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L^AT_EX for engineers and scientists

(book review)¹

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Although the L^AT_EX manual is a useful book, it is not suitable as an introduction, as a book for beginning users. ‘L^AT_EX for engineers and scientists’ by David J. Buerger, which was published this year, at first sight appears to be a good introduction. In the preface the author writes: ‘[this book] was written to provide a fast and easy way to learn how to produce technical documents with L^AT_EX.’ And indeed, ‘L^AT_EX for engineers and scientists’ is a book that doesn’t frighten readers by its length and is easy to read. It describes B_IB_TE_X and M_Ak_EI_Nd_Ex, it gives exercises – with answers – that are really not bad, and it contains an index – although I find that a bit short – and a glossary.

Unfortunately my general opinion about this book is not positive: both the contents of the book and the quality of the book as a printed product leave a lot to be desired.

My overall impression of the contents of the book can be summarized in a few points.

- The author has not quite grasped the concept of a document style and the separation between logical and visual structure, two fundamental concepts of L^AT_EX.
- The author does not distinguish between L^AT_EX proper and L^AT_EX *plus* the standard document styles. There are many document styles beside the standard ones, so this distinction is essential.
- In several examples L^AT_EX and T_EX commands are mixed. My opinion is that in examples only L^AT_EX commands should be used. If the author insists on mentioning the T_EX equivalents, he should explain what sort of functionality L^AT_EX adds.
- Some functions of L^AT_EX, among which at least one important function, are not explained in the book.
- Explanations in the book are sometimes confusing or sloppy. In a few cases they are even incorrect.

I will give some examples:

- In chapter 4, Formatting environments, the author starts with the `center`, `flushleft` and `flushright` environments, and then goes on to treat the list and quotation environments. The main

purpose of L^AT_EX’s markup instructions is describing the logical structure of the text. In a book on L^AT_EX, descriptions of logical design should come before descriptions of visual design.

- The custom description list on p. 28 refers to layout parameters of the `list` environment that cannot be found in the index or the glossary. Although the author includes in his book instructive page-layout diagrams² that are unfortunately absent in the L^AT_EX manual, he forgets to include the equally useful list-layout diagram that is printed on p. 113 of the L^AT_EX manual.
- The custom description list given as an example on p. 28 is a variation on the `description` environment described in the L^AT_EX manual. In this example the items are typed as `\item[{\bf Fox}]`; as a result there is no clear separation between form and contents. A better way would be to define the layout of the items in the definition of the customised list. That way, one only has to type `\item[Fox]`.
- On p. 39 the author gives a table of the typeface sizes that correspond to L^AT_EX commands such as `\small`, `\normalsize` and `\large`. The correspondence given in the table is valid only for the standard document styles and not for *every* document style. By failing to make this distinction, the author suggests that the table is universally valid, which it isn’t.
- In chapter 6 the author treats only the `$... $` and not the `\(... \)` construction for in-line mathematical formulae. `$... $` and `$$... $$` give formulae in a more or less fixed layout. If one uses L^AT_EX’s `\(... \)` and `equation` environment instead, the user lets the document style control the formula layout. Furthermore, the L^AT_EX notation for formulae has opening and closing tags that are not identical, which results in fewer errors.
- In chapter 7, on p. 52, the author introduces the `\lefteqn` command without any explanation. This is a command that a lot of users find confusing: they often think that `\lefteqn` puts an equation flush with the left margin of the text.

¹To be submitted to TUGboat, © 1991, T_EX Users Group.

²Similar diagrams have appeared in TUGboat.

- In chapter 8 the author gives a confusing description of the two environments `table` and `tabular`. The `tabular` environment produces a table, i.e. an arrangement of cells in rows and columns, possibly with horizontal and vertical rules³. The `table` environment creates a floating object, i.e. a part of the document for which L^AT_EX tries to find a good place to print it. In most cases, the `table` environment contains a caption that starts with the word ‘Table’⁴ and a `tabular` environment for the actual table contents. However, Buerger writes (italics mine):

Tables *created* with the `tabbing` or `tabular` environments—...
The `\begin{table[]}` or `\begin{figure[]}` command will *create* a table or figure.

- On p. 64 the author explains the use of `\label` and `\ref`. He instructs the reader to put the `\label` command after sectional-unit commands and after the `\caption` command of a `figure` or `table` environment. However, there is no information on where to put the label in `equation` and `eqnarray` environments.
- In chapter 10, Organizing a document, the author uses in an example


```
\topmargin 0mm
\def\BibTeX{ ... }
```

 instead of the L^AT_EX equivalents


```
\setlength{\topmargin}{0mm}
\newcommand{\BibTeX}{ ... }
```
- In chapter 10 the author fails to distinguish between L^AT_EX proper and the standard document styles. On p. 68 the author writes:

Title information is automatically centered.

and (italics by the author):

You can produce an abstract placed below the title information ... by typing the following command *before* the `\maketitle` command.

In both cases the behaviour the author describes is that of the standard document styles: in other document

styles a title could be left-justified and emphasized phrases could be printed in a boldface font. In the second case, the author is also definitely wrong since the `\maketitle` command defined in the standard document styles does not print the abstract, but only the title, author and date.

The author is also inconsistent with notation: for example, in pages vii-xiii, the table of contents, list of figures and list of tables, I found ‘L^AT_EX’, ‘LaTeX’ and ‘LaTeX’! I sometimes got the feeling that the book was written or at least finished in some haste.

Some examples of features of L^AT_EX that are missing in ‘L^AT_EX for engineers and scientists’.

- The author writes that the `\include` command is similar to the `\input` command, except that it starts on a clean page. He doesn’t mention one of the nicest mechanisms in L^AT_EX: cross-referencing between sub-documents if some of the sub-documents are excluded from the current formatting run by means of `\includeonly`.
- The only information on T_EX’s units was the sentence ‘There are 72.27 points to an inch’, and I found it in the chapter on error messages!
- One of the sample input files contains the `\;` command, without explanation and without treating other, similar commands.

So far, I have only criticized the author. However, I think the publisher of this book, McGraw–Hill, can be blamed for a few things as well. Concerning the quality of the book as a printed product: the book was produced from camera-ready pages prepared by the author on a laser printer. Computer Modern is a good typeface, if only you use it on a printing device of sufficiently high quality. Laser printer quality is, I’m afraid, not good enough and I hope this book is one of the last books on T_EX-related matters produced in such a way. As for the contents of the book: it seems likely that McGraw–Hill did not ask an expert to review the book, otherwise they would have asked the author to rewrite parts of it.

‘L^AT_EX for engineers and scientists’ is not a bad book, but it is not a good book either. It can be used, but I can’t really commend it.

³An imprecise definition of a table, I know!

⁴To be precise: this is specified by the document style, but it should be ‘Table’ or something equivalent.