Chapter 3

[This chapter is titled "Carrying On" which doesn't really describe what's in the chapter, and the information below doesn't belong to any section, it's just presented with no preamble at the beginning of the chapter. But I found it interesting ...]

1 Modes

As TEX processes your input text, it is always in one of three modes: paragraph mode, math mode, or left-to-right mode (called LR mode for short)[1].

- Paragraph mode is TEX's normal mode—the one it's in when processing ordinary text. In paragraph mode, TEX regards your input as a sequence of words and sentences to be broken into lines, paragraphs, and pages.
- TEX is in math mode when it's generating a mathematical formula. More precisely: it enters math mode upon encountering a command like $ or `\(` or `\[` or `\begin{equation}` that begins a mathematical formula; and it leaves math mode after finding the corresponding command that ends the formula. When TEX is in math mode it considers letters in the input file to be mathematical symbols and ignores any space characters between them—e.g. "*is*" would be treated as the product of i and s.
- In left-to-right mode, as in paragraph mode, TEX considers your input to be a string of words with spaces between them. However, unlike paragraph mode, TEX produces output that keeps going from left to right; **it never starts a new line in LR mode**. The `\mbox` command (Section 2.2.1) causes TEX to process its argument in LR mode, which is what prevents the argument from being broken across lines.

Different modes can be nested within one another as seen, for example, when you put an `\mbox` command inside a mathematical formula.

[1] Paragraph mode corresponds to the vertical and ordinary horizontal modes in *The TEXbook*, and LR mode is called restricted horizontal mode there. LATEX also has a restricted form of LR mode called picture mode that is described in Section 7.1.

Example

Consider this expression: $y > z$ if x^2 real.
Made with this code `\( y > z \mbox{ if $x^{2}$ real} \).`

When processing this expression, LaTeX enters and exits `math mode` and `left-to-right mode`. (For the expressions below, the blank spaces between the letters are also processed in each mode.)

- when processing `y > z` (i.e. ␣y ␣> ␣z ␣) TeX is in math mode
- when processing `if` and `real` TeX is in LR mode
- when processing `x^{2}` TeX is in math mode
- The space between "z" and "if" is produced by the first space in the argument for `mbox`
- The space in `real} \)` is processed in math mode, so it produces no space between "real" and "."

2 Changing the Type Style

Type style is used to indicate logical structure. In this book, emphasized text appears in *italic* style type and LaTeX input in `typewriter` style.

None of the text-producing commands or declarations can be used in math mode. (Section 3.3.8 explains how to change type style in a mathematical formula.)

Type style is a visual property. Commands to specify visual properties belong not in the text, but in the definitions of commands that describe logical structure. Section 3.4 explains how to define your own commands for the logical structures in your document.

For example, suppose you want the names of genera to appear in italic in your book on African mammals. Don't use `\textit` throughout the text; instead, define a `\genus` command and write something like
`\genus{Connochaetes} seems to pop up ...`
Then, if you decide that Connochaetes and all other genera should appear in slanted rather than italic type, you just have to change the definition of `\genus`.