

Magnifications

Minimum set of magnifications

The DVI processor must be able to use fonts at least at the following magnifications of its target resolution:

- 1 (magstep0),
- 1.095 (magstep0.5),
- 1.2 (magstep1),
- 1.44 (magstep2),
- 1.728 (magstep3),
- 2.074 (magstep4),
- 2.488 (magstep5),
- 2.986 (magstep6),
- 3.583 (magstep7),
- 4.3 (magstep8), and
- 5.160 (magstep9).

Explanation: The term `magstep n` stems from the \TeX and METAFONT control sequences with the same name. Its meaning is 1.2^n .

DVI processor authors are encouraged to support all possible magnifications.

Margin of error

If a DVI file requests a font at a size that does not exist, but the requested size is within 0.2% of a supported magnification with the font at that size existing, the DVI processor must use the latter font without warning.

Explanation: \TeX and METAFONT compute font magnifications with different precisions. Further, calculations done by \TeX and/or a DVI processor are subject to roundoff errors. The margin prescribed is sufficient for accommodating most of these errors. It is *not* intended to compensate for fonts requested at an incorrect size.

Missing fonts If a font is missing the DVI processor must continue processing and, after issuing an appropriate warning message, deal with the missing font in one of three ways:

1. Insert appropriate white space where characters of the font would appear.
2. Insert black rectangles of the size of the characters given in the TFM file for the font.
3. Print the characters from that font at a different size or from another font at the same size.

If method 1 or 2 is used and the processor is unable to determine size information for the font in question, then the processor may simply ignore any character setting command that occurs while the current font is that font.

Under no circumstances should a missing font cause a fatal error.

- ◊ The TUG DVI Driver Standards Committee
 c/o Joachim Schrod, Secretary
 Technical University of Darmstadt
 Institut für Theoretische Informatik
 Alexanderstr. 10
 W-6100 Darmstadt
 Federal Republic of Germany
schrod@iti.informatik.th-darmstadt.de

Resources

New books on \TeX

Victor Eijkhout

Editor's note: [Like the rest of this issue of *TUGboat*, this review was postponed from autumn 1991; by the time you read this, a corrected reprint of the subject book should be in circulation, incorporating some of the comments that appear here as well as other amendments.]

Even though English seems to be understood by just about everyone nowadays, \TeX books in other languages still serve a useful purpose. Sometimes it looks as if the whole of Germany learned \LaTeX from Helmut Kopka instead of from Leslie Lamport, and in France Raymond Seroul's *Le petit livre de \TeX* is very popular. In both cases, the rest of the world is getting a chance to see what it's been missing. Kopka's introductory volume is being translated, and Seroul's book has just appeared, under joint authorship with its translator, Silvio Levy.

A Beginner's Book of \TeX (Springer Verlag, New York, 1991, ISBN 0-387-97562-4) is more than just a translation of the earlier book¹. Levy is described as 'translator-turned-coauthor', and the most visible difference is the incorporation of the features of \TeX version 3. The result is a rather handsome volume. For one, the text is very well-written, never feeling like a translation. The worst errors that I found were the misspelling 'wierd' which appears twice; the idiom 'head over heels' is used where something

¹ In this reviewer's opinion, however, the title has suffered from the translation. The original title had more of a *je ne sais quoi*.

like ‘topsy-turvy’ was meant, and the reader is told once that by finding an error in \TeX ‘you’ll earn your prize and a place in the official listing of \TeX ’s (former) bugs’. In general, the style of writing is the type of ‘dialogue with the reader’ that characterizes *The \TeX book*.

Another good point about the book is the rather open layout. The typefaces used are Times Roman and (its inevitable companion) Helvetica. Choosing these typefaces instead of Computer Modern, while in itself not too adventurous, removes the book immediately from the spheres of ‘yet another book done with the \TeX font’. The Computer Modern family is used to show examples of \TeX output. A nice idea, although the effect is sometimes rather subtle, if just a single word of Computer Modern appears in a paragraph of Times.

My only criticism of the layout is that the book itself uses `\parindent=0pt`, so the output of some of the examples is different from what the ordinary user (who sticks to the default value of the indentation) will get. The authors should have made a remark about this, or prevented it from happening altogether.

The structure of the book is as follows. Chapter 1 is an introduction, chapter 13 is the ‘Dictionary and Index’, and in between are chapters that each treat an aspect of \TeX , for instance modes, glue, paragraphs, math, or \TeX programming. Although the final chapter is at 90 pages a generous one, and, well-stocked with examples, more than a mere index, I was most impressed with the expository chapters. They are meant for careful reading through them, rather than for easy reference (although the index refers back to them), but they contain an amount of information that is very respectable for an introductory book. It pleased me particularly to read the section on modes, a subject that is shunned by all other introductory books on \TeX so far. The book contains many examples that illustrate their point well.

Of course, this book doesn’t treat everything about \TeX . The chapter on page layout has many examples, but, understandably, doesn’t go very deeply into output routines. The control sequence `\expandafter` appears only in the Dictionary, and even there the reader is told that ‘this subtle primitive is not for beginners’.

I have one comment about the Index/Dictionary, and that is that it contains too many irrelevant entries for my taste. It was the authors’ idea to make the index refer to the examples ‘by content’, but it irritates me finding the likes of Humpty Dumpty and Bilbo Baggins all over the place.

In general, however, I found little to complain about in this book. There are hardly any \TeX errors, and the ones that I found are not very serious. The worst error was that the authors claim that the keywords `height`, `depth`, and `width` have to appear in that order, whereas they may appear in any order. A case of misleading information is that the authors repeatedly recommend `\vglue` where the plain format of \TeX version 3 has `\topglue`. Some other comments: the authors talk about ‘the family `\fam1`’ as if it were an identifier like ‘the font `\MyFont`’, whereas it is an assignment; calling `$` with category 12 an ‘active character’ because it prints as a dollar (page 173) is an unfortunate choice of words; and the reason that there are 18 μ to a quad may be obscure, but it is not ‘only known to Knuth’ as the authors state: the division of a quad in 18 basic units has been the standard for Monotype equipment for ages (this fact also appears in the space of the Computer Modern fonts: for the roman font the space is $\frac{1}{3}\text{em}$ plus $\frac{1}{6}\text{em}$ minus $\frac{1}{9}\text{em}$).

All of this is minor squabbling. This book does an admirable job of bringing together in single chapters enough information about topics in \TeX for a starting \TeX er to be able to ‘typeset just about any document’. It is superb as an introductory reading text, and the Dictionary/Index can be used for reference later on.

◇ Victor Eijkhout
Department of Computer Science
University of Tennessee
104 Ayres Hall
Knoxville TN 37996, USA
eijkhout@cs.utk.edu

New books on \LaTeX

Nico Poppelier

\LaTeX – Eine Einführung, Helmut Kopka, 3rd revised edition, Addison Wesley (Germany) 1991. hardbound, 375 pages.

\LaTeX – Erweiterungsmöglichkeiten mit einer Einführung in METAFONT, Helmut Kopka, 2nd revised edition, Addison Wesley (Germany) 1991. hardbound, 552 pages.

In view of the tremendous popularity of \LaTeX within the European \TeX communities it is not really a surprise that two good books on \LaTeX , \LaTeX

– *Eine Einführung* (An introduction) and *L^AT_EX – Erweiterungsmöglichkeiten mit einer Einführung in METAFONT* (Possibilities for extension and an introduction to METAFONT), have appeared in Europe. These two books were written by DANTE member Helmut Kopka, and will soon appear in an English version.

The first book consists of nine chapters and four appendices. The chapters discuss the fundamentals of L^AT_EX, commands and environments, document styles and page styles, text producing commands, mathematical formulas (a very nice chapter, with lots of examples), pictures, user-defined structures and error handling. The appendices treat production of letters, BIB_TE_X, fonts, and L^AT_EX extensions for the German language.

A description of MakeIndex and/or other indexing tools is missing, which is unfortunate since no L^AT_EX system is complete without BIB_TE_X and MakeIndex. What is also lacking in this introductory volume is a description of the basic idea behind L^AT_EX, namely the separation of logical structure from visual structure. The author presents L^AT_EX as a bag of tricks. Maybe a big bag, and maybe useful tricks, but a bag of tricks nevertheless.

In chapter 4 the author discusses typefaces, typeface sizes and environments that explicitly concern layout, e.g. `center` and `flushleft`, before the ones that concern structure, such as `itemize` and `enumerate`. A tell-tale sign of the author's approach to L^AT_EX is the fact that already in chapter 3 he discusses various layout commands, such as line breaks and page dimensions.

The book contains a few errors, of which I give one example: on page 158 the author explains how to typeset chemical formulas. He explains how you can get all subscripts on one level, whether or not a superscript is present, by changing `\fontdimen16` and `\fontdimen17`. What the author forgets is that these are global changes, no many how many braces you put around them.

Nevertheless, it is a very useful book, full of information, with a list of all commands with a short description of each, and an extensive index.

The second book consists of three parts and three appendices. Part 1 describes extensions to L^AT_EX, for example the option 'german', $\mathcal{A}\mathcal{M}\mathcal{S}$ -T_EX and its fonts, SL_TE_X, P_IC_TE_X and MakeIndex. Since MakeIndex is not an extension, but an essential part of L^AT_EX, it should have appeared in the first book. Furthermore, the description of $\mathcal{A}\mathcal{M}\mathcal{S}$ -T_EX should be replaced by a description of $\mathcal{A}\mathcal{M}\mathcal{S}$ -L^AT_EX.

Part 2 is called 'L^AT_EX for advanced users'. It discusses the structure of the L^AT_EX system, including document styles, and gives a short introduction to T_EX. Part 3 is the short introduction to METAFONT. The appendices treat WEB, the various other programs related to T_EX, and a sample application in CWEB.

All in all, this is a useful book, because it brings together information about the complete T_EX system. Also, it is the only real description of L^AT_EX's document-style mechanism.

The author has told me that the English version of his books will not be a mere translation of the German originals, but an internationalized version. I would like to suggest that in the rewriting process parts specific to the German language are removed in favour of international extensions to L^AT_EX, e.g. 'a4' and 'babel', that some parts are moved from book 1 to book 2 or vice versa, and that book 2 discusses the new font-selection scheme for L^AT_EX.

A general criticism: these books appear to be produced from low-resolution camera copy, which is a practice I think should be abandoned. Some of the illustrations in the introduction to METAFONT, in the second book, are particularly bad. T_EX's high-quality output deserves better, namely

- a *real layout*, i.e. not one of the standard styles modified by the author or the publisher, but one created by a *real designer*
- *real typefaces*, i.e. not Computer Modern at a low resolution. Computer Modern is not synonymous with T_EX! Besides, it's old-fashioned.

Finally: let's hope that these books appear soon, so that they can still be used for a number of years. After all, L^AT_EX 3 is in the making ...

◇ Nico Poppelier
Elsevier Science Publishers BV
Amsterdam, The Netherlands
n.poppelier@elsevier.nl