

Book Reviews

Book review: *T_EX Unbound*, by Alan Hoenig

Michael Doob

Alan Hoenig, *T_EX Unbound: L^AT_EX & T_EX Strategies for Fonts, Graphics, & More*. Oxford University Press, New York, 1998, ISBN 0-19-509686-X.

It is a daunting task to try to describe in some detail the principal extensions available to enhance the typesetting abilities of T_EX. Some, such as MetaFont, go back to the very origins of T_EX; some, such as MetaPost, are adaptations of older programs to newer technologies; some, such as those involving hypertext references or using T_EX to create documents for use on the internet, are responses to very current changes in methods of transmitting information. *T_EX Unbound* is the first book (all 600 pages of it) that makes a serious attempt at fulfilling this task.

Reviewing a book about T_EX is necessarily a multifaceted task. In addition to considering the usual content, one is inevitably drawn to the typesetting and the quality (or possible lack thereof) of design. For *T_EX Unbound* it is obvious that great effort has been put into producing an attractive book.

The text has been set in Adobe Garamond, a refreshing change from the plethora of books typeset using Computer Modern; the style is generally attractive and consistent. Nonetheless, your reviewer did find a small pride of typographical errors, but surprisingly few for a book of this size (in fact this review came from reading the final proofs of the book; perhaps there are even fewer typos now). This is not to say that all is perfect: the author spends some time describing f-words; these are defined by him to be words that end in the letter f (just to be sure that the reader's imagination doesn't run wild with any possibly prurient thoughts). Given this emphasis, it is surprising that whenever the phrase "of T_EX" appears, the close kerning stops the reading process and is just plain annoying. That having been said, the book is attractive, and this in itself is helpful as the author gently introduces some principles of good style. A particularly interesting example of this is the "Rogues' Gallery" of 28 different combinations of mathematical fonts (Computer Modern, Math Times, Euler, Lucida New Math, Mathematica) and text fonts (Computer Modern, Times New Roman, Palatino, Baskerville, Galliard, Lucida Bright, Lucida Sans). The results (intentionally) range from attractive to disastrous. Looking over these samples carefully really clarifies many typesetting issues, especially in the cases where the math and text italic fonts are the same. Other interesting applications of T_EX showed up from time to time in the text, e.g. ct ligatures, and provided pleasant surprises to the reader.

The intended audience of this book is clear from the topics covered: installing and running T_EX, using MetaFont and MetaPost, installing new fonts, the use (via nontrivial examples) of virtual fonts, and various method of graphic inclusions including the use of the L^AT_EX picture environment, epic, eepic, P_ICT_EX, MetaFont, MetaPost, mfpic, and PSTricks. A comfortable working knowledge of T_EX is generally assumed, but no higher expertise is demanded. It must be said that there is a bias towards the UNIX operating system, and towards the C shell within it. This is clearly not a first-level book, but neither does it require any system-level knowledge of either T_EX or the underlying operating system (a somewhat more advanced knowledge is required to understand the Perl scripts, but they aren't very numerous so this might be considered "knit"-picking).

The first 10% of the book describes the main principles of running T_EX and the sources for T_EX: the internet and the CD-ROM. It also describes newsgroups, some tools (mainly ftp), CTAN and the

different T_EX users groups. It is really more of a refresher, but does describe a number of relatively new web sites that might be of interest to the more seasoned user of T_EX.

The real nuts and bolts of *T_EX Unbound* starts with the discussion of MetaFont and MetaPost. Since there are relatively few introductions to MetaFont, especially *vis-à-vis* its companion program T_EX, it is fortunate that this one starts from the beginning and explains how to construct basic shapes using lines and (Bézier) curves, how to change pen shapes, and how to adjust the parameters of MetaFont; this is really welcome. The discussion of bit-mapped versus outline fonts is also useful (although the lack of any discussion of hinting of outline fonts is particularly unfortunate). Many samples of MetaFont fonts are given; it would have been useful to have samples of a few letters with both their control points and MetaFont code displayed. In the latter part of *T_EX Unbound* there are a number of excellent examples of MetaFont and MetaPost code; the results are elegant, beautiful and reflect both mathematical and artistic beauty (it should be noted that the author is clearly the Captain Ahab of the T_EX world pursuing the perfect graphic output).

T_EX Unbound then proceeds with a short introduction to L^AT_EX followed by some elementary interactions with other types of software, e.g. Mathematica. Along with the introduction to plain T_EX in the appendix, these seem rather out of place, having neither the sophistication nor excitement of the rest of the book.

On the other hand, the description of font selection is excellent and fills a much-unneeded gap in the literature. The use of fonts other than Computer Modern with L^AT_EX, especially with the new font selection scheme (NFSS) and its extensions to L^AT_EX 2_ε, is somewhat byzantine, and having the concepts of font selection, encodings, and naming schemes explained in one consistent chapter is welcome.

The topic of virtual fonts follows naturally from font selection. Again, the reason behind and needs for virtual fonts and various encodings are explained, and methods of installing them are discussed (with examples). Complete descriptions of several projects are given: strikeout fonts, underline fonts, and composite fonts. The examples displayed in the accompanying figures are wonderful. (A personal *steckenpferd* of the reviewer: using `\bar` as a math accent gives the same size accent for all letters of all widths so that *i* and *M* get the same accent. Using `\overline` produces an accent that is too wide. Why not a virtual overline font?) While

several useful tools for manipulating virtual fonts are described, the basic structure of the `vf1` files remains unmentioned. Even a brief description would convey better the power of virtual fonts.

Want to install new math fonts? Software for doing this (available on CTAN) is described and used to produce the aforementioned Rogues' Gallery.

Finally, there are descriptions and extensive examples of various methods of inserting graphics inclusions into T_EX files. These include some that are internal to T_EX (in the sense that auxiliary macros are input and make graphic commands available) such as the L^AT_EX picture environment, PSTricks, PSfrag, and P_ICT_EX; others create external files that can then be processed by T_EX such as `bm2font` or `mfpic`. *T_EX Unbound* is certainly the best collective description of the various methods of adding graphics. Perhaps a little more might have been said to compare the relative strengths and weaknesses of the various programs.

Finally, a few words must be said about the writing style of the author. This is a highly technical book, and such books are often somewhat unpleasant to read. Sometimes it seems that an author is trying to write a entire book without using an adverb. In contrast, this book is well written using a good deal of style and humour. Much of the material presented in this book could have been dry and repetitive; instead the descriptions and the examples used are attractive and interesting. Typical is the short example about buckling of beams under compression entitled "Necking in bars". However, it probably takes the condescension of a true New Yorker to appreciate the comments about Hoboken.

All in all this is an excellent addition to the T_EX references available. Anyone who uses T_EX on a day to day basis will definitely want it. Anyone who is even mildly interested in the limits of T_EX will also want this book. For a T_EXie it's a good read.

◇ Michael Doob
 Department of Maths and Astronomy
 University of Manitoba
 Winnipeg, Manitoba, Canada R3T 2N2
 doob@cc.umanitoba.ca