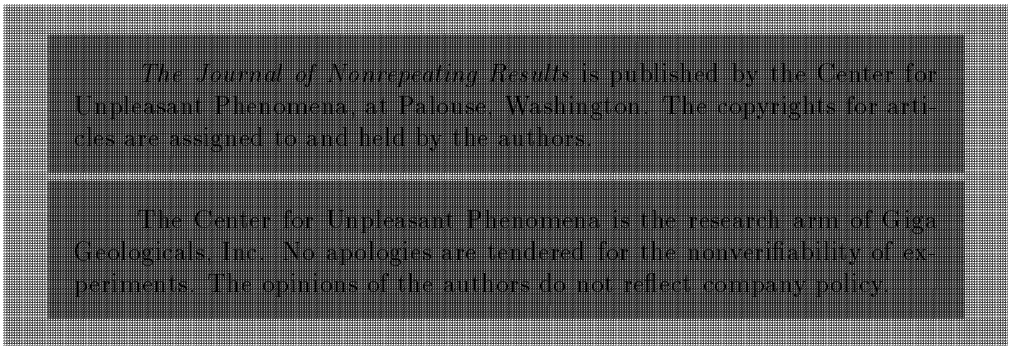
Abbreviation: \pb

Parameters: *text*

Description: Whole paragraphs can be put into a \paragraphbox if you use \vbox with the \paragraphbox. The resulting box will extend into the left and right margins by the sum of the \paragraphboxmat and \paragraphboxrulesize. If you use \paragraphbox{ ...} instead of \paragraphbox{\vbox{ ...}}, the paragraph size is reduced such that the box will fit within the current margins.

Example: This illustrates the difference between a paragraph boxed with \paragraphbox and \paragraphbox.

```
\paragraphbox{{\it The Journal of Nonrepeating
Results} is published by the Center for Unpleasant
Phenomena, at Palouse, Washington. The copyrights for
articles are assigned to and held by the authors.}
\paragraphbox{\vbox{The Center for Unpleasant Phenomena
is the research arm of Giga Geologicals, Inc. No apologies
are tendered for the nonverifiability of experiments.
The opinions of the authors do not reflect company policy.}}
```



Note: Do not use \paragraphbox around more than one page of formatted material.

paragraphboxformat

```
\paragraphboxformat{\screen{0}
    \boxmat{3pt}
    \boxrule{.4pt]}
    \boxshadow{0pt}
    \outerboxmat{0pt}
    \outerboxrule{0pt}}
```

Abbreviation: `\pbf`

Parameters: submarkup

Submarkup: `\screen`, `\boxmat`, `\boxrule`, `\boxshadow`, `\outerboxmat`, `\outerboxrule`

Description: The `\paragraphboxformat` markup is used in determining the mat, rule size, shadow, and screening level for all boxes, with the exception of paragraph boxes. The `\paragraphboxformat` is used in determining these values for paragraphs. The submarkup for the `\paragraphboxformat` is described below.

`\screen` allows you to set a level of screening to be done in the boxed area. The value is given in a level from 0–64. They range from white to black as illustrated below;

By default, there is no screening done (level 0).

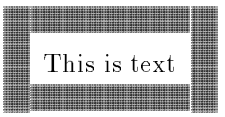
Example: If you wanted to have a level 20 screen and no rule, you could enter:

```
\pbf{\screen{20}\boxrule{0pt}}
\cl{\pb{This is a level 20 screen}}
```

Which prints something like:

The font DT must be available to accomplish the screening. The DT font is Knuth's "dithered" font as described in *TUGboat* 8#2 pp 135–160. This font is provided with the *TEXT1* distribution.

`\boxmat` The `\boxmat` submarkup determines the amount of space between the rule and the text. This is the area that has been shaded in the following illustration.

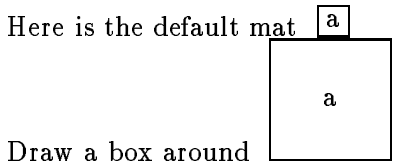


The default mat is 3 points.

Example: If you wanted to change the mat, the distance between the rule and the text from the default 3pt to 20pt, you would enter:

```
Here is the default mat \paragraphbox{a}\par
\paragraphboxformat{\boxmat{20pt}}
Draw a box around \paragraphbox{a}
```

This would look like the following illustration.



\boxrule The \boxrule submarkup determines the thickness of the rule drawn around the text. By default, .4pt is the rule thickness.

Example: If you wanted to change the rule thickness to 3pt, you would enter:

```
\pbf{\boxrule{3pt}}
\pb{A 3pt Rule}
```

\boxshadow The \boxshadow submarkup determines the thickness of shadow which is drawn around the outside of the box. By default, there is no shadow.

Example: If for example, you wanted a 10pt shadow, you could enter something like:

```
\pbf{\boxshadow{10pt}\boxmat{20pt}}
\pb{This is a shadow box}}
```

\outerboxmat It is possible to draw a box around a box. This is done with the \outerboxmat and \outerboxrule markup. See the following example under \outerboxrule on how to use this feature.

paragraphboxformat

\outerboxrule It is possible to draw a box around a box. This is done with the \outerboxmat and \outerboxrule markup. By default, both of these are zero.

Example: If you wanted to create an outer box with a 4pt rule and a 2pt mat, you could enter:

```
\paragraphboxformat{\outerboxrule{4pt}\outerboxmat{2pt}}
\paragraphbox{\bi Corrections Made}
```

paragraphindent

\paragraphindent{*indent*}

Abbreviation: \pin

Parameters: *indent*

Description: Throughout an entire document, paragraphs have 24 points indentation on the first line of each paragraph. This value may be changed by modifying the default with \paragraphindent. All following paragraphs will then exhibit the new indent.

Example: The first paragraph indent has been set to 14 points for comparison with the second paragraph which has a \paragraphindent of 24 points.

```
\paragraphindent{14pt}
{\it The Journal of Nonrepeating
Results} is published by the Center for Unpleasant
Phenomena, at Palouse, Washington. The copyrights for
articles are assigned to and held by the authors.
\par
\pin{24pt}
The Center for Unpleasant Phenomena is the research arm
of Giga Geologicals, Inc.
No apologies are tendered for the nonverifiability of
experiments. The opinions of the authors do not reflect
company policy.
```

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Note: Use the \paragraphboxformat markup to change the style of these boxes.

paragraphskip

```
\paragraphskip{0pt plus3pt minus0pt}
```

Abbreviation: `\psk`

Parameters: units of measure

Description: This markup causes all following paragraphs to be separated by the new distance. The `\paragraphskip` is expressed using valid units of measurement in *TEXT1*. The default value is 0 points.

Example: The first two paragraphs used a paragraph skip of 10 points. The third one used a skip of 20 points.

```
\paragraphskip{10pt}
{\it The Journal of Nonrepeating
Results} is published by the Center for Unpleasant
Phenomena, at Palouse, Washington. The copyrights for
articles are assigned to and held by the authors.
\par
The Center for Unpleasant Phenomena is the research arm
of Giga Geologicals, Inc.

\psk{20pt}
No apologies are tendered for the nonverifiability of
experiments. The opinions of the authors do not reflect
company policy.
```

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No apologies are tendered for the nonverifiability of experiments. The opinions of the authors do not reflect company policy.

Note: The "plus3pt" after the setting of "0pt" means that up to 3 points additional space may be added before each paragraph, if this space is needed to fill out a page when using `\normalbottom`. If the `\paragraphskip` is set to "minus1pt", it implies that up to 1 point may be subtracted before each paragraphs if needed to fill out a page when using `\normalbottom`. Since the leading is usually only 2 points more than the size of the type, the "minus" value should not be more than 1 point.

part

\part{*title*}

Abbreviation: none

Parameters: *title*

Description: The \part markup starts a new page, centers the title in 12 point Computer Modern bold, and enters the title in the table of contents. Furthermore, the \part markup places the part title in the center of a blank page (called a half-title page). Parts are numbered. Each heading markup can be used as often as necessary.

Example: This example would print the title "Human Sciences" on a half title page, then skip to a new page where it begins the paragraph "Humanity is still ...".

```
in order.
\part{Human Sciences}
\newpage
Humanity is still the measure of  ...
```

Note: To change how a part looks, use the \partformat markup.

Note: Each time you enter \part, the chapter number and subhead numbers are reset to zero.

Note: If you have text you want included in the part title in the document, but not to be printed in the table of contents, you can exclude it with the \notintoc markup. Refer to the \figure markup for an example on how to use \notintoc.

Note: The \toclinebreak May be used to have a line in the Table of Contents break differently than the way it is printed in the document. Refer to the \figure markup for an example on how to use \toclinebreak.

partformat

```
\partformat{\numberingstyle{1}
  \titleformat{\dumpinsertseject\titlepage
       \hrule height 0pt depth 0pt
       \vfil
       \centerline{\twelvept\bd
                          Part \partnumber}
       \centerline{\twelvept\bd \parttitle}
       \setchapternumber{0}
       \setsubheadanumber{0}
       \setsubheadbnumber{0}
       \setsubheadcnumber{0}
       \setsubheaddnumber{0}
       \setfootnotenumber{0}
       \setendnotenumber{0}
       \setfigurenumber{0}
       \settablenumber{0}
       }
  \incontents{yes}
   }
```

Abbreviation: `\paf`

Parameters: submarkup

Submarkup: `\numberingstyle, \titleformat, \incontents`

Description: The `\partformat` markup allows you to modify the defaults that control the appearance of the part title. Following are the submarkup descriptions.

`\numberingstyle` allows you to change the style from Arabic numerals, the default (1), to capital letters (`A`) or roman numerals (`I`). If you wanted your parts in roman numerals, you would specify:

```
\partformat{\numberingstyle{I}}
```

`\titleformat` controls the appearance of the part title banner. You may use markup such as `\newpage`, `\dumpinsertseject` `\verticalspace`, and `\centerline` within `\titleformat` as *Nested Markup*. Other markup you may use within or outside of `\partformat`:

- `\partnumber` prints the most recent part number.
- `\parttitle` prints the most recent part title.
- `\hrule height 0pt depth 0pt` is used to create a half title page along with `\vfil`.

`\incontents` places the part title in contents (if one is printed). Printing can be suppressed by changing to "no."

Example: This example does not create a half title page. Instead the part starts a new page, centers the title bold, and one line is skipped afterwards before printing the text of the part.

```
\partformat{\titleformat{\newpage
      \cl{\bd \parttitle}
      \vs{1\bl}
      }}
```

Note: See *The TEXbook* for more on `\vfil`.

plaintexmathon

```
\plaintexmathon
```

Abbreviation: none

Parameters: none

Description: This markup can be used to make the dollar sign ($) the valid math mode indicator as is used in PLAIN TEX. This mode is the default *TEXT1* math mode.

Example:

```
\plaintexmathon
⋮
$$z\neq x_2-y¬2 = (x+y)(x-y).\eqno(15)$$
```

$$z \neq x_2 - y^2 = (x + y)(x - y). \tag{15}$$

Note: If used, it should be specified at the top of your document. You will need to use the TEX `\catcode` markup to change back to using the at sign as the math mode indicator:

```
\catcode'44=12
```

For more on the `\catcode` markup, refer to *The TEXbook*.

poplevel

```
\poplevel{7}
```

Abbreviation: `\ppl`

Parameters: *level*

Description: This markup is used in counting lines for line numbering in the margin of a document. The level number is TEX's stacking level number. The default is pop level 7.

Example: If you must change to a different pop level, 9 for example, enter:

```
\poplevel{9}
```

Note: Line numbering is only available on the phototypesetter. This markup is ignored for all other printers.

preface

\preface{*title*}

Abbreviation: \pre

Parameters: *title*

Description: Each preface starts a new page, centers the title in bold, and enters it in the table of contents (if one is printed). The preface is not numbered. Each heading markup can be used as often as necessary.

Example:

```
\today
\preface{Acknowledgments}
I am grateful for the assistance and financial support
of the Grand Foundation for ...
```

Acknowledgments

I am grateful for the assistance and financial support of the Grand Foundation for ...

Note: You can modify the default style for a preface with the \prefaceformat markup.

Note: If you have text you want included in the preface title in the document, but not to be printed in the table of contents, you can exclude it with the \notintoc markup. Refer to the \figure markup for an example on how to use \notintoc.

Note: The \toclinebreak May be used to have a line in the Table of Contents break differently than the way it is printed in the document. Refer to the \figure markup for an example on how to use \toclinebreak.

prefaceformat

```
\prefaceformat{\titleformat{\dumpinsertseject
                           \cl{\twelvept\bd \prefacetitle}
                           \vs{1\bl}}
              \incontents{yes}
    }
```

Abbreviation: \prf

Parameters: submarkup

Submarkup: \titleformat, \incontents

Description: The \prefaceformat markup allows you to modify the defaults that control the appearance of the preface title. There are two submarkup:

\titleformat controls the appearance of the part title banner. You may use markup such as \newpage, \verticalspace, and \centerline within \titleformat as *Nested Markup*. You may also use:

- \prefacetitle prints the most recent preface title.

\incontents places the preface title in contents (if one is printed). Printing can be suppressed by changing to "no."

Example: In this example, the preface starts a new page, the title is centered in bold, and one line is skipped afterwards. No preface is put in contents.

```
\prefaceformat{\titleformat{\newpage
      \cl{\bd \prefacetitle}
      \vs{1\bl}
                }
    \incontents{no}
            }
```

printendnotes

```
\printendnotes
```

Abbreviation: `\pen`

Parameters: none

Description: To print the endnotes accumulated with the `\autoendnote` markup, use the `\printendnotes` markup.

Example: To start a new page, center a title (such as "Notes"), and dump the endnotes, enter:

```
There is a well-marked division of
labor.\autoendnote{Such as it is. Things could be
different in the geological world, but they are not.}
Details of organization have evolved by an
optimization process.  ...
\newpage
\titlepage
\cl{\bd Notes}
\vs{\bl}
\printendnotes
```

Notes

1. Such as it is. Things could be different in the geological world, but they are not.

Note: The `\printendnotes` markup **does not** print the title "Note". It may be used more than once in a paper; for example, you may want to print all endnotes within a chapter at the end of the chapter rather than at the end of the entire paper. The `\printendnotes` markup prints all endnotes accumulated up to that point.

printindex

```
\printindexn
```

Abbreviation: none

Parameters: index number

Description: The **\printindex** markup sorts and prints the index entries generated with the **\index** markup. The **\printindex** markup would usually come at the end of a document before the table of contents. This markup has the format

```
\printindexn
```

where *n* is the index number: 1, 2 or 3. By default, the index is printed using the indent style of index in ten point Computer Modern. It is recommended that you print the index in two columns (**\twocolumns**). For a complete list of the defaults and how to modify them, refer to the **\indexformat** markup.

Example: The following illustrates how to place an index at the end of a document, after the last appendix, and before the table of contents. Assume the table of contents is to begin on page "iv".

```
\appendix{Sample Data}
⋮
\preface{Index}
\twocolumns
\printindex1
\onecolumns
\tableofcontents{-4}
```

Using the **\preface** markup will start a new page with the title "**Index**" at the top of the page. Then **\twocolumns** will begin two column formatting (typical for indexes). Next **\printindex1** will sort index "1" and print the sorted index according to the defaults set by the **\indexformat** markup. After printing the last of the index, **\onecolumn** will switch back to single column mode before printing the table of contents.

Example: Sometimes multiple indexes are required. If you had used \index1 and \index2, then you would use \printindex1 and \printindex2 to print them out:

```
\index1item in first index
\index2item in second index
⋮
\preface{Index One}
\twocolumns
\printindex1
\onecolumns
\preface{Index Two}
\twocolumns
\printindex2
\onecolumns
```

Note: If you are using CMS, the \printindex command works as described. If you are using any other system, you will need to make one pass on the document collecting the indicies. Then run the program texix. For example, if you are on a vax you would create the indicies for the document instal_guide.tex by entering:

```
text1 instal_guide
```

Next you would run the texix program on the indicies:

```
texix
```

When texix finishes, you will have a file called text1$$.ix1 which itself can be edited and run through TEX or *TEXT1*. You can FTP texix from ftp.wsu.edu in the anonymous text1.texix directory.

printingnumbers

```
\printingnumbers{status}
```

Abbreviation: `\prin`

Parameters: *status*

Description: This markup is used to start the printing of line numbering in the margin of a document. *Status* is `true` or `false`.

Example: To enable line numbers to be printed, enter:

```
\printingnumbers{true}
```

Note: Line numbering is only available on the phototypesetter. This markup is ignored for all other printers.

putincontents

\putincontents*n*{*text*}

Abbreviation: \pic*n*

Parameters: text and markup

Description: Major headings and the first two levels of subheadings are automatically placed in a table of contents (if one is called). Any heading, text, or markup can be put in the table of contents using the \putincontents markup (abbreviated \pic).

This markup has one parameter, but that parameter can be either markup to manipulate the table of contents itself or the text, usually a heading, to be put in the contents. Note that in the example the page number and dot leadering to separate it from the text were both included.

There are three levels of contents: the first (\pic*1*) puts text and/or markup into the primary table of contents; \pic*2* puts text and/or markup into the list of figures; \pic*3* puts text and/or markup into the list of tables.

Refer to the example on the next page.

Example: To create an Abstract that conforms to the Washington State University graduate school's thesis requirements and print the abstract title in the table of contents, enter:

```
\newpage
\putincontents1{ABSTRACT\leader\pagenumber\par}
\doublespace
\vsk{6\bl}
\centerlinesbegin
\bd EFFECTIVENESS OF PRISM TRAINING
ON THE IMPROVEMENT OF READING
AT THE FIFTH GRADE LEVEL
ABSTRACT
\singlespace
\vs{2\bl}
\rm by Ray Elmer Brown, Ph.D.
Washington State University, 1979
\vs{1\bl}
\centerlinesend
\nin Chairman: Lloyd B. Johnson
\vs{1\bl}
The text of the abstract follows at this point ...
⋮
\pic2{LIST OF FIGURES\leader vi}
\pic3{LIST OF TABLES\leader viii}
\setpagenumber{0}
\chapter{Introduction}
```

(Note, single spacing will return to double spacing after the `\centerlinesend` markup, since it acts as a delimiter with `\centerlinesbegin`.)

The abstract would print as:

EFFECTIVENESS OF PRISM TRAINING

ON THE IMPROVEMENT OF READING

AT THE FIFTH GRADE LEVEL

ABSTRACT

by Ray Elmer Brown, Ph.D.
Washington State University, 1979

Chairman: Lloyd B. Johnson

The text of the abstract follows at this point ...

The table of contents generated would contain:

ACKNOWLEDGEMENTS iii
ABSTRACT iv
List of Figures vi
List of Tables viii
Introduction 1

Note: Notice in the sample source file illustrated on the previous page that the List of Figure's and List of Table's page numbers were manually put into the `\putincontents` markup. This is the **only** way to have these placed into the table of contents.

```
\quad
```

Abbreviation: `none`

Parameters: none

Description: A printer's quad of space used to be a blank square of type, 1 em high and 1 em wide, equivalent in size to a capital "M." A *TEXT1* quad is a unit of horizontal space. It is one em space in the current type size. The `\quad` markup can be used in text, "as is," and math mode.

Example: Consider the input for this table:

```
\tat{Surface Land Temperature (degrees C)\lbr
Changes after Nuclear Exchanges}
\vs{6pt}
\settabs\+\quad&number\quad&number\quad
\+&number\quad&number\quad&number&\cr
\+&1000&-22&8&7&13\cr
\+&3000&9&6&8&10\cr
```

Table 3

Surface Land Temperature (degrees C)
Changes after Nuclear Exchanges

1000	-22	8	7	13
3000	9	6	8	10

Note: `\quad`=`\horizontalspace{1em}`. In `\twelvept`, `\quad`≈12 points; in `\tenpt`, `\quad`≈10 points.

qquad

```
\qquad
```

Abbreviation: `none`

Parameters: none

Description: The `\qquad` markup leaves two quads of space. It is two em spaces in the current type size. It can be used in text, "as is," or math mode.

Example:

```
\tat{Surface Land Temperature (degrees C)\lbr
Changes after Nuclear Exchanges}
\vs{6pt}
\settabs\+\qquad&number\qquad&number\qquad
\+&number\qquad&number\qquad&10,000&\cr
\+&1000&-22&8&7&13\cr
\+&3000&9&6&8&10\cr
```

Table 4

Surface Land Temperature (degrees C)
Changes after Nuclear Exchanges

1000	-22	8	7	13
3000	9	6	8	10

Note: `\qquad=\horizontalspace{2em}=\quad\quad`. In `\twelvept`, `\qquad`≈24 points; in `\tenpt`, `\qquad`≈20 points.

raggedbottom

```
\raggedbottom
```

Abbreviation: none

Parameters: none

Description: By default, *TEXT1* tries to make the top and bottom of each page of text line up. If you are not concerned with having the bottom of each page line up, you can enter `\raggedbottom`. If you have specified `\raggedbottom` and you want to go back to the default, enter `\normalbottom`.

Note: Refer to *The TEXbook* for more on this markup.

rightindent

```
\rightindent{units}
```

Abbreviation: `\rin`

Parameters: units of measurement

Description: The `\rightindent` markup adds (or subtracts) the amount from the current right margin (default is zero). The indentation remains until another `\rightindent` overrides it. This markup causes a break in text.

Example:

```
Humans also require trace amounts of manganese,
zinc, selenium, and copper, appearing in suitable
proportions.
\vs{50pt}
\lin{1in}
\rightindent{1.5in}
{\bd Figure 2}.
Physiognomic similarities between the earth and
human beings.
\rightindent{-1.5in}
\lin{0in}
\vs{10pt}
Most elemental abundances are the same in the
lithosphere and the anthrosphere.
```

Humans also require trace amounts of manganese, zinc, selenium, and copper, appearing in suitable proportions.

Figure 2. Physiognomic similarities between the earth and human beings.

Most elemental abundances are the same in the lithosphere and the anthrosphere.

Example: The previous example could have used grouping as illustrated below and the same output would have been generated. If you do grouping, be sure there is a `\paragraph` markup before the closing right curly brace of the group.

```
Humans also require trace amounts of manganese,
zinc, selenium, and copper, appearing in suitable
proportions.
\vs{50pt}
{\lin{1in}
\rightindent{1.5in}
{\bd Figure 2}.
Physiognomic similarities between the earth and
human beings.
\par
}
\vs{10pt}
Most elemental abundances are the same in the
lithosphere and the anthrosphere.
```

Humans also require trace amounts of manganese, zinc, selenium, and copper, appearing in suitable proportions.

Figure 2. Physiognomic similarities between the earth and human beings.

Most elemental abundances are the same in the lithosphere and the anthrosphere.

Note: none.

rightline

```
\rightline{text}
```

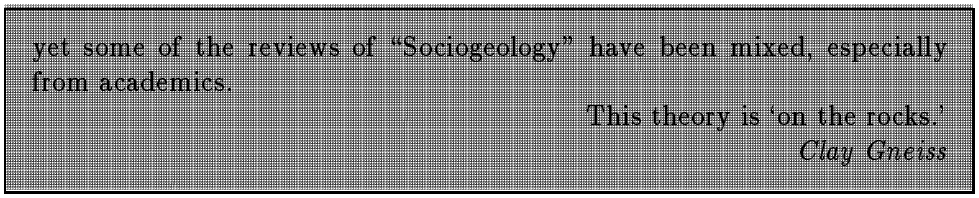
Abbreviation: `\rl`

Parameters: text to be right justified

Description: The `\rightline` markup right justifies individual lines. This markup ends the previous paragraph. The only parameter for this markup is text.

Example:

```
yet some of the reviews of ``Sociogeology'' have
been mixed, especially from academics.
\rightline{This theory is `on the rocks.'}
\rl{\it Clay Gneiss}
```



Note: none.

```
\rightlinesbegin
```

Abbreviation: `\rlb`

Parameters: none

Description: The `\rightlinesbegin` markup begins right justifying all following lines. Vertical spacing and font changes are the only markup permitted after it. There are no parameters or markup options. End a `\rightlinesbegin` with a matching `\rightlinesend`.

Example:

```
\rightlinesbegin
This theory is `on the rocks.'
{\it Clay Gneiss}
\rightlinesend
```

This theory is 'on the rocks.'
Clay Gneiss

Note: Each `\rightlinesbegin` must be followed by a matching `\rightlinesend`.

You cannot use `\rightlinesbegin` within any of the following markup: `\appendix`, `\autofootnote`, `\bibliography`, `\centerline`, `\chapter`, `\drawbox`, `\figure`, `\footnote`, `\item`, `\label`, `\marginnote`, `\paragraphbox`, `\part`, `\preface`, `\rightline`, `\runningheadformat`, `\runningfootformat`, `\subheada`, `\subheadb`, `\subheadc`, `\subheadd`, or `\tabletitle`.

rightlinesend

```
\rightlinesend
```

Abbreviation: `\rle`

Parameters: none

Description: The `\rightlinesend` markup ends lines that are being right justified with `\rightlinesbegin`. This markup causes a paragraph break.

Example:

```
\rightlinesbegin
This theory is 'on the rocks.'
{\it Clay Gneiss}
\rightlinesend
```

This theory is 'on the rocks.'
Clay Gneiss

Note: Each `\rightlinesbegin` must be followed by a matching `\rightlinesend`.

```
\rightragged
```

Abbreviation: `\rr`

Parameters: none

Description: The `\rightragged` markup turns off right justification. If you only want to right justify a certain section of the document, then you would use a combination of the `\justify` and `\rightragged` markup.

Example:

```
\rightragged
The comparison may seem facile, but from deliberate
oversimplification comes complex obfuscation and
general theoretification.
Behavioral research will lead in this direction, as
the general theory of Sociogeology predicts the ...
\justify
Humans exhibit metamorphic behavior over time or at high
temperatures, fever, for instance.
Metamorphic crystallization involves low ...
```

The comparison may seem facile, but from deliberate oversimplification comes complex obfuscation and general theoretification. Behavioral research will lead in this direction, as the general theory of Sociogeology predicts the ...

Humans exhibit metamorphic behavior over time or at high temperatures, fever, for instance. Metamorphic crystallization involves low ...

Note: The default values for space skips is listed below.

	Composing Printers
`\rightskip`	plus 1fil
`\spaceskip`	.35em
`\xspaceskip`	.55em

roman

```
\roman
```

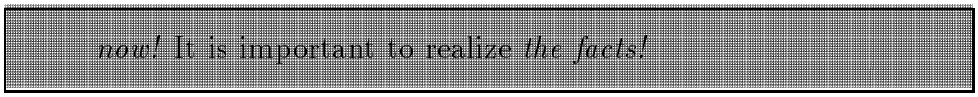
Abbreviation: `\rm`

Parameters: none

Description: Roman is a medium-weight type good for reading. It is the default face for *TEXT1*. It is usually specified as the default font at the beginning of a paper, so that it will be in effect for most of the paper. Roman can also be used to terminate the use of a special typeface, such as italic or bold.

Example:

```
\twelvept
\italic now! \roman It is important to realize
\it the facts!
```



Example: This example is the same as the one above, except that grouping was used to change from the roman font back to italics.

```
\tenpt
\italic now! {\roman It is important to realize}
the facts!
```

Note: none.

```
\rule
```

Abbreviation: `none`

Parameters: none

Description: The `\rule` markup skips a blank line and draws a horizontal line (rule). Rules are used to separate material, such as tables or sections. No extra vertical space is skipped after the rule, so you may need to add some with `\vs`.

Example:

```
\tabletitle{Elements of the Spheres}
\rule
\vs{6pt}
\tabskip 3em plus 3em minus 1em
\halign{\lft{#}&&\rt{#}\hs{20pt}\cr
Element&\omit\ctr{Anthrosphere}&\omit\ctr{Lithosphere}\cr
Oxygen&62.1\phantom{0}&60.6\phantom{0}\cr
Hydrogen&1.1\phantom{0}&0.1\phantom{0}\cr
Aluminum&0.22&11.54\cr}
\rule
\vs{6pt}
\nin Most elemental abundances are the same in the ...
```

Table 5
Elements of the Spheres

Element	Anthrosphere	Lithosphere
Oxygen	62.1	60.6
Hydrogen	1.1	0.1
Aluminum	0.22	11.54

Most elemental abundances are the same in the ...

Note: If you want a rule of a different height, depth, or width than illustrated with `\rule` then use `\hrule`.

runningfootformat

```
\runningfootformat{
        \bothpages{\vs{1\bl}
                   \line{\twelvept\rm\lft{}
                                \ctr{}\rt{}}}
        }
```

Abbreviation: \rff

Parameters: submarkup

Submarkup: \bothpages, \evenpages, \oddpages

Description: The \runningfootformat markup provides running titles at the bottom of all pages except the title page. The default running bottom title for *TEX T1* is blank.

\bothpages is used to place the same running foot at the bottom of both the even and odd pages. The \line markup defines a single title line. Within it, you may center, left align, or right align text, using the submarkup \ctr, \lft, or \rt. Besides \line, you may also use markup such as \hrule and \verticalspace.

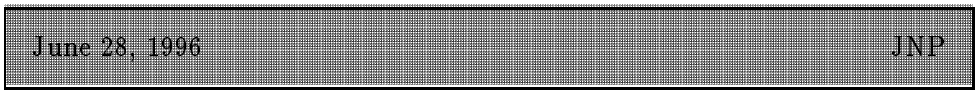
\evenpages is used to place the same running foot at the bottom of each even page. The \line markup defines a single title line. Within it, you may center, left align, or right align text, using the submarkup \ctr, \lft, or \rt. Besides \line, you may also use markup such as \hrule and \verticalspace.

\oddpages is used to place the same running foot at the bottom of each odd page. The \line markup defines a single title line. Within it, you may center, left align, or right align text, using the submarkup \ctr, \lft, or \rt. Besides \line, you may also use markup such as \hrule and \verticalspace.

Example: This example prints the date and author's initials at the bottom of each page.

```
\runningfootformat{
   \bothpages{\vs{18pt}
              \line{\rm\lft{\today}\ctr{}\rt{JNP}}
               }
   }
```

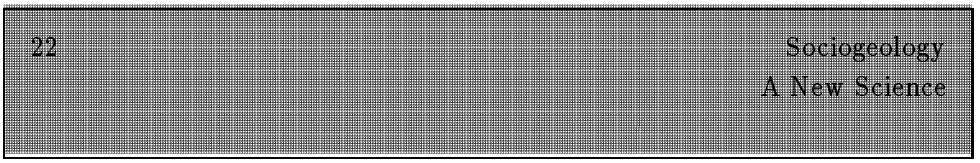
which produces a running foot as illustrated on the next page.



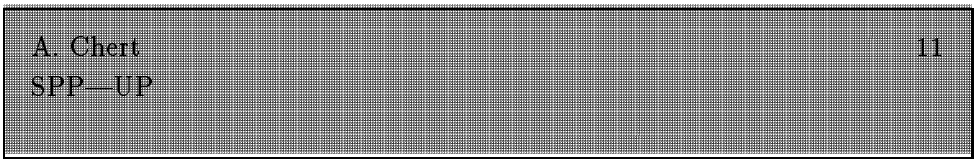
Example: This example illustrates the use of odd and even page layout with two lines. The page number alternates sides so that it appears on the outside of the page. The title appears above the subtitle on even pages. The author's name appears above the journal name on odd pages.

```
\runningfootformat{
  \evenpages{\line{\lft{\pagenumber}
                   \rt{Sociogeology}}
             \vs{2pt}}
             \line{\rt{A New Science}}
             \vs{\bl}}
  \oddpages{\line{\lft{A. Chert}
                  \rt{\pagenumber}}
            \vs{2pt}}
            \line{\lft{SPP---UP}}
            \vs{\bl}}
  }
```

which produces on even page numbers a running foot that looks like:



and produces on odd page numbers a running foot that looks like:

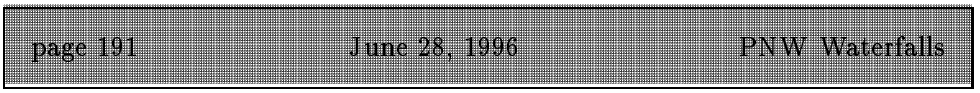


Note: An empty `\lft`, `\ctr`, or `\rt` may be omitted as was done in the above example.

A construct such as,

```
\rff{\bothpages{
         \line{\lft{page \pn}\ctr{\today}
           \rt{PNW Waterfalls}}}}
```

will **not** print the date centered on the page:



To accomplish this, you should print the left and right justified text with `\line`, then space backwards one line (`\verticalspace{-\bl}`), then center the date:

```
\rff{\bothpages{\line{\lft{page \pn}
                      \rt{PNW Waterfalls}}}
          \vs{-\bl}
          \line{\ctr{\today}}}
```

runningfootformat

And you will have a running foot on each page similar to:

page 192	June 28, 1996	PNW Waterfalls

```
\runningheadformat{\bothpages{\twelvept
        \line{\rm\lft{}\ctr{}\rt{\pagenumber}}
        \vs{1\bl}
        }
    }
```

Abbreviation: \rhf

Parameters: submarkup

Submarkup: \bothpages, \evenpages, \oddpages

Description: The \runningheadformat markup provides running titles at the top of all pages except the title page. The default running top title for *TEXT1* is a right justified page number.

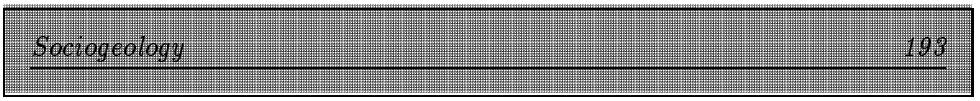
\bothpages is used to place the same running head at the top of both the even and odd pages. The \line markup defines a single title line. Within it, you may center, left align, or right align text, using the submarkup \ctr, \lft, or \rt. Besides \line, you may also use markup such as \hrule and \verticalspace.

\evenpages is used to place the same running head at the top of each even page. The \line markup defines a single title line. Within it, you may center, left align, or right align text, using the submarkup \ctr, \lft, or \rt. Besides \line, you may also use markup such as \hrule and \verticalspace.

\oddpages is used to place the same running head at the top of each odd page. The \line markup defines a single title line. Within it, you may center, left align, or right align text, using the submarkup \ctr, \lft, or \rt. Besides \line, you may also use markup such as \hrule and \verticalspace.

Example: To customize running titles, you modify the \runningheadformat for the top titles and the \runningfootformat for bottom titles. In this example, "Sociogeology" and a page number are placed at the top of every page.

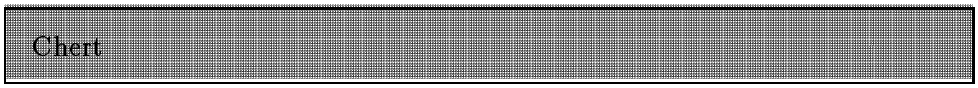
```
\runningheadformat{\bothpages{\it
   \line{\lft{Sociogeology}\ctr{}\rt{\pn}}
   \vs{2pt}
   \hrule
   \verticalspace{18pt}
   }
}
```



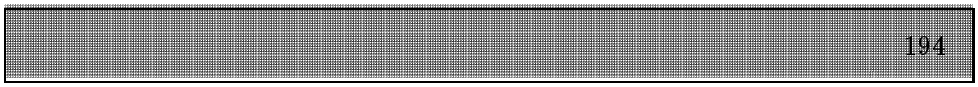
Example: This example alternates the author's name and page number at the top of even and odd pages. It complements the last example on the previous page.

```
\rhf{\evenpages{\vs{\bl}
                \line{\lft{Chert}}}}
     \oddpages{\vs{\bl}
               \line{\rt{\pagenumber}}}}
   }
```

Even pages will look like:



Odd pages will look like:

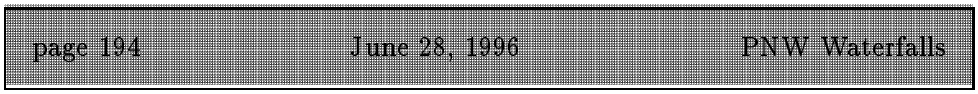


Note: An empty `\lft`, `\ctr`, or `\rt` may be omitted as was done in the above example.

A construct such as,

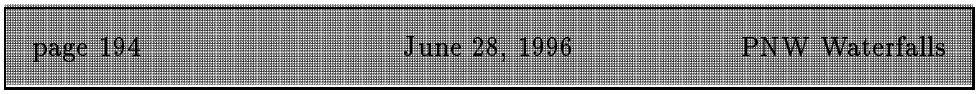
```
\rhf{\bothpages{
         \line{\lft{page \pn}\ctr{\today}
           \rt{PNW Waterfalls}}}}
```

will **not** print the date centered on the page:



To accomplish this, you should print the left and right justified text with `\line`, then space backwards one line (`\verticalspace{-\bl}`), then center the date:

```
\rhf{\bothpages{\line{\lft{page \pn}
              \rt{PNW Waterfalls}}}
         \vs{-\bl}
         \line{\ctr{\today}}}
```



Note: If you want no page numbers, then enter the following:

```
\runningheadformat{\bothpages{}}
```

sameauthor

```
\sameauthor
```

Abbreviation: `\sau`

Parameters: none

Description: The `\sameauthor` markup allows you to substitute a standard rule for an author's name for multiple references in a bibliography. The default rule is 3 em spaces wide; the default width may be changed in `\bibliographyformat` markup.

Example:

```
\bibliography{References Cited}
\frenchspacing
\bibentry
Roszak, T. 1972. {\it Where the Wasteland Ends}.
New York: Harper \& Row.
\bie
Weldon, S. 1971. {\it Waging Peace}.
Wilmington: M. \&\ R. Wolfe, Limited.
\bie
\sameauthor 1983. {\it The Metaindustry: War and
Economic  Development}.
Los Angeles: Thompson Books.
```

References Cited

Roszak, T. 1972. *Where the Wasteland Ends.* New York: Harper & Row.

Weldon, S. 1971. *Waging Peace.* Wilmington: M. & R. Wolfe, Limited.

———1983. *The Metaindustry: War and Economic Development.* Los Angeles: Thompson Books.

Note: none.

selectfontset

```
\selectfontset{cm12}{twelvept}{14pt}
\selectfontset{cm10}{tenpt}{12pt}
\twelvept
```

Abbreviation: \sfs

Parameters: catalog name, user's reference, leading

Description: For a typical document, you will need both a font set and a math set. The default font set selections consist of two sets for composing printers: \twelvept for the 12 point size Computer Modern serif typestyle; and \tenpt for the 10 point Computer Modern serif typestyle. Typically, the \selectfontset markup is placed in the front of your document. The format of this markup is

\selectfontset{*catalog name*}{*user's reference*}{*leading*}

where *catalog name* is the system name for that font set. (Complete lists of the catalog names can be found by going to the *TEXT1* help menu, or by looking in the *Font Catalogs*.) The *user's reference* is a name of your own devising. This name, when prefaced with a backslash will give you access to that font set. The *leading* is the interlineskip specification.

Each font set includes the following nine faces, each of which is called by adding a backslash in front of the name, or using the abbreviation: \roman (\rm), \bold (\bd), \italic (\it), \typewriter (\tt), \caps (\cc), \mathitalic (\mi), \symbol (\sy), \extension (\ex), and \bolditalic (\bi). Not all font sets have all nine faces available. If a particular face is not available, a warning message will be printed.

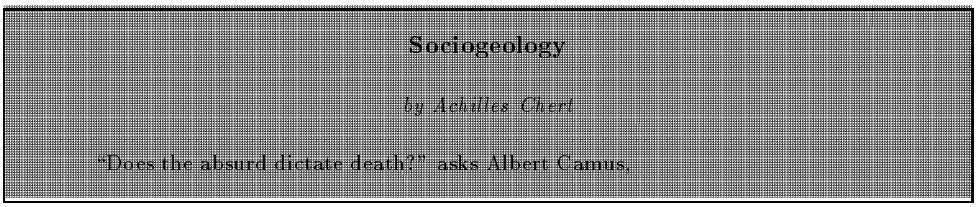
Example: After entering the \selectfontset,

```
\selectfontset{cm11}{eleven}{default}
\eleven
```

each time \eleven is specified, you would be using the Computer Modern font set at a 11 point size (cm11). The third parameter ("default") indicates that *TEXT1* will use the default value for \interlineskip, in this case 13 points. Then, whenever you switch to bold (\bd) you would get Computer Modern bold at a 11 point size. If you were to specify \it you would get Computer Modern italic at 11 points.

Example: Consider this example for switching from 9 point to a 8 point size. The \eightpoint is set with \interlineskip{9pt} instead of the default \interlineskip{10pt}, leaving less space between lines.

```
\selectfontset{cm9}{ninepoint}{default}
\selectfontset{cm8}{eightpoint}{9pt}
\eightpoint
\centerline{\ninepoint\bd Sociogeology}
\vs{12pt}
\centerline{\it by Achilles Chert}
\vs{12pt}
``Does the absurd dictate death?'' asks Albert Camus,
```



Note: Again, not all font sets have all nine faces available. If a particular face is not available, a warning message will be printed.

selectmathset

```
\selectmathset{cm97m}{mathdefault}
\mathdefault
```

Abbreviation: `\sms`

Parameters: catalog name, user's reference

Description: The `\selectmathset` markup loads type for use by math mode. Super-scripted footnotes, and mathematical equations, require the *TEXT1* math mode. For composing printers, the default for the primary (script) math set that is used to set super or subscripts is a 9 point Computer Modern, the secondary (script-script) math set which is used to set super-super or sub-subscripts is 7 point Computer Modern. *TEXT1* typewriter printers do not support math mode. The format of this markup is

`\selectmathset{`*catalog name*`}{`*user's reference*`}`

where *catalog name* is the system name for that math set. (Complete lists of the catalog names can be found by going to the *TEXT1* help menu, or by looking in the *Font Catalogs*.) The design of this name is such that the first digit(s) is the primary (script) size, the second digit(s) is the secondary (script-script) size. The *user's reference* is a name of your own devising. This name, when prefaced with a backslash will give you access to that math set.

Typically, the `\selectmathset` markup is placed in the front of your document with your `\selectfontset` markup.

Example: This math mode example uses a primary 14 point math font, instead of the default, and a secondary math font of 12 point.

```
\selectmathset{cm1412m}{bigmath}
\selectfontset{cm18}{bigfont}{default}
\bigfont
\bigmath
Human intelligence became possible when
$$C_{14}\to C_{1.4 \bullet 10| 6}$$
```

Human intelligence became possible when

$$C_{14} \rightarrow C_{1.4 \bullet 10^{6}}$$

Note: Typically, the `\selectmathset` markup is placed in the front of your document with your `\selectfontset` markup.

TEXT1 typewriter printers do not support math mode.

Only the super and subscripts are affected by the math mode fonts selected with the `\selectmathset` markup.

See *The TEXbook* for more on math mode.

selectspecificfont

\selectspecificfont{*cn*}{*fs*}{*le*}

Abbreviation: \ssf

Parameters: *catalog name, font size, leading*

Description: The \selectspecificfont markup permits you to include fonts that are not members of sets or families, and have an \interlineskip associated with it. The format of this markup is,

\selectspecificfont{*catalog name*}{*font size*}{*leading*}

where *catalog name* is the system name for that font without the font size specification. (Complete lists of the catalog names can be found by going to the *TEXT1* help menu, or by looking in the *Font Catalogs*.) The *font size* is the size in points of that face. The *leading* is the interlineskip specification. You **cannot** use "default" for the leading as you can with \selectfontset.

To access a specific font made available with \selectspecificfont, you enter a backslash, followed by the catalog name, followed by the font size, and ending with a semicolon.

Example: This example makes the Computer Modern Slanted font at 12 points available for use. After specifying,

```
\selectspecificfont{cmsl}{12}{14pt}
```

you would then enter "\cmsl12;" to use this font. For example,

```
\selectspecificfont{cmsl}{12}{14pt}
\twelvept
\cl{\cmsl12; Nuclear Utopia}
Nuclear war is unthinkable.
```

Nuclear Utopia
Nuclear war is unthinkable.

Note: Each font specified with \selectspecificfont **must** be followed by a semicolon.

You **cannot** use "default" for the leading as you can with \selectfontset.

\set{ *variable name*}{ *markup reference name*}

Abbreviation: none

Parameters: first parameter = *variable name*
second parameter = *markup reference name*

Description: There are times when it would be helpful to be able to set a variable which can be used later in your document to refer to a figure or chapter or table number. You can do this with the \set markup. For example, if you entered \set{myfigure}{\figurenumber} you could then use the variable \myfigure later on in your document.

The complete list of markup reference names you can include in the second parameter with the \set markup is:

\appendixnumber
\chapternumber
\endnotenumber
\figurenumber
\footnotenumber
\partnumber
\pagenumber
\subheadanumber
\subheadbnumber
\subheadcnumber
\subheaddnumber
\tablenumber

Example: If you would like to remember a particular figure number generated in chapter 1 and use that figure number later in chapter 2. For example, in chapter 1 you would use \set like this:

```
The following figure presents counts of material
types by analytic zones. As shown, the bulk of
material from both sits was jasper and chalcedony.
\fig{\vs{1in}}{Material Types by Zone}
\set{analyticzone}{\figurenumber}
```

Then later on in chapter 2 you could reference the above figure by saying:

```
Most stone objects at both sites were made of
cryptocrystalline stones as indicated previously in
Figure \analyticzone.
```

which would print something like.

Most stone objects at both sites were made of cryptocrystalline stones as indicated previously in Figure 17.

Note: You can use any sequence of characters to create your variable name used as the first parameter to the \set markup. But just like TEX variables, you cannot use digits, and case is sensitive.

setappendixnumber

```
\setappendixnumber{number}
```

Abbreviation: `\san`

Parameters: previous appendix number

Description: The appendix number will be automatically incremented by one for each use of `\appendix`. The appendix number can be reset by inserting the `\setappendixnumber` markup before the next occurrence of `\appendix`.

Example: By default, the first appendix is number 1. If you want to start with appendix 5, you would enter:

```
\setappendixnumber{4}
\appendix{Title of the fifth appendix}
⋮
```

Note: The number specified in the `\setappendixnumber` parameter is the *previous* appendix number, not the next appendix number.

setchapternumber

\setchapternumber{*number*}

Abbreviation: \scn

Parameters: previous chapter number

Description: The chapter number will be automatically incremented by one for each use of \chapter. The chapter number can be reset by inserting the \setchapternumber markup before the next occurrence of \chapter.

Example: By default, the first chapter is number 1. If you want to start with chapter 5, you would enter:

```
\setchapternumber{4}
\chapter{Title of the fifth chapter}
⋮
```

Note: The number specified in the \setchapternumber parameter is the *previous* chapter number, not the next chapter number.

setendnotenumber

\setendnotenumber{*number*}

Abbreviation: \senn

Parameters: previous endnote number

Description: The endnote number will be automatically incremented by one for each use of \autoendnote. The endnote number can be reset by adding the \setendnote-number markup before the next occurrence of an \autoendnote.

Example: By default, endnote numbers are reset in parts. If you also want them reset in chapters, you could modify the \chapterformat by adding \setendnotenumber to the \titleformat:

```
\chapterformat{\numberingstyle{1}
  \titleformat{\dumpinsertseject
      \cl{\twelvept\bd Chapter \chapternumber}
      \cl{\twelvept\bd \chaptertitle}
      \vs{1\bl}
      \setendnotenumber{0}
      \setsubheadanumber{0}
      \setsubheadbnumber{0}
      \setsubheadcnumber{0}
      \setsubheaddnumber{0}}
  \incontents{yes}}
```

Note: The number specified in the \setendnotenumber parameter is the *previous* endnote number, not the next endnote number. If you want the next \autoendnote to be endnote [90], then specify

```
\setendnotenumber{89}
```

setfigurenumber

\setfigurenumber{*number*}

Abbreviation: \sfn

Parameters: previous figure number

Description: The figure number will be automatically incremented by one for each use of \figure. The figure number can be reset by adding the \setfigurenumber markup before the next occurrence of \figure.

Example: By default, figure numbers are reset in parts. If you also want them reset in chapters, you could modify the \chapterformat by adding \setfigurenumber to the \titleformat:

```
\chapterformat{\numberingstyle{1}
  \titleformat{\dumpinsertseject
      \cl{\twelvept\bd Chapter \chapternumber}
      \cl{\twelvept\bd \chaptertitle}
      \vs{1\bl}
      \setfigurenumber{0}
      \setsubheadanumber{0}
      \setsubheadbnumber{0}
      \setsubheadcnumber{0}
      \setsubheaddnumber{0}}
  \incontents{yes}}
```

Note: The number specified in the \setfigurenumber parameter is the *previous* figure number, not the next figure number. If you want the next \figure to be Figure 90, then specify

```
\setfigurenumber{89}
```

setfootnotenumber

```
\setfootnotenumber{number}
```

Abbreviation: `\sfnn`

Parameters: previous footnote number

Description: The footnote number will be automatically incremented by one for each use of `\autofootnote`. The footnote number can be reset by adding the `\setfootnotenumber` markup before the next occurrence of an autofootnote.

Example: By default, footnote numbers are reset in parts. If you also want them reset in chapters, you could modify the `\chapterformat` by adding `\setfootnotenumber` to the `\titleformat`:

```
\chapterformat{\numberingstyle{1}
  \titleformat{\dumpinsertseject
      \cl{\twelvept\bd Chapter \chapternumber}
      \cl{\twelvept\bd \chaptertitle}
      \vs{1\bl}
      \setfootnotenumber{0}
      \setsubheadanumber{0}
      \setsubheadbnumber{0}
      \setsubheadcnumber{0}
      \setsubheaddnumber{0}}
  \incontents{yes}}
```

Note: The number specified in the `\setfootnotenumber` parameter is the *previous* footnote number, not the next footnote number. If you want the next `\autofootnote` to be footnote [90], then specify

```
\setfootnotenumber{89}
```

The `\setfootnotenumber` markup has no effect on the `\footnote` markup.

setpagenumber

\setpagenumber{*number*}

Abbreviation: \spn

Parameters: previous page number

Description: The \setpagenumber markup resets the page number of a paper. The first page of a document, commonly referred to as the title page, is treated as page number "1". You can begin the document with a page number other than 1, or renumber sections of the document.

The \setpagenumber markup can be specified anywhere in your document. It changes the number of the current page. This can be particularly useful if you are printing your document one part or chapter at a time.

To get pages in lower case roman numerals, for lead pages, enter a negative number, for instance \setpagenumber{-1}.

Example: To set the page number so that the sentence beginning "Furthermore ..." is on page 11, enter

```
as shown in this series of figures.
% insert four full-page figures
\setpagenumber{10}
\newpage
Furthermore, there are too many physical
similarities between human forms and earth forms
to dismiss. Indeed, they are made of the same ...
```

You could also have placed the \setpagenumber markup *after* the \newpage and changed the number from 10 to 11:

```
as shown in this series of figures.
% insert four full-page figures
\newpage
\setpagenumber{11}
Furthermore, there are too many physical
similarities between human forms and earth forms
to dismiss. Indeed, they are made of the same ...
```

Note: To get pages in lower case roman numerals, for lead pages, enter a negative number, for instance \setpagenumber{-1}.

setpartnumber

```
\setpartnumber{number}
```

Abbreviation: `\sptn`

Parameters: previous part number

Description: The part number will be automatically incremented by one for each use of `\part`. The part number can be reset by inserting the `\setpartnumber` markup before the next occurrence of `\part`.

Example: By default, the first part is number 1. If you want to start with part 5, you would enter:

```
\setpartnumber{4}
\part{Title of the fifth part}
⋮
```

Note: The number specified in the `\setpartnumber` parameter is the *previous* part number, not the next part number.

setsubheadanumber

\setsubheadanumber{*number*}

Abbreviation: \ssan

Parameters: previous subheada number

Description: The subheada number will be automatically incremented by one for each use of \subheada. The subheada number can be reset by inserting the \setsubheadanumber markup before the next occurrence of \subheada.

Example: By default, the first subheada is number 1. If you want to start with number 5, you would enter:

```
\setsubheadanumber{4}
\subheada{Title of the fifth subheada}
⋮
```

Note: The number specified in the \setsubheadanumber parameter is the *previous* subheada number, not the next subheada number.

The subheada number is reset to zero when you enter \part, \chapter or \appendix.

setsubheadbnumber

\setsubheadbnumber{*number*}

Abbreviation: \ssbn

Parameters: previous subheadb number

Description: The subheadb number will be automatically incremented by one for each use of \subheadb. The subheadb number can be reset by inserting the \setsubheadbnumber markup before the next occurrence of \subheadb.

Example: By default, the first subheadb is number 1. If you want to start with number 5, you would enter:

```
\setsubheadbnumber{4}
\subheadb{Title of the fifth subheadb}
⋮
```

Note: The number specified in the \setsubheadbnumber parameter is the *previous* subheadb number, not the next subheadb number.

The subheadb number is reset to zero when you enter \part, \chapter, \subheada, or \appendix.

setsubheadcnumber

\setsubheadcnumber{*number*}

Abbreviation: \sscn

Parameters: previous subheadc number

Description: The subheadc number will be automatically incremented by one for each use of \subheadc. The subheadc number can be reset by inserting the \setsubheadcnumber markup before the next occurrence of \subheadc.

Example: By default, the first subheadc is number 1. If you want to start with number 5, you would enter:

```
\setsubheadcnumber{4}
\subheadc{Title of the fifth subheadc}
⋮
```

Note: The number specified in the \setsubheadcnumber parameter is the *previous* subheadc number, not the next subheadc number.

The subheadc number is reset to zero when you enter \part, \chapter, \subheada, \subheadb, or \appendix.

setsubheaddnumber

\setsubheaddnumber{*number*}

Abbreviation: \ssdn

Parameters: previous subheadd number

Description: The subheadd number will be automatically incremented by one for each use of \subheadd. The subheadd number can be reset by inserting the \setsubheaddnumber markup before the next occurrence of \subheadd.

Example: By default, the first subheadd is number 1. If you want to start with number 5, you would enter:

```
\setsubheaddnumber{4}
\subheadd{Title of the fifth subheadd}
⋮
```

Note: The number specified in the \setsubheaddnumber parameter is the *previous* subheadd number, not the next subheadd number.

The subheadd number is reset to zero when you enter \part, \chapter, \subheada, \subheadb, \subheadc, or \appendix.

settablenumber

\settablenumber{*number*}

Abbreviation: \stn

Parameters: previous table number

Description: The table number will be automatically incremented by one for each use of \tabletitle. The table number can be reset by adding the \settablenumber markup before the next occurrence of \tabletitle.

Example: By default, table numbers are reset in parts. If you also want them reset in chapters, you could modify the \chapterformat by adding \settablenumber to the \titleformat:

```
\chapterformat{\numberingstyle{1}
  \titleformat{\dumpinsertseject
      \cl{\twelvept\bd Chapter \chapternumber}
      \cl{\twelvept\bd \chaptertitle}
      \vs{1\bl}
      \settablenumber{0}
      \setsubheadanumber{0}
      \setsubheadbnumber{0}
      \setsubheadcnumber{0}
      \setsubheaddnumber{0}}
  \incontents{yes} }
```

Note: The number specified in the \settablenumber parameter is the *previous* table number, not the next table number. If you want the next \tabletitle to be Table 90, then specify

```
\settablenumber{89}
```

singlespace

```
\singlespace
```

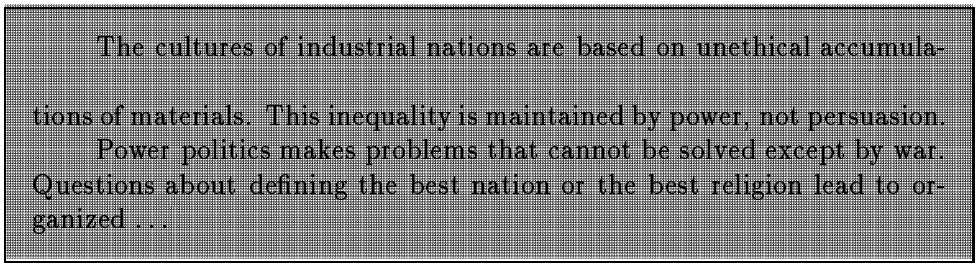
Abbreviation: `\ssp`

Parameters: none

Description: Single spacing is the default for *TEXT1*. The `\singlespace` markup can be used to return to single spacing if the spacing has been changed double spacing with `\doublespace`. The markup `\singlespace` markup has no parameters, and causes an end-of-paragraph, forcing the following text into a new paragraph.

Example:

```
\doublespace
The cultures of industrial nations are based on
unethical accumulations of materials.
This inequality is maintained by power, not
persuasion.
\singlespace
Power politics makes problems that cannot be solved
except by war.
Questions about defining the best nation or the best
religion lead to organized ...
```



Note: The interline skip value used with `\singlespace` and `\doublespace` is set with the `\interlineskip` markup.

```
\strut
```

Abbreviation: none

Parameters: none

Description: There are times when it is necessary to have the baselineskip between two lines be the same, especially if you are building a table that uses rules between columns. The **\strut** markup can be used in an **\halign** to maintain consistent distance between lines of a table. The **\strut** markup has no parameters. Its height is 1.8 times the height of an "x" in the current point size. Its depth is .6 times the height of an "x" in the current point size.

Example: Consider this table created without the use of **\strut**,

```
\sfs{cm8}{eightpt}{default}
\twelvept

⋮
\tabletitle{Comparison of the composition of goat's
milk and that of two common breeds of dairy cows}
{\offinterlineskip\eightpt
\halign{\vrule\hs{3pt}\lft{#}\hs{3pt}\vrule&&
    \hs{3pt}\ctr{#}\hs{3pt}\vrule\cr
\noalign{\hrule}
&&\bd Total&&&\cr
\bd Source of milk&\bd Water&\bd Solids&
     \bd Fat&\bd Protein&\bd Lactose\cr
\noalign{\hrule height 1pt}
Goats&82.02\%&11.98\%&3.50\%&3.13\%&4.55\%\cr
\noalign{\hrule}
Holstein-Friesian&87.50\%&12.50\%&3.55\%&3.42\%&4.86\%\cr
\noalign{\hrule}
Jersey&85.31\%&14.69\%&5.18\%&3.86\%&4.94\%\cr
\noalign{\hrule}
}}
\twelvept
```

which prints as:

Table 6
Comparison of the composition of goat's milk and that of two common breeds of dairy cows

Source of milk	Water	Total Solids	Fat	Protein	Lactose
Goats	82.02%	11.98%	3.50%	3.13%	4.55%
Holstein-Friesian	87.50%	12.50%	3.55%	3.42%	4.86%
Jersey	85.31%	14.69%	5.18%	3.86%	4.94%

Now add `\strut` to the `\halign` preamble,

```
\halign{\strut\vrule\hs{3pt}\lft{#}\hs{3pt}\vrule&&
    \hs{3pt}\ctr{#}\hs{3pt}\vrule\cr
```

and notice the uniform distance between lines:

Table 7
Comparison of the composition of goat's milk and that of two common breeds of dairy cows

Source of milk	Water	Total Solids	Fat	Protein	Lactose
Goats	82.02%	11.98%	3.50%	3.13%	4.55%
Holstein-Friesian	87.50%	12.50%	3.55%	3.42%	4.86%
Jersey	85.31%	14.69%	5.18%	3.86%	4.94%

Note: The size of the strut changes as the interline skip changes. `\twelvept` will have a longer `\strut` than will `\tenpt`.

See *The TEXbook* for more on `\offinterlineskip`.

subheada

\subheada{*title*}

Abbreviation: \sha

Parameters: *title*

Description: The \subheada markup creates a first level subheading, which skips two baselines, prints the title in bold type, then skips one more baseline. It does not begin a new page. Its title is placed in the table of contents automatically.

Example:

```
more realistic.
\subheada{Nationalism and War}
Nationalism is directly related to war.
Lord Acton observed that ...
```

which prints:

more realistic.

Nationalism and War

Nationalism is directly related to war. Lord Acton observed that ...

Note: Use \subheadaformat to change any of the above mentioned defaults.

TEXT1 will encourage page breaking before a \subheada. It discourages page breaking between the \subheada and the first line of the following paragraph.

Note: If you have text you want included in the subheada title in the document, but not to be printed in the table of contents, you can exclude it with the \notintoc markup. Refer to the \figure markup for an example on how to use \notintoc.

Note: The \toclinebreak May be used to have a line in the Table of Contents break differently than the way it is printed in the document. Refer to the \figure markup for an example on how to use \toclinebreak.

subheadaformat

```
\subheadaformat{\numberingstyle{1}
        \titleformat{\removelastskip
                     \goodbreak\vs{2\bl}
                     \twelvept
                     \bd\nin\subheadatitle
                     \par\nobreak
                     \vs{1\bl}\nobreak
                     \setsubheadbnumber{0}
                     \setsubheadcnumber{0}
                     \setsubheaddnumber{0}}
          \incontents{yes}
        }
```

Abbreviation: `\shaf`

Parameters: submarkup

Submarkup: `\numberingstyle, \titleformat, \incontents`

Description: The `\subheadaformat` markup lets you change the appearance of the subheading title. There are three submarkup that control how the `\subheada` is to appear.

`\numberingstyle` by default is `1` which will print the subhead number in Arabic numbers. Other possibilities are "`A`" and "`I`". By default, subhead numbers are not printed, even though the `\subheadanumber` is incremented.

`\titleformat{`*Nested Markup*`}` is used to describe how the subhead title is to be printed. You may use markup such as `\newpage`, `\removelastskip`, `\goodbreak`, `\nobreak`, `\verticalspace`, and `\centerline` within `\titleformat` as *Nested Markup*. Other markup you may use within or outside of `\subheadaformat`:

- `\subheadanumber` prints the most recent subheada number.
- `\subheadatitle` prints the most recent subheada title.

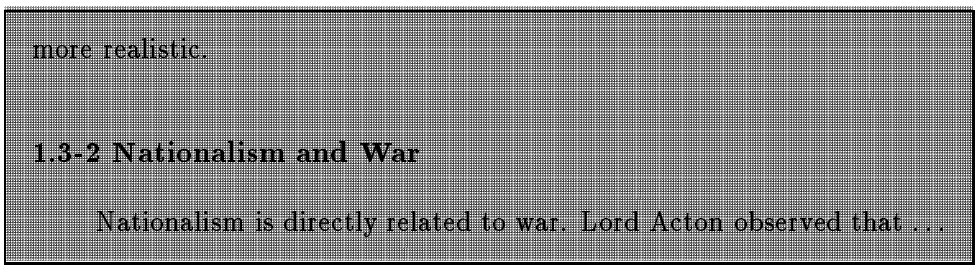
`\incontents` places the subheada title by default in the contents (if one is printed). Printing in the table of contents can be suppressed by changing to "no":

```
\shaf{\incontents{no}}
```

Example: Some applications require the subheads to be numbered. For `\subheada` to include a number like "*pp.cc-aa*" where "*pp*" is the part number, "*cc*" is the chapter number, and "*aa*" is the subheada number, you would modify the `\subheadaformat`:

```
\subheadaformat{\numberingstyle{1}
  \titleformat{\removelastskip\goodbreak\vs{2\bl}
       \bd\partnumber.\chapternumber-\subheadanumber
       \quad\subheadatitle\par
       \nobreak\vs{1\bl}\nobreak}
  \incontents{yes}
}
⋮
more realistic.
\par
\subheada{Nationalism and War}
Nationalism is directly related to war.
Lord Acton observed that ...
```

The second subheada in the third chapter of the first part would print as:



subheadb

\subheadb{*title*}

Abbreviation: \shb

Parameters: *title*

Description: The \subheadb markup creates a second level subheading, which skips two baselines, prints the title in italics, then skips one more baseline. It does not begin a new page. Its title is placed in the table of contents automatically.

Example:

```
more realistic.
\par
\subheadb{Nationalism and War}
Nationalism is directly related to war.
Lord Acton observed that ...
```

which prints:

more realistic.

Nationalism and War

Nationalism is directly related to war. Lord Acton observed that ...

Note: Use \subheadbformat to change any of the above mentioned defaults.

TEXT1 will encourage page breaking before a \subheadb. It discourages page breaking between the \subheadb and the first line of the following paragraph.

Note: If you have text you want included in the subheadb title in the document, but not to be printed in the table of contents, you can exclude it with the \notintoc markup. Refer to the \figure markup for an example on how to use \notintoc.

Note: The \toclinebreak May be used to have a line in the Table of Contents break differently than the way it is printed in the document. Refer to the \figure markup for an example on how to use \toclinebreak.

subheadbformat

```
\subheadbformat{\numberingstyle{1}
        \titleformat{\removelastskip
                     \goodbreak\vs{2\bl}
                     \twelvept
                     \it\nin\subheadbtitle
                     \par\nobreak
                     \vs{1\bl}\nobreak
                     \setsubheadcnumber{0}
                     \setsubheaddnumber{0}}
          \incontents{yes}
        }
```

Abbreviation: \shbf

Parameters: submarkup

Submarkup: \numberingstyle, \titleformat, \incontents

Description: The \subheadbformat markup lets you change the appearance of the subheading title. There are three submarkup that control how the \subheadb is to appear.

\numberingstyle by default is 1 which will print the subhead number in Arabic numbers. Other possibilities are "A" and "I". By default, subhead numbers are not printed, even though the \subheadbnumber is incremented.

\titleformat{*Nested Markup*} is used to describe how the subhead title is to be printed. You may use markup such as \newpage, \removelastskip, \goodbreak, \nobreak, \verticalspace, and \centerline within \titleformat as *Nested Markup*. Other markup you may use within or outside of \subheadbformat:

- \subheadbnumber prints the most recent subheadb number.
- \subheadbtitle prints the most recent subheadb title.

\incontents places the subheadb title by default in the contents (if one is printed). Printing in the table of contents can be suppressed by changing to "no":

```
\shbf{\incontents{no}}
```

Example: Some applications require the subheads to be numbered. If you wanted `\subheadb` to include a number like "*pp.cc.aa.bb*" where "*pp*" is the part number, "*cc*" is the chapter number, "*aa*" is the subheada number, and "*bb*" is the subheadb number, you would modify the `\subheadbformat`:

```
\subheadbformat{\numberingstyle{1}
  \titleformat{\removelastskip\goodbreak\vs{2\bl}
   \italic
    \partnumber.\chapternumber.\subheadanumber.\subheadbnumber
        \quad\subheadbtitle\par
        \nobreak\vs{1\bl}\nobreak}
  \incontents{yes}
}
⋮
more realistic.
\subheadb{Nationalism and War}
Nationalism is directly related to war.
Lord Acton observed that ...
```

The first subheadb in the second subheada of the third chapter of the first part would print as:

more realistic.

1.3.2.1 Nationalism and War

Nationalism is directly related to war. Lord Acton observed that ...

\subheadc{*title*}

Abbreviation: \shc

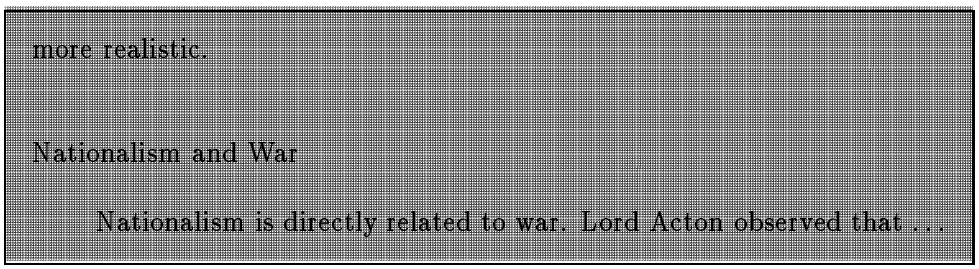
Parameters: *title*

Description: The \subheadc markup creates a third level subheading, which skips two baselines, prints the title in roman type, then skips one more baseline. It does not begin a new page. Its title is **not** placed in the table of contents automatically.

Example:

```
more realistic.
\subheadc{Nationalism and War}
Nationalism is directly related to war.
Lord Acton observed that ...
```

which prints:



Note: Use \subheadcformat to change any of the above mentioned defaults.

TEXT1 will encourage page breaking before a \subheadc. It discourages page breaking between the \subheadc and the first line of the following paragraph.

Note: If you have text you want included in the subheadc title in the document, but not to be printed in the table of contents, you can exclude it with the \notintoc markup. Refer to the \figure markup for an example on how to use \notintoc.

Note: The \toclinebreak May be used to have a line in the Table of Contents break differently than the way it is printed in the document. Refer to the \figure markup for an example on how to use \toclinebreak.

subheadcformat

```
\subheadcformat{\numberingstyle{1}
        \titleformat{\removelastskip
                     \goodbreak\vs{2\bl}
                     \twelvept
                     \rm\nin\subheadctitle
                     \par\nobreak
                     \vs{1\bl}\nobreak
                     \setsubheaddnumber{0}}
          \incontents{no}
        }
```

Abbreviation: \shcf

Parameters: submarkup

Submarkup: \numberingstyle, \titleformat, \incontents

Description: The \subheadcformat markup lets you change the appearance of the subheading title. There are three submarkup that control how the \subheadc is to appear.

\numberingstyle by default is 1 which will print the subhead number in Arabic numbers. Other possibilities are "A" and "I". By default, subhead numbers are not printed, even though the \subheadcnumber is incremented.

\titleformat{*Nested Markup*} is used to describe how the \subheadc title is to be printed. You may use markup such as \newpage, \removelastskip, \goodbreak, \nobreak, \verticalspace, and \centerline within \titleformat as *Nested Markup*. Other markup you may use within or outside of \subheadcformat:

- \subheadcnumber prints the most recent subheadc number.
- \subheadctitle prints the most recent subheadc title.

\incontents places the subheadc title in the contents (if one is printed). By default, the title is not placed in the contents. Printing in the table of contents can be included by changing to "yes":

```
\shcf{\incontents{yes}}
```

Example: Some applications require the subheads to be numbered. If you wanted `\subheadc` to include a number like "**Section** *cc*:" where "*cc*" is a bold subheadc number, you could modify the `\subheadcformat`:

```
\subheadcformat{\numberingstyle{1}
  \titleformat{\removelastskip\goodbreak\vs{2\bl}
       \nin\bd Section \subheadcnumber:
       \quad\subheadctitle\par
       \nobreak\vs{1\bl}\nobreak}
  \incontents{no}
}
⋮
more realistic.
\subheadc{Nationalism and War}
Nationalism is directly related to war.
Lord Acton observed that ...
```

The third subheadc would print as:

more realistic.

Section 3: Nationalism and War

Nationalism is directly related to war. Lord Acton observed that ...

subheadd

\subheadd{*title*}

Abbreviation: \shd

Parameters: *title*

Description: The \subheadd markup creates a fourth level subheading, which skips to a new paragraph, prints the title in italics followed by a period, then continues the paragraph. It does not begin a new page. Its title is **not** placed in the table of contents automatically.

Example:

```
more realistic.
\subheadd{Nationalism and War}
Nationalism is directly related to war.
Lord Acton observed that ...
```

which prints:

more realistic.
Nationalism and War. Nationalism is directly related to war. Lord Acton observed that ...

Note: Use \subheaddformat to change any of the above mentioned defaults.

TEXT1 will encourage page breaking before a \subheadd.

Note: If you have text you want included in the subheadd title in the document, but not to be printed in the table of contents, you can exclude it with the \notintoc markup. Refer to the \figure markup for an example on how to use \notintoc.

Note: The \toclinebreak May be used to have a line in the Table of Contents break differently than the way it is printed in the document. Refer to the \figure markup for an example on how to use \toclinebreak.

subheaddformat

```
\subheaddformat{\numberingstyle{1}
        \titleformat{\goodbreak
                     {\twelvept
                       \it\subheaddtitle.}
          \incontents{no}
        }
```

Abbreviation: \shdf

Parameters: submarkup

Submarkup: \numberingstyle, \titleformat, \incontents

Description: The \subheaddformat markup lets you change the appearance of the subheading title. There are three submarkup that control how the \subheadd is to appear.

\numberingstyle by default is 1 which will print the subhead number in Arabic numbers. Other possibilities are "A" and "I". By default, subhead numbers are not printed, even though the \subheaddnumber is incremented.

\titleformat{*Nested Markup*} is used to describe how the subhead title is to be printed. You may use markup such as \newpage, \removelastskip, \goodbreak, \nobreak, \verticalspace, and \centerline within \titleformat as *Nested Markup*. Other markup you may use within or outside of \subheaddformat:

- \subheaddnumber prints the most recent subheadd number.
- \subheaddtitle prints the most recent subheadd title.

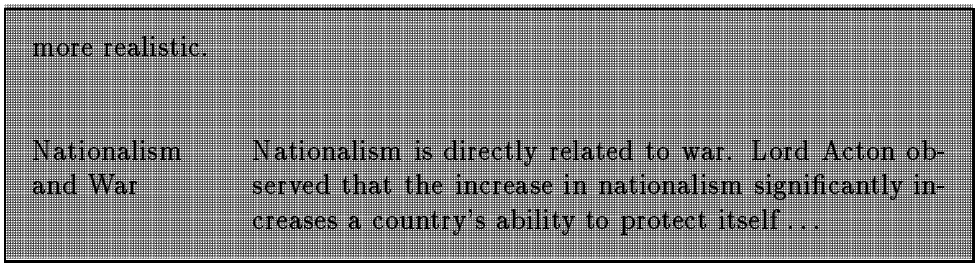
\incontents places the subheadd title in the contents (if one is printed). By default, the title is not placed in the contents. Printing in the table of contents can be included by changing to "yes":

```
\shdf{\incontents{yes}}
```

Example: If you wanted a subhead to place the title in a lable, you would modify the `\subheaddformat`:

```
\subheaddformat{\numberingstyle{1}
  \titleformat{\removelastskip\goodbreak\vs{2\bl}
       \label{\subheaddtitle}
       }
  \incontents{no}
}
⋮
more realistic.
\subheadd{Nationalism and War}
Nationalism is directly related to war.
Lord Acton observed that the increase in nationalism
significantly increases a country's ability to
protect itself ...
```

The fourth subheadd would print as:



```
\symbol
```

Abbreviation: `\sy`

Parameters: none

Description: The `\symbol` markup sets the face to the Computer Modern Math Symbol face. Refer to *The TEXbook*, Appendix F, for a complete list of the characters available in the Symbol face.

Example: This example uses `\symbol` to print a diagonal arrow:

```
Put a {\symbol\char'45} next to  ...
```

Put a ↗ next to ...

Note: For more on the use of the `\char` markup, refer to *The TEXbook*.

tableformat

```
\tableformat{
   \titleformat{\vs{\bl}
               \cl{\twelvept\bd Table \tablenumber}
               \cl{\twelvept\tabletitle}
               \vs{\bl}
               }
  \incontents{yes}
}
```

Abbreviation: \taf

Parameters: submarkup

Submarkup: \titleformat, \incontents

Description: The \tableformat markup allows you to modify the defaults that control the appearance of the table title.

\titleformat{*Nested Markup*} controls the appearance of the table title. You may use markup such as \blockquotebegin, \hangingparagraph, \verticalspace, and \centerline within \titleformat as *Nested Markup*. Other markup you may use within or outside of \tableformat:

- \tablenumber prints the most recent table number.
- \tabletitle prints the most recent table title.

\incontents places the table title in contents (if one is printed). Printing can be suppressed by changing to "no."

Example: If you wanted a table title to print in a hanging paragraph style, and you didn't want the table title put in the table of contents, enter:

```
\tableformat{%
        \titleformat{\bqb\hp\bd Table \tablenumber.
                              \rm\tabletitle\bqe}
        \incontents{yes}
   }
⋮
\tabletitle{Size data of a Yellow
Transparent fruit during the period of July 23 to August 9,
1977. (fruit No. IV$_b$)}
\halign{\qquad\ctr{#}&&\hs{1em}\ctr{#}\cr
July 23&July 27&July 31&August 5&August 9\cr
32&67&44&47&18\cr}
```

And you will get a table something like:

Table 8. Size data of a Yellow Transparent fruit during the period of July 23 to August 9, 1977. (fruit No. IV_6)

July 23	July 27	July 31	August 5	August 9
32	67	44	47	18

tableofcontents

```
\tableofcontents{page number}
```

Abbreviation: `\toc`

Parameters: page number

Description: The `\tableofcontents` markup prints the table of contents, beginning with the designated page. A roman numeral page number is specified by entering a negative page number. This markup must always appear at the end of a document.

By default, parts, chapters, appendices and subheading levels "A" and "B" are included in the table of contents. The order of printing in the table of contents is always

1. table of contents
2. list of figures
3. list of tables

The list of figures will print only if a \figure markup was used. The list of tables will print only if a \tabletitle markup was used.

Example: To print the table of contents beginning on page 32 enter:

```
of utmost importance.
\tableofcontents{32}
```

Example: If you wanted the table of contents to begin on roman numeral page three ("iii"), you would enter a minus three.

```
New York: Halstead Press.
\tableofcontents{-3}
```

Note: This markup **must always** appear at the end of a document.

Multiple line titles may be broken in the table of contents by using `\toclinebreak`.

tableofcontentsformat

```
\tableofcontentsformat{%
  \toctitle{\centerline{\bd Table of Contents}
            \vs{\bl}}
  \prefacetocformat{\nin\prefacetitle\leader\pn}
  \parttocformat{\vs{1\bl}
     \centerline{Part \partnumber}
     \centerline{\parttitle}\vs{1\bl}
     \nin Part \partnumber\leader\pn}
  \continuechapter{no}
  \chaptertocformat{\hangingchapternumber
     \chaptertitle \leader \pagenumber}
  \hangingchapterindent{.25in}
  \appendixtocformat{\hangingappendixnumber
     \appendixtitle \leader \pn}
  \hangingappendixindent{.25in}
  \subheadatocformat{\leftindent{.5in}\nin
     \subheadatitle \leader \pagenumber}
  \subheadbtocformat{\leftindent{1in}\nin
     \subheadbtitle \leader \pagenumber}
  \subheadctocformat{\leftindent{1.5in}\nin
     \subheadctitle \leader \pagenumber}
  \subheaddtocformat{\leftindent{2in}\nin
     \subheaddtitle \leader \pagenumber}
  \bibliographytocformat{\nin\bibtitle\leader\pn}
  \figuretoctitle{\newpage
     \centerline{\bd List of Figures}
     \line{Figure \rt{Page}}}
  \figuretocformat{\hangingnumber{\figurenumber.}
     \figuretitle\leader\pn}
  \hangingfigureindent{.25in}
  \tabletoctitle{\newpage
     \centerline{\bd List of Tables}
     \line{Table \rt{Page}}}
  \tabletocformat{\hangingnumber{\tablenumber.}
     \tabletitle\leader\pn}
  \hangingtableindent{.25in}}
```

Abbreviation: `\tocf`

Parameters: submarkup

Submarkup: `\toctitle`, `\prefacetocformat`, `\parttocformat`, `\continuechapter`, `\chaptertocformat`, `\hangingchapterindent`, `\appendixtocformat`,

`\hangingappendixindent`, `\subheadatocformat`, `\subheadbtocformat`, `\subheadctocformat`, `\subheaddtocformat`, `\bibliographytocformat`, `\figuretoctitle`, `\figuretocformat`, `\hangingfigureindent`, `\tabletoctitle`, `\tabletocformat`, `\hangingtableindent`

Description: The table of contents prints with the titles "Table of Contents", "List of Figures", and "List of Tables" centered in bold letters and each beginning on a new page. If you want to change these defaults you use the `\tableofcontentsformat` markup. This markup also changes the way part, chapter, subhead, appendix, bibliography, preface, figure and table titles print in table of contents.

`\toctitle` regulates how the table of contents title is to be printed. By default it is a centered bold title "**Table of Contents**". Use `\toctitle` to change this default.

Example: If you wanted the title of the table of contents to print "*Contents*" you would enter:

```
\tableofcontentsformat{
      \toctitle{\cl{\it Contents}}}
```

`\prefacetocformat` determines how titles entered on the `\preface` markup are to print in the table of contents. By default, they are simply printed with a `\noindent`.

Preface 234

Example: If you wanted the preface title to print in italics as illustrated on the next page, you would enter:

```
\tocf{\prefacetocformat{\nin\it
                \prefacetitle\leader\pn}}
```

Preface *234*

`\parttocformat` determines how titles entered on the `\part` markup are to print in the table of contents. By default, part titles skip one line, center the part number, center the part title, skip another line, then print "Part" followed by the part number again, followed by leader and the page number:

Part 1
Mechanics

Part 1 234

Example: If you wanted parts to print in a hanging paragraph style, enter:

```
\tocf{\parttocformat{\hp\parttitle\leader\pn}}
```

Videodiscs in today's modern office — Timely TV Tutors 235

\continuechapter if specified as "yes" will print "Chapter" at the top of each page under the header. The default is "no".

\chaptertocformat{*Nested Markup*} determines how a chapter title is to be printed in the table of contents. By default, the chapter number and title are printed in a hanging number style. For example, if you entered,

```
\chapter{The Nineteenth Century and after\lbr
best-sellers\toclbr and steady-sellers}
```

you would get in the table of contents:

1. The Nineteenth Century and after best-sellers and steady-sellers 235

Note that the line break from \lbr only occurs in the text, not in the table of contents. Use \toclbr to create a line break which is to occur in the table of contents. To change the amount of indent, use the \hangingchapterindent. You may use markup such as \newpage, \chaptertitle, \chapternumber, \vertical-space, and \centerline within \chaptertocformat as *Nested Markup*. You may also use \hangingchapternumber, which prints the chapter number in a similar fashion as \item.

Example: If you wanted chapter titles to print in a hanging paragraph style, without an associated chapter number, you would enter:

```
\tocf{\chaptertocformat{\hp\chaptertitle\leader\pn}}
```

The Nineteenth Century and after best-sellers and steady-sellers 235

Example: If you want the title "Chapter" to appear left justified in the table of contents above the first chapter number, **prior to** the first chapter you would enter the following \putincontents markup:

```
\putincontents1{\nin Chapter}
\chapter{First Chapter}
```

```
Text of the first chapter ...
```

which prints in the table of contents as:

Chapter
1. First Chapter 236

\hangingchapterindent controls the amount of indent before printing the chapter title when you print using \hangingchapternumber.

\appendixtocformat{*Nested Markup*} determines how an appendix title is to be printed in the table of contents. By default, the appendix number and title are printed in a hanging number style. For example, if you entered,

```
\appendix{The Nineteenth Century and after\lbr
best-sellers\toclbr and steady-sellers}
```

you would get in the table of contents:

A. The Nineteenth Century and after best-sellers
and steady-sellers 236

Note that the line break from \lbr only occurs in the text, not in the table of contents. Use \toclbr to create a line break which is to occur in the table of contents. To change the amount of indent, use the \hangingappendixindent. You may use markup such as \newpage, \appendixtitle, \appendixnumber, \verticalspace, and \centerline within \appendixtocformat as *Nested Markup*. You may also use \hangingappendixnumber, which prints the chapter number in a similar fashion as \item.

Example: If you wanted appendix titles to print in a hanging paragraph style, without an associated appendix number, you would enter:

```
\tocf{\appendixtocformat{\hp\appendixtitle\leader\pn}}
```

The Nineteenth Century and after best-sellers
and steady-sellers 236

Example: If you want the title "Appendix" to appear left justified in the table of contents above the first appendix number, **prior to** the first appendix you would enter the following \putincontents markup:

```
\putincontents1{\nin Appendix}
\appendix{First Appendix}
```

```
Text of the first appendix ...
```

Appendix
A. First Appendix 236

\hangingappendixindent controls the amount of indent before printing the appendix title when you print using \hangingappendixnumber.

\subheadatocformat by default prints all titles entered with \subheada to be block indented 1/2 inch from the left margin. Use \subheadatocformat to change this default.

Chapter
1. Document Exchange 237
Micro-to-Mainframe Links: They don't quite make it yet 237

Example: To have subheada titles indented 1/4 inch and printed with a hangingindent, enter:

```
\tocf{\subheadatocformat{\leftindent{.25in}
                \hp\subheadatitle \leader \pagenumber}}
```

Chapter
1. Document Exchange 237
Micro-to-Mainframe Links: They don't quite make it yet 237

\subheadbtocformat by default prints all titles entered with \subheadb to be block indented 1 inch from the left margin. Use \subheadbtocformat to change the default illustrated here:

Chapter
1. Document Exchange 237
Micro-to-Mainframe Links: They don't quite make it yet 237

Example: To have subheadb titles indented 1/4 inch and printed with a hangingindent prefaced with "*cc.aa.bb*" where *cc* is the chapter number, *aa* is the subheada number and *bb* is the subheadb number, enter:

```
\tocf{\subheadbtocformat{\leftindent{.25in}
            \hp\chapternumber.\subheadanumber.\subheadbnumber
                \quad\subheadbtitle \leader \pagenumber}}
```

The first \subheadb in the second \subheada of the first chapter would print in the table of contents as:

Chapter
1. Document Exchange 238
1.2.1 Micro-to-Mainframe Links: They
don't quite make it yet 238

\subheadctocformat by default prints all titles entered with \subheadc to be block indented 1½ inch from the left margin. Use \subheadctocformat to change this default.

Chapter
1. Document Exchange 238
Micro-to-Mainframe Links: They
don't quite make it yet 238

Example: To have subheadc titles indented ¾ inch and printed in italics, enter:

```
\tocf{\subheadctocformat{\leftindent{.75in}
            \nin\italic
            \subheadctitle \leader \pagenumber}}
```

Chapter
1. Document Exchange 238
Micro-to-Mainframe Links: They don't
quite make it yet 238

\subheaddtocformat by default prints all titles entered with \subheadd to be block indented 2 inches from the left margin. Use \subheaddtocformat to change this default.

Chapter
1. Document Exchange 238
Micro-to-Mainframe Links:
They don't quite make
it yet 238

Example: To have subheadd titles indented 2 inches, printed with a hangingindent in a 10 point Computer Modern italic font, and no page number, enter:

```
\tocf{\subheadatocformat{\leftindent{2in}
        \hp\tenpt\italic
          \subheaddtitle}}
```

Chapter
1. Document Exchange 239
Micro-to-Mainframe Links:
They don't quite make it yet

\bibliographytocformat determines how titles entered on the \bibliography markup are to print in the table of contents. By default, they are simply printed with a \noindent like prefaces. Use \bibliographytocformat to change this default.

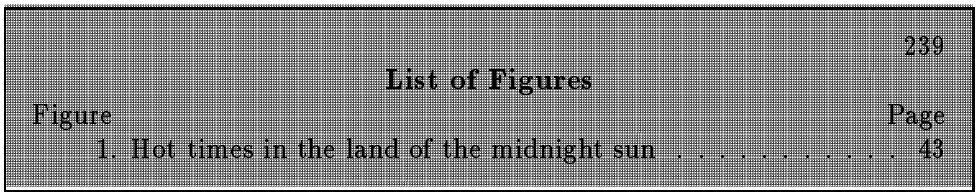
Bibliography 239

Example: If you wanted the preface title to print in bold, you would enter:

```
\tocf{\bibliographytocformat{\nin\bold
        \bibtitle\leader\pn}}
```

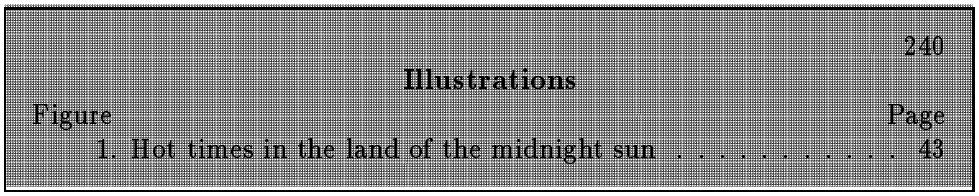
Bibliography 239

\figuretoctitle determines how the list of figures is to print. By default, it will start a new page, center the title "**List of Figures**", and then print a header above the first figure, which in the example below had the title "Hot times . . ." and printed on page 43:



Example: If you wanted the list of figures to print the title "**Illustrations**" instead of "**List of Figures**" after skipping to a new page, enter

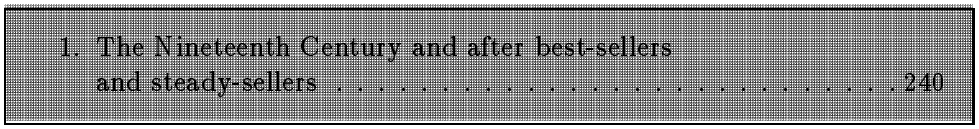
```
\tocf{\figuretoctitle{\newpage
          \cl{\bd Illustrations}
          \line{Figure\rt{Page}}}}
```



\figuretocformat{*Nested Markup*} determines how a figure title is to be printed in the table of contents. By default, the figure number and title are printed in a hanging number style. For example, if you entered:

```
\figure{\halfpage}{The Nineteenth Century
and after best-sellers\toclbr and steady-sellers}
```

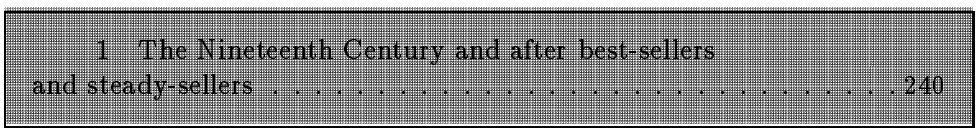
the figure title would print in the contents as:



To change the amount of indent, use the \hangingfigureindent. You may use markup such as \figuretitle and \figurenumber, within \figuretocformat as *Nested Markup*. You may also use \hangingnumber{\figurenumber} which prints the figure number in a similar fashion as \item.

Example: If you wanted figure titles to print in a hanging paragraph style prefaced with the figure number, you would enter:

```
\tocf{\figuretocformat{\hp
          \figurenumber\quad\figuretitle\leader\pn}}
```



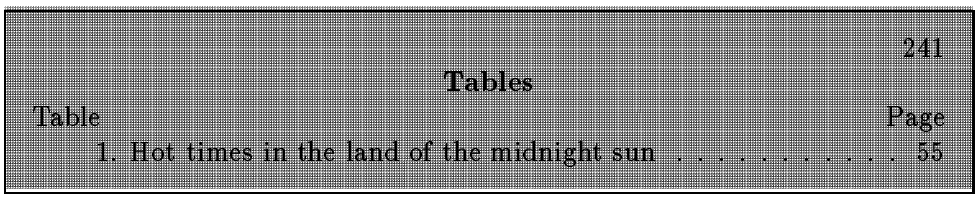
\hangingfigureindent controls the amount of indent before printing the figure title when you print using:

```
\hangingnumber{\figurenumber}
```

\tabletoctitle determines how the list of tables is to print. By default, it will start a new page, center the title "**List of Tables** ", and then print a header above the first table, which in the example below had the title "Hot times ..." and printed on page 55:

Example: If you wanted the list of tables to print the title "**Tables**" after skipping to a new page, enter

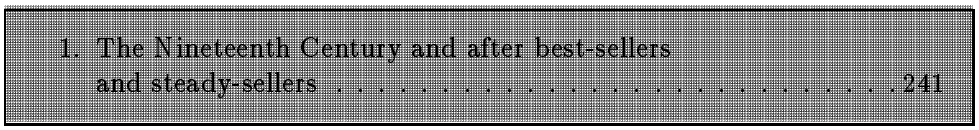
```
\tocf{\tabletoctitle{\newpage
          \cl{\bd Tables}
          \line{Table\rt{Page}}}}
```



\tabletocformat{*Nested Markup*} determines how a table title is to be printed in the table of contents. By default, the table number and title are printed in a hanging number style. For example, if you entered:

```
\tabletitle{The Nineteenth Century
and after best-sellers\toclbr and steady-sellers}
```

the table title would print as:



To change the amount of indent, use the \hangingtableindent. You may use markup such as \tabletitle and \tablenumber, within \tabletocformat as *Nested Markup*. You may also use \hangingnumber{\tablenumber}, which prints the table number in a similar fashion as \item.

Example: If you wanted table titles to print in a hanging paragraph style prefaced with "*cc.tt*" where *cc* is the chapter number and *tt* is the table number, you would enter,

```
\tocf{\tabletocformat{\hp\chapternumber.\tablenumber
        \quad\tabletitle\leader\pn}}
```

and the first table of the second chapter would print in the contents as:

2.1 The Nineteenth Century and after best-sellers and steady-sellers 242

`\hangingtableindent` controls the amount of indent before printing the table title when you print using:

```
\hangingnumber{\tablenumber}
```

Note: The `\tableofcontentsformat` markup should always appear at the top of a document.

tabletitle

```
\tabletitle{text}
```

Abbreviation: \tat

Parameters: title text

Description: A table is a presentation of information in columns. The \tabletitle markup centers the title and puts that title in the table of contents. The \tabletitle markup does not print the actual table, you must use \halign or \settabs to accomplish that.

Example:

```
\tabletitle{Monthly Salaries in Public Libraries\lbr
for 1981}
\tenpt
\halign{\quad\lft{#}&&\quad\ctr{#}\cr
\noalign{\hrule\vs{3pt}}
&&\ctr{\bd Library Aide}&\ctr{\bd Page}\cr
\omit\ctr{\bd City/Town}&\ctr{\bd Librarian}&
   \ctr{\bd and Clerical}&\ctr{\bd and}\cr
\omit\ctr{\bd Libraries}&\ctr{\bd (a)(b)}&
   \ctr{\bd Assistant}&\ctr{\bd Bookbinder}\cr
Brewster&190&---&---\cr
Burlington&1158&5.89 hr&3.35/3.50 hr\cr
Castle Rock&300&3.35 hr&---\cr
Cathlamet&225&---&---\cr
Chewelah&290&---&---\cr
Cle Elum&3.50 hr&---&---\cr
Colville&5.68 hr&5.00 hr&---\cr
}
```

which prints the table illustrated on the following page.

tabletitle

Table 1
Monthly Salaries in Public Libraries
for 1981

City/Town Libraries	Librarian (a)(b)	Library Aide and Clerical Assistant	Page and Bookbinder
Brewster	190	—	—
Burlington	1158	5.89 hr	3.35/3.50 hr
Castle Rock	300	3.35 hr	—
Cathlamet	225	—	—
Chewelah	290	—	—
Cle Elum	3.50 hr	—	—
Colville	5.68 hr	5.00 hr	—

Note: `\tabletitle` only prints the table title in the text and places the title in the table of contents. Use `\halign` or `\settabs` to construct the table itself.

Note: If you have text you want included in the table title in the document, but not to be printed in the table of contents, you can exclude it with the `\notintoc` markup. Refer to the `\figure` markup for an example on how to use `\notintoc`.

Note: The `\toclinebreak` May be used to have a line in the Table of Contents break differently than the way it is printed in the document. Refer to the `\figure` markup for an example on how to use `\toclinebreak`.

\tenpt

Abbreviation: none

Parameters: none

Description: There are two default \selectfontsets established when you format a *TEXT1* file: \twelvept for the 12 point size Computer Modern serif typestyle; and \tenpt for the 10 point Computer Modern serif typestyle.

The font set includes the following nine faces, each of which is called by adding a backslash in front of the name, or using the abbreviation: \roman (\rm), \bold (\bd), \italic (\it), \typewriter (\tt), \caps (\cc), \mathitalic (\mi), \symbol (\sy), \extension (\ex), and \bolditalic (\bi).

Example: Consider this example for switching from 12 point to a 10 point size.

```
\tenpt
\centerline{\twelvept\bd Sociogeology}
\centerline{\it by Achilles Chert}
``Does the absurd dictate death?'' asks Albert Camus,
```

Sociogeology
by Achilles Chert
"Does the absurd dictate death?" asks Albert Camus,

Note: There are some markup, such as \figure, \blockquotebegin, \autoendnote, and \autofootnote which use \tenpt in formatting. If you decide you want to use another 10 point font set (like Plantin) instead of Computer Modern as the default, you **must** give that set the same name, "tenpt":

```
\selectfontset{pl10}{tenpt}{default}
\selectfontset{pl12}{twelvept}{default}
\selectmathset{cg97m}{mathdefault}
\tenpt
⋮
```

text1

```
\text1
```

Abbreviation: none

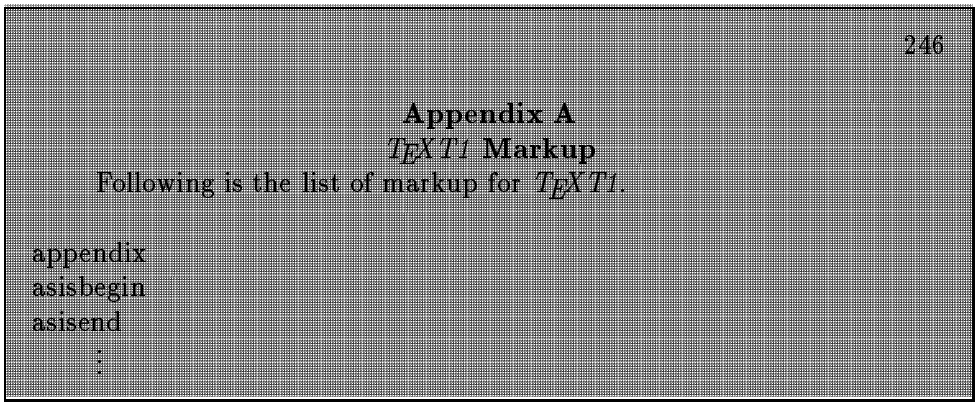
Parameters: none

Description: You can print the name of the *TEXT1* system by entering the markup `\text1`.

Example:

```
\appendix{\text1\ Markup}
Following is the list of markup for \text1.
\twc
\aib
appendix
asisbegin
asisend
⋮
\aie
\oc
```

will print an appendix that looks like:



Note: You must follow `\text1` with a required space (either a tilde ~ or with a backslash-space, \␣) if you want a space following `\text1` as indicated in the example above in the `\appendix` markup. If you do not need a space following, such as at the end of the sentence illustrated in the second line of the example above beginning "Following is ...", then omit the space.

```
\threecolumns
```

Abbreviation: `\thc`

Parameters: none

Description: The `\threecolumns` markup formats text in three identical width columns. Column widths, gutters and margins are calculated automatically. The default column width is 31% of the galleywidth (hsize). The default gutter between each column is 3.5% of the galleywidth.

The Flexible format (the default) allows the user to use single column, two column, and three column text interchangeably on the current page by entering one of the markup choices at the desired point in the text. The flexible format will balance the text columns whenever the number of columns changes.

For example, if the author changes the multiple column format by typing a different markup *TEXT1* will automatically balance the columns it is currently processing and change to a new number of columns. These instructions can be inserted at any point on the page.

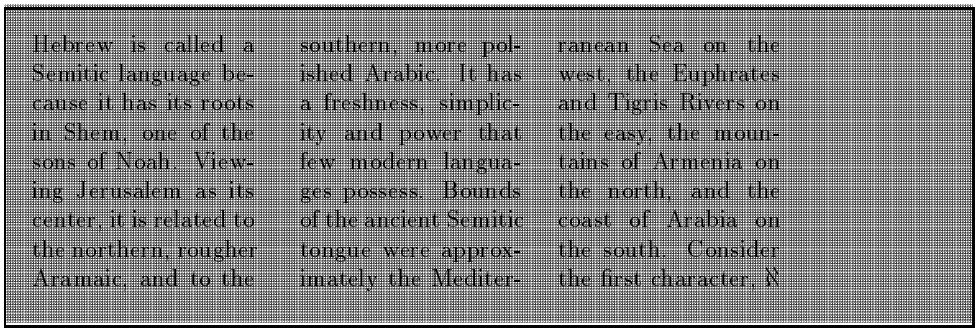
The author may want to handle tables and other large blocks of text by returning to a single column for the table by typing `\onecolumn` immediately before the table and returning to two or three column formatting immediately after the table.

All running head, running foot, and inserts are printed across the full single column width that prints across the top of the current page. Footnotes will be printed across the full width at the bottom of the page.

threecolumns

Example:

```
\threecolumns
\nin Hebrew is called a Semitic language because it has
its roots in Shem, one of the sons of Noah.
Viewing Jerusalem as its center, it is related to the
northern, rougher Aramaic, and to the southern, more
polished Arabic. It has a freshness, simplicity and
power that few modern languages possess. Bounds of the
ancient Semitic tongue were approximately the
Mediterranean Sea on the west, the Euphrates and Tigris
Rivers on the easy, the mountains
of Armenia on the north,
and the coast of Arabia on the south. Consider the first
character, $\aleph$ ...
```


Hebrew is called a Semitic language because it has its roots in Shem, one of the sons of Noah. Viewing Jerusalem as its center, it is related to the northern, rougher Aramaic, and to the southern, more polished Arabic. It has a freshness, simplicity and power that few modern languages possess. Bounds of the ancient Semitic tongue were approximately the Mediterranean Sea on the west, the Euphrates and Tigris Rivers on the easy, the mountains of Armenia on the north, and the coast of Arabia on the south. Consider the first character, ℵ

Note: To change the column width or the gutter width, use the `\multicolumnformat` markup.

You **cannot** specify `\threecolumns` inside of `\vbox`, `\drawbox`, `\paragraphbox`, or a floating `\figure` (non floating figures, `\nofloat`, are ok).

If you want footnotes and figures to print in one column instead of across both columns, use the `\fixedformat` markup.

titlepage

```
\titlepage
```

Abbreviation: `\tp`

Parameters: none

Description: By convention, a title page is a display page, differing from body pages. It usually has *sinkage* (extra vertical space before the title), a centered title (in bold or larger type), and a *blind folio* (where the page is numbered but the number is not printed). It may also have special text in the footing.

By default, the first page of any paper is a title page in *TEXT1*, although it can be suppressed by `\notitlepage`. Furthermore, title pages can be added anywhere in a paper using `\titlepage`. Since the title page usually receives different treatment from body pages, there is separate markup for it. By default, the title page adds 1 inch to the top margin and does not print a running foot line at the bottom of the page.

The next page after a title page in *TEXT1* is always assumed to be a `\notitlepage`.

Example: Some applications have more than one page in the document which are not to carry a running top title. For example, if you want a chapter to always print without a running top title, you could add `\titlepage` to the `\chapterformat` markup:

```
\chapterformat{\numberingstyle{1}
  \titleformat{\dumpinsertseject
      \titlepage
      \cl{\twelvept\bd Chapter \chapternumber}
      \cl{\twelvept\bd \chaptertitle}
      \vs{1\bl}
      \setsubheadanumber{0}
      \setsubheadbnumber{0}
      \setsubheadcnumber{0}
      \setsubheaddnumber{0}}
  \incontents{yes}}
```

Note: Use the `\titlepageformat` to change the defaults on the title page.

titlepageformat

```
\titlepageformat{\titleleadskip{1in}
                                \titlefootline{}
                }
```

Abbreviation: `\tpf`

Parameters: submarkup

Submarkup: `\titleleadskip, \titlefootline`

Description: By convention, a title page is a display page, differing from body pages. It usually has *sinkage* (extra vertical space before the title), a centered title (in bold or larger type), and a *blind folio* (where the page is numbered but the number is not printed). It may also have special text in the footing. The `\titlepageformat` markup changes the heading and footing of a titlepage.

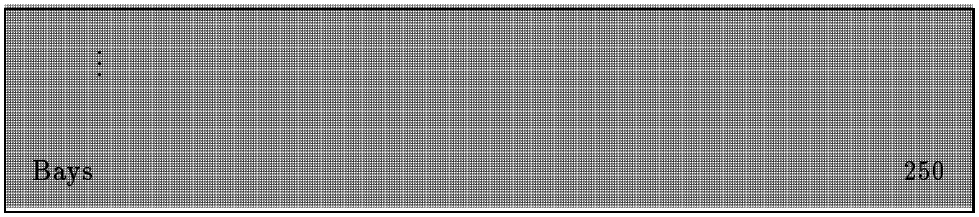
`\titleleadskip` is the amount of space to be left at the top of title pages, in addition to the top margin. By default, there is a 1 inch lead skip and a 1 inch top margin, making for a 2 inch white space at the top of each title page.

`\titlefootline` is the footing at the bottom of a title page. Similar in function to the running foot, its difference is that you do not specify `\bothpage`, `\evenpage`, or `\oddpage` with `\titlefootline`.

Example: If you want to add 3 inches to the top margin, and print "Bays" at the bottom of the page with the page number, enter:

```
\titlepageformat{\titleleadskip{3in}
  \titlefootline{\line{\lft{Bays}\rt{\pn}}}
  }
```

which prints a footing at the bottom of the page like:



Note: none.

```
\toclinebreak
```

Abbreviation: `\toclbr`

Parameters: none

Description: The `\toclinebreak` markup causes a line to finish without interrupting a paragraph in the table of contents. Occasionally it is necessary to break a line in a precise place within a paragraph, as opposed to letting *TEXT1* decide where to break the line. This markup does not end a paragraph, it simply starts the following text of the paragraph on a new line in the table of contents instead of concatenating it to the end of the previous line.

Example:

```
\chapter{More facts about Datapoint
information\toclbr processing\linebreak
 and office
automation products,\lbr\toclbr
systems, and software}
```

will print the chapter title on three lines in the text of the document:

More facts about Datapoint information processing and office automation products, systems, and software

and on three lines in the table of contents:

1. More facts about Datapoint information processing and office automation products, systems, and software 32

Note: none.

today

```
\today
```

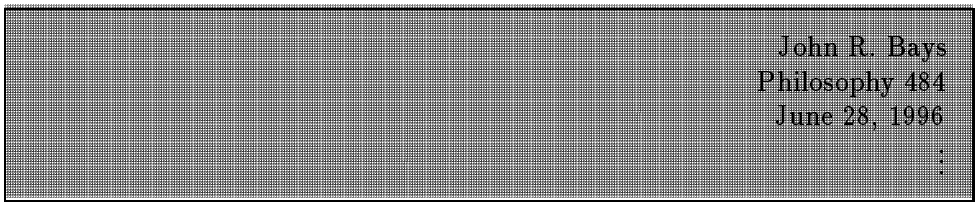
Abbreviation: `none`

Parameters: none

Description: The `\today` markup prints the current date in a standard format, "*month day, year*".

Example:

```
\rightlinesbegin
John R. Bays
Philosophy 484
\today
\rightlinesend
⋮
```



Note: none.

\twelvept

Abbreviation: none

Parameters: none

Description: There are two default \selectfontsets established when you format a *TEXT1* file: \twelvept for the 12 point size Computer Modern serif typestyle; and \tenpt for the 10 point Computer Modern serif typestyle.

The font set includes the following nine faces, each of which is called by adding a backslash in front of the name, or using the abbreviation: \roman (\rm), \bold (\bd), \italic (\it), \typewriter (\tt), \caps (\cc), \mathitalic (\mi), \symbol (\sy), \extension (\ex), and \bolditalic (\bi).

Example: Consider this example for switching from 12 point to a 10 point size.

```
\tenpt
\centerline{\twelvept\bd Sociogeology}
\centerline{\it by Achilles Chert}
``Does the absurd dictate death?'' asks Albert Camus,
```

Sociogeology
by Achilles Chert
"Does the absurd dictate death?" asks Albert Camus,

Note: There are some markup, such as \tableformat, \runningheadformat, \runningfootformat, \chapterformat, \partformat and the other heading markup. If you want to use another 12 point font set (like Plantin) as the default instead of Computer Modern, you **must** give that set the same name, "twelvept":

```
\selectfontset{pl10}{tenpt}{default}
\selectfontset{pl12}{twelvept}{default}
\selectmathset{cg97m}{mathdefault}
\twelvept
⋮
```

twocolumns

```
\twocolumns
```

Abbreviation: `\twc`

Parameters: none

Description: The `\twocolumns` markup formats text in two columns with identical width. The column widths and gutter are calculated automatically within the specified margins. The default width of both columns is 48% of the galleywidth. The default gutter width is 4% of the galleywidth.

The Flexible format allows the user to use single column, two column, and three column text interchangeably on the current page by entering one of the markup choices at the desired point in the text. The flexible format will balance the text columns whenever the number of columns changes.

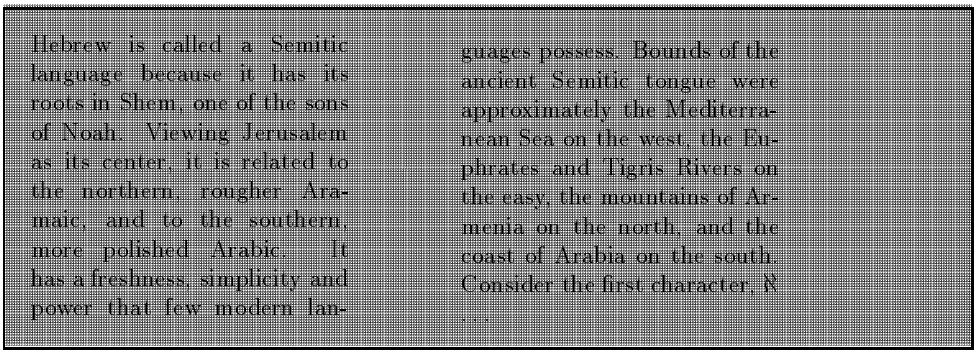
For example, if the author changes the multiple column format by typing a different markup *TEXT1* will automatically balance the columns it is currently processing and change to a new number of columns. These instructions can be inserted at any point on the page.

The author may want to handle tables and other large blocks of text by returning to a single column for the table by typing `\onecolumn` immediately before the table and returning to two or three column formatting immediately after the table.

All running head, running foot, and inserts are printed across the full single column width that prints across the top of the current page. Footnotes will be printed across the full width at the bottom of the page.

Example:

```
\twocolumns
\nin Hebrew is called a Semitic language because it has
its roots in Shem, one of the sons of Noah.
Viewing Jerusalem as its center, it is related to the
northern, rougher Aramaic, and to the southern, more
polished Arabic. It has a freshness, simplicity and
power that few modern languages possess. Bounds of the
ancient Semitic tongue were approximately the
Mediterranean Sea on the west, the Euphrates and Tigris
Rivers on the easy,
the mountains of Armenia on the north,
and the coast of Arabia on the south. Consider the first
character, $\aleph$ ...
```



Note: To change the column width or the gutter width, use the `\multicolumnformat` markup.

You **cannot** specify `\twocolumns` inside of `\vbox`, `\drawbox`, `\paragraphbox`, or a floating `\figure` (non floating figures, `\nofloat`, are ok).

If you want footnotes and figures to print in one column instead of across both columns, use the `\fixedformat` markup.

typewriter

```
\typewriter
```

Abbreviation: `\tt`

Parameters: none

Description: Typewriter is a medium-weight uniformly spaced type face. You get this face when you enter `\typewriter`. Each character has the same width. It is handy in `\asisbegin` blocks.

Example: Using the typewriter font,

```
\asisbegin
And yet not cloy thy lips           1
    with loath'd satiety,           2
But rather famish them              3
    amid their plenty,              4
\asisend
```

you get the line number on the right to line up:

```
And yet not cloy thy lips           1
    with loath'd satiety,           2
But rather famish them              3
    amid their plenty,              4
```

Without `\typewriter` you get:

```
And yet not cloy thy lips           1
    with loath'd satiety,           2
But rather famish them              3
    amid their plenty,              4
```

Note: none.

\underscore{*text*}

Abbreviation: \us

Parameters: *text*

Description: Underscoring, drawing a line under words or sentences, is also used for emphasis and to indicate book titles.

Example:

```
Figure 1 shows a schema borrowed from my previous
book, \us{The} \us{Intact} \us{Societies:}
\us{Vestals} \us{and} \us{Volcanos}
\us{in} \us{the} \us{South Pacific}, which suggests ...
```

Figure 1 shows a schema borrowed from my previous book, The Intact Societies: Vestals and Volcanos in the South Pacific, which suggests ...

Note: In proportional spacing, the \underscore markup has the occasional disadvantage of preventing hyphenation and line breaking, which can result in awkward or impossible interword spacing and line breaks. To remedy this, put each word to be underscored inside of its own \underscore markup as illustrated above.

Do not use \underscore in math mode. Use \underline, which is described in *The TEXbook*, in place of \underscore.

vbox

\vbox{*box material*}

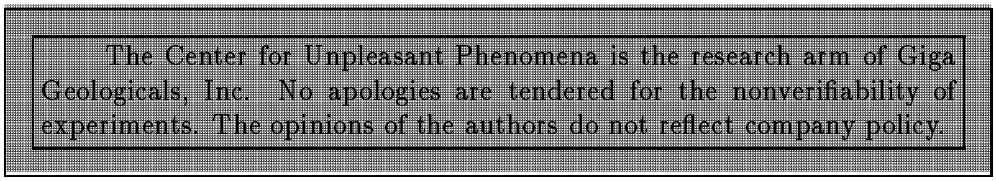
Abbreviation: none

Parameters: *box material*

Description: The \vbox markup has many uses. One use is to be able to put multiple lines into a \drawbox markup.

Example:

```
\drawbox{\vbox{The Center for Unpleasant Phenomena
is the research arm of Giga Geologicals,
Inc. No apologies
are tendered for the nonverifiability of experiments.
The opinions of the authors do not reflect
company policy.}}
```



Note: Refer to *The TEXbook* for more on this markup.

```
\verticalspace{units}
```

Abbreviation: \vs

Parameters: units of measure

Description: The \verticalspace markup creates blank lines (or space) on a page. This markup causes a break in text and leaves a specified amount of space within a page. Any following text starts a new paragraph. The total amount of white space left is the units of measure (dimension) in the \verticalspace, plus the current paragraph skip value. This markup is followed by a parameter, which can be entered in whole blank lines, inches, points, or other valid units of measure.

Example:

```
\verticalspace{24pt}
{\bd Minerals and Human Behavior}
\verticalspace{1\bl}
``Does the Absurd dictate death?'' asks Albert
Camus, a novelist who lionized the labors of...
```

Minerals and Human Behavior

"Does the Absurd dictate death?" asks Albert Camus, a novelist who lionized the labors of ...

Note: You can tell *TEXT1* you want a variable amount of white space between lines by entering something line:

```
\verticalspace{10pt plus 2pt minus 1pt}
```

which tells *TEXT1* you want 10 points of white space in addition to the paragraph skip. If *TEXT1* cannot balance text to the bottom of the page when \normalbottom is in effect (which is the default), then the above specification allows *TEXT1* to add up to 2 points of white space or subtract up to 1 point of white space from the 10 points of white space.

If you enter a \verticalspace markup at the top of a page it will be ignored. Putting a \verticalspace at the bottom of a page is risky, also, if the amount of space left on the page is less than the amount asked for. The difference will not be carried over to the following page; it will be lost. Both difficulties can be resolved by using a required space markup, \verticalspacekeep.

verticalspacekeep

\verticalspacekeep{*units*}

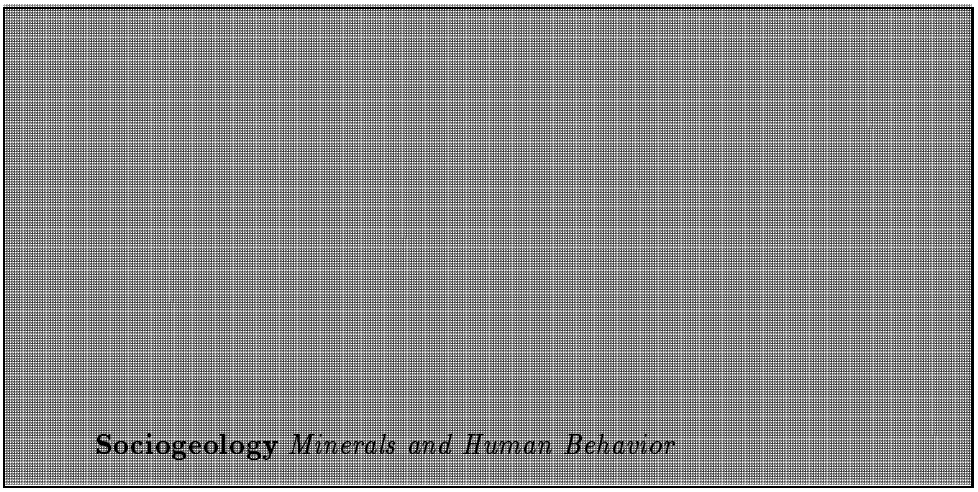
Abbreviation: \vsk

Parameters: units of measure

Description: The \verticalspacekeep markup leaves a required amount of space, for a figure, plate, or table. The space will always be kept together on the current page or printed at the top of the next page if not enough space remains on the current page. Text that follows a \verticalspacekeep will not be used to fill in the current page if the required space is moved to the following page. The amount of white space left is the \verticalspacekeep dimension plus the current paragraph skip value.

Example:

```
\verticalspacekeep{2in}
{\bd Sociogeology}
{\it Minerals and Human Behavior}
```



Note: \verticalspacekeep is the best way to have white space left at the top of a page. \verticalspace will not leave white space at the top of a page.

vrule

```
\vrule  dimension
```

Abbreviation: none

Parameters: *dimension*

Description: The `\vrule` markup draws a vertical rule. It is a native TEX markup, and the usage is different in that the parameter is not surrounded with curly braces. If you do not supply a dimension, *TEXT1* will print the rule with a height of the highest character in that line and the depth of the deepest character in that line. By default, the rule drawn has a thickness (width) of .4pt.

Note: Refer to *The TEXbook* for more on `\vrule` and how to use the "depth" parameter with the "height" and "width" parameters.

Appendix A

Summary of Markup

Markup	*Abbreviation*	*Function*
\appendix{}	\app	designate appendix
\appendixformat{}	\apf	modify appendix style
\asisbegin	\aib	start 'as is' text
\asisend	\aie	end 'as is' text
\asisformat{}	\aif	modify 'as is' style
\atmathon	(none)	begins using the @ as the math mode character
\autoendnote{}	\aen	put endnote
\autofootnote{}	\afn	put footnote
\bibentry	\bie	start entry
\bibliography{}	\bib	designate bibliography
\bibliographyformat{}	\bif	modify bibliography style
\blockquotebegin	\bqb	start block quote
\blockquoteend	\bqe	end block quote
\blockquoteformat{}	\bqf	modify block quote style
\bold	\bd	call bold font
\bolditalic	\bi	call bolditalic font
\break	(none)	force line and page breaks
\bullet	\bul	start bullet
\bye	(none)	ends the document
\caps	\cc	call caps/small caps font
\centerline{}	\cl	center one line
\centerlinesbegin	\clb	begin centering, 'as is'
\centerlinesend	\cle	end centering
\cents	(none)	cent sign
\chapter{}	\chap	designate chapter
\chapterformat{}	\chf	modify chapter style
\countinglines{}	\coul	start counting lines
\doublespace	\dsp	start alternate blank lines
\drawbox{}	\db	draw a box around text
\drawboxformat{}	\dbf	changes the attributes of boxes
\dumpinsertseject	\die	dump and print inserts
\ellipsis	\el	3 or 4 dot ellipsis
\emptypage	\ep	print an empty page
\endnoteformat{}	\enf	modify endnote style

Markup	*Abbreviation*	*Function*
\evenpagemargin	\epm	used in line numbering
\extension	\ex	call the extension font
\figure{}{}	\fig	create a figure
\figureformat{}	\fif	modify figures
\fixedformat	\fixf	multiple column style
\font	(none)	font definition
\footnote{}{}	(none)	put footnote
\footnoteformat{}	\fnf	modify footnote style
\fraction	\frac	print a fraction
\frenchspacing	(none)	spacing for bibliographies
\goodbreak	(none)	indicate likely page break
\halign	(none)	table building
\hangingindent	\hin	set hanging paragraph indent
\hangingparagraph	\hp	start hanging paragraph
\hbox	(none)	TEX horizontal box
\horizontalspace{}	\hs	add horizontal space
\hrule	(none)	draw a horizontal rule
\hsize	(none)	set the galleywidth
\hyphenoff	\hof	turn off hyphenation
\hyphenon	\hon	turn on hyphenation
\include{}	\incl	includes a GDPS document
\indent	(none)	add horizontal space
\index	\ix	places an entry in the index
\indexformat	\ixf	modify the index style
\input	(none)	input another file
\interlineskip{}	\isk	set interline skip
\italic	\it	specify italic font
\item	(none)	unordered lists
\justify	\ju	align margins
\label	\la	start a label
\labelformat	\laf	modify label style
\leader	(none)	dot leadering
\leftindent{}	\lin	indent left margin
\leftragged	\lr	unaligned left margin
\line	(none)	left justify a line
\linebreak	\lbr	cause unfilled line break
\lineinterval	\lint	line numbering
\linenumberfont	\lnf	line numbering

Markup	*Abbreviation*	*Function*
\listbegin	\lib	start list
\listend	\lie	end list
\listformat{}	\lif	modify list style
\listlevel	\lil	start new level
\listresume	\lir	resume at previous list level
\marginnote	\mn	print a note in the margin
\marginnoteformat	\mnf	modify margin note style
\mathdefault	(none)	establish math fonts
\mathitalic	\mi	call math italic font
\multicolumnformat	\mcf	modify multiple column defaults
\newcolumn	\nc	start a new column
\newpage	\np	start a new page
\nobreak	(none)	discourage page break
\noindent	\nin	suppress paragraph indent
\nonfrenchspacing	(none)	turn off french spacing
\nopagenumbers	(none)	turn off running head/foot page numbering
\notintoc	(none)	prints text in the document but not in the TOC
\notitlepage	\ntp	suppress title page
\numberinglines	\numl	line numbering
\oddpagemargin	\opm	line numbering
\onecolumn	\oc	one column formatting
\pageformat	\pf	page size and margins
\pagenumber	\pn	print page number
\paragraph	\par	end paragraph
\paragraphbox	\pb	box a paragraph
\paragraphboxformat	\pbf	changes the style of a paragraphbox
\paragraphindent{}	\pin	set paragraph indentation
\paragraphskip{}	\psk	set space between paragraphs
\part{}	(none)	designate major heading
\partformat{}	\paf	modify part style
\plaintexmathon	(none)	use PLAIN.TEX's $
\poplevel	\ppl	line numbering
\preface{}	\pre	designate preliminary pages
\prefaceformat{}	\prf	modify preface style
\printendnotes	\pen	print accumulated endnotes
\printindex	(none)	prints the index
\printingnumbers{}	\prin	line numbering
\putincontents1{}	\pic1	add to the table of contents
\quad	(none)	add an 'em' of space
\qquad	(none)	add two 'em's of space

Markup	*Abbreviation*	*Function*
\raggedbottom	(none)	don't align page bottoms
\rightindent{}	\rin	indent right margin
\rightline{}	\rl	right justify line
\rightlinesbegin	\rlb	begin right alignment, 'as is'
\rightlinesend	\rle	end right alignment, 'as is'
\rightragged	\rr	unaligned right margin
\roman	\rm	specify roman font
\rule	(none)	create horizontal line
\runningfootformat{}	\rff	modify running foot
\runningheadformat{}	\rhf	modify running head
\sameauthor	\sau	previous author, bibliography
\selectfontset{}{}{}	\sfs	specify font set
\selectmathset{}{}	\sms	specify math set
\selectspecificfont{}{}{}	\ssf	specify specific font
\setappendixnumber{}	\san	reset appendix number
\setchapternumber{}	\scn	reset chapter number
\setendnotenumber{}	\senn	reset endnote number
\setfigurenumber{}	\sfn	reset figure number
\setfootnotenumber{}	\sffn	reset footnote number
\setpagenumber{}	\spn	reset page number
\setpartnumber{}	\sptn	reset part number
\setsubheadanumber{}	\ssan	reset subheada number
\setsubheadbnumber{}	\ssbn	reset subheadb number
\setsubheadcnumber{}	\sscn	reset subheadc number
\setsubheaddnumber{}	\ssdn	reset subheadd number
\settablenumber{}	\stn	reset table number
\singlespace	\ssp	start single spacing
\strut	(none)	tables
\subheada{}	\sha	designate first subheading
\subheadaformat{}	\shaf	modify first subheading style
\subheadb{}	\shb	designate second subheading
\subheadbformat{}	\shbf	modify second subheading style
\subheadc{}	\shc	designate third subheading
\subheadcformat{}	\shcf	modify third subheading style
\subheadd{}	\shd	designate fourth subheading
\subheaddformat{}	\shcf	modify fourth subheading style

Markup	*Abbreviation*	*Function*
\symbol	\sy	call the symbol font
\tableformat{}	\taf	modify table title style
\tableofcontents{}	\toc	print table of contents
\tableofcontentsformat{}	\tocf	modify table of contents style
\tabletitle{}	\tat	print a table title
\tenpt	(none)	call 10pt font set
\text1	(none)	print "*TEXT1*"
\threecolumns	\thc	print text in 3 columns
\titlepage	\tp	designate title page
\titlepageformat{}	\tpf	modify title page style
\toclinebreak	\toclbr	cause a line break in the contents
\today	(none)	print current date
\twelvept	(none)	call 12pt font set
\twocolumns	\twc	print text in 2 columns
\typewriter	\tt	call typewriter font
\underscore{}	\us	underline word(s)
\vbox	(none)	TEX vertical box
\verticalspace{}	\vs	leave vertical space
\verticalspacekeep{}	\vsk	leave vertical space
\vrule	\hs	draw a vertical rule

Appendix B

Glossary

Application: Any use for a computer program.

Baseline: An imaginary line on which the body of all letters sit (descenders may go below it).

Blind Folio: A page number that is counted but not printed.

Body Copy: The written words that make up the textual work.

Bold: A face of type with a heavier outline. **This line is printed in a bold serif font.**

Block: A related group of markup that controls formatting by default values.

Bullet: A centered dot used as an *identifier*.

Caps: see *Small Caps*.

Caption: A title to an illustration (or a legend); a legend is an explanation of an illustration.

Character: A symbol, number or letter.

Column: A vertical section on a printed page.

Command: An instruction (typed on a computer terminal command line) that specifies an operation.

Composing Printer: A printer which has the ability to print formatted output using proportional fonts. Composing printers can also print *TEXT1* math mode material.

Control Word: A TEX markup.

Default: A predetermined value used in formats.

Delimiter: Characters, such as the left and right curly braces ({}), which are used to limit the effects of markup.

Em: A horizontal space measurement equal to the value of the current typesize. In 10 point type, an *em* space is 10 points wide.

Emdash: A dash one *em* wide. An *emdash* is entered as three consecutive hyphens. *Emdashes* are used for punctuation in sentences.

En: One half the size of an *em*. In 10 point type, an *en* space is 5 points wide.

Endash: a dash one *en* wide. An *endash* is entered as two consecutive hyphens. *Endashes* are used for number ranges.

Face: see *Type Face*.

Family of Type: see *Typestyle*.

Flush: Alignment at the margin, specifically, 'flush right,' 'flush left,' or 'flush bottom.'

Font: A collection of characters such as the alphabet, as well as universal characters in one face and size.

Font Set: A group of alphabets in one style and size. Each font set includes the following nine faces, each of which is called by adding a backslash in front of the name, or using the abbreviation: \roman (`\rm`), \bold (`\bd`), \italic (`\it`), \typewriter (`\tt`), \caps (`\cc`), \mathitalic (`\mi`), \symbol (`\sy`), \extension (`\ex`), and \bolditalic (`\bi`). Not all font sets have all nine faces available. If a particular face is not available, a warning message will be printed.

Footing: see *Running Foot.*

Format: The design aspect of an editorial structure, such as a figure or footnote. The structure for the arrangement of textual elements in a paper.

French Spacing: The use of only one space after periods that end sentences (the most common practice).

Galley Width: see *Measure.*

Gutter: The space between two margins (as between two columns or a label and text).

Hanging Indent: Alignment in which all lines after the first are indented at the left the same amount (as in hanging paragraph).

Hanging Paragraph: A paragraph with the first line full-measure wide and succeeding lines indented.

Heading: see *Running Head.*

Hyphen: A short dash used to connect words.

Identifier: A numeral, letter, or ornament, e.g., star or dagger, that identifies an item in a list or outline.

Input: Text or data to be entered into a source file.

Interlineskip: the vertical space between lines of text, measured from baselines.

Italic: A type face which is slanted. *This sentence is printed in an italic serif font.*

Justification: The alignment of lines into equal lengths, such that both margins line up vertically.

Keyboard Command: A command given to the program by pressing a key, such as a **PF** function key.

Layout: The way text elements are arranged on a page.

Leading: (Pronounced lĕdĭng, from the days when typesetters used hot lead type.) see *Interlineskip.*

Legend: see *Caption.*

Ligature: A combination of two or more characters into one character. For example, entering "`difficult`" will combine the "ffi" characters into one character yielding "difficult".

Line Space: A vertical space equal to the interline skip.

Macro: A collection of markup under one markup name.

Markup: Control sequences that instruct the program to structure the text. See also Nested Markup and Submarkup.

Measure: The maximum width of a normal text line.

Menu: A list of choices from which you can select an action to be done by the program.

Minus: A long dash used to indicate negativity.

Model: A custom combination of format structures.

Monospaced Fonts: Fixed spaced fonts where every character has the same width. For example, "`W`" is the same width as "`i`".

Nested Markup: Markup that can be inserted into Submarkup.

Operator: A mathematical sign, such as 'equal' or 'plus.'

Orphan: A partial line, usually the beginning of a paragraph, that ends a page.

Output: The results of computer operation.

Parameter: A value associated with markup (either text or numbers).

Phototypesetting: A process by which type is set by a machine on film for camera-ready copy.

Pica: An absolute unit of measurement equal to 12 points or approximately 1/6 of an inch.

Point: an absolute unit of measurement equal to approximately 1/72 of an inch or 1/12 of a pica.

Program: A set of instructions written in a language, such as *TEXT1*, that tells a computer what to do.

Proportional Spaced Fonts: Variable spaced fonts where character widths vary. For example, "W" is wider than "i".

Quad: An empty space (equal to 1 'em' space).

Reference Marks: see *Identifiers*.

Regular Spacing: The use of a quad after sentence periods.

Roman: A typeface that is straight up and down.

Rule: A straight line of unvarying thickness.

Running Foot: Repeating text in the bottom margin of the page.

Running Head: Repeating text in the top margin of the page.

Running Title: Repeating text outside the margin of a page, on running head, running foot, or both.

Sans Serif: A typeface without letter beginning or ending strokes. This sentence is printed in a roman sans serif face.

Screen: The text that appears on a video display.

Secondary Text: Text set off by format distinctions from the main text, usually quoted material.

Serif: A typeface with letter beeginning and ending strokes. This sentence is printed in a roman serif face.

Set: See *Font Set*.

Sinkage: The vertical distance that a title is dropped from the top of a normal page (measured from the top of a running head).

Size: The set specification of type.

Small Caps: A type face where the lower case letters are printed as small capital letters. THIS SENTENCE IS PRINTED IN A SMALL CAPS SERIF FACE.

Source File: A collection of text containing markup.

Submarkup: Markup which appears only inside of other markup. It would generate an error message if used outside of the specified markup.

Title Page: A display page, differing from body pages. It usually has sinkage, a centered title, and a blind folio. It may also have special text in the footing.

Type Face: A distinctive visual characteristic of a typestyle, referred to as slant or weight.

Type Family: see *Typestyle*.

Typestyle: A distinctive design (or style) of type.

Typesetting Printers: Similar in capability to a composing printer. Usually accomplished by using a photographic process, achieving a higher resolution than composing printers.

Typewriter Printers: Basic *TEXT1* printers which cannot print math mode and can only print using monospaced fonts.

Universal Characters: Characters, such as superscripts and mathematical signs, that are not associated with any typeface.

Variable: A feature, such as type size or paragraph indent, that can be specified separately.

Widow: A partial line that begins a new page or column.

Appendix C

Plain TEX Commands Redefined in *TEXT1*

Following are all of the PLAIN.TEX commands listed in *The TEXbook* that have been redefined in *TEXT1*.

```
~
\@ins
\aa
\AA
\allowbreak
\break
\bullet
\bye
\centerline
\dag
\dagger
\ddag
\ddagger
\endinsert
\footnoterule
\footstrut
\makeheadline
\makefootline
\midinsert
\neg
\newcount
\newtoks
\nobreak
\output
\P
\plainoutput
\raggedbottom
\removelastskip
\rightline
\S
\sl
\strut
\supereject
\topinsert
\vfootnote
```

Appendix D

Plain TEX Commands That May Not Work in *TEXT1*

The following markup will not work, and may create errors, if used in a *TEXT1* document.

```
\hoffset
\magstep
\magstephalf
\output
\shipout
\voffset
```

Appendix E

How to get *TEXT1*

You can get *TEXT1* at any CTAN repository, or you can get *TEXT1* at ftp.wsu.edu in the public TEX directory.

You should also consider becoming a member of the TEX Users Group. For information, send a note to tug@tug.org.

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