Review of *Typesetting mathematics with LaTeX* by Herbert Voss

Introduction

In the Preface to the TeXBook [Knuth, 1986], Don Knuth wrote: "TeX [is] intended for the creation of beautiful books—and especially for books that contain a lot of mathematics." Some features of TeX have been adopted outside mathematics, for instance the hyphenation algorithm, but mathematical typesetting remains TeX's primary niche.

TeX is reputed to have a steep learning curve. It is quite different from other (alleged) typesetting systems, most of which have adopted the what-you-see-is-what-you-get model. The error messages confronting the beginner are often bewildering. As a guide for beginners, the TeXBook leaves a lot to be desired. However, the unrivaled quality of the resulting typeset output makes the effort to learn TeX worthwhile.

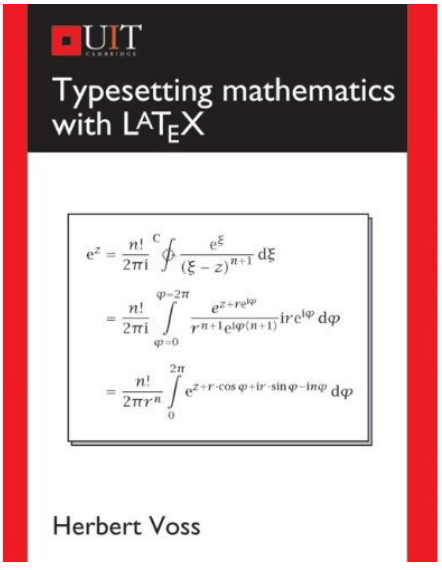
LaTeX [Lamport, 1994] was created by Leslie Lamport to make using TeX simpler, primarily by distinguishing the logical structure of a document from its typographical realization, and by providing a number of macros for constructions common in mathematical texts. LaTeX has now replaced pure TeX for most mathematical typesetting.

Most beginning LaTeX users in my experience (limited to computer science and physics departments in universities) start by modifying a LaTeX file from a colleague. Many of the high-level commands have well-chosen mnemonic names, and some users even add illuminating comments to their LaTeX files making the learning-by-modifying exercise much easier. However, inevitably there comes a time that this approach no longer works, and the dreaded stage of consulting a manual cannot be avoided. It seems that Voss' book is aimed at users in that situation.

Description

This book is a translation of the German version [Voß, 2009]. It is similarly priced, so you can choose either based on your linguistic preferences.

The book has eleven chapters. After the (one-page) Introduction, chapter 2 treats in-line mathematical expressions, using standard LaTeX. Chapter 3 treats display mode mathematics, while chapter 4 describes other constructs standard LaTeX offers for mathematical



formulae. Compared to Lamport's book, these chapters contain little that is new, either in substance or in presentation. What is new, is sometimes bordering on the esoteric, for example the discussion of the interchanged role of comma and point in (American) English versus 'continental' usage, and the repercussions this has for spacing large numbers. Doubtless this difference should be hidden in a macro.

Chapter 5 gives a brief, but nevertheless too long, description of the `color` package to colour formulae. Chapter 6 describes the various packages provided by the American Mathematical Society (without reference to the admittedly old manual by M.D. Spivak [Spivak, 1986]). Chapter 7, with 50 pages the longest chapter, lists mathematical symbols provided by standard LaTeX as well as a number of other packages. As the author says: "The order of the packages in this chapter is purely based on optimising page breaks". This does not really help in guiding the user to find the package that may contain the symbol he/she is looking for.

Chapter 8 describes some of the internals of TeX, while chapter 9 lists a number of packages with material useful for typesetting mathematical formulae, and gives some examples of using them. Again in the author's

words: "The selection in this chapter is more or less arbitrary, but common problems are addressed." Chapter 10 gives a number of examples of various constructions, without a clear organization, based 'on personal experience'. Finally, chapter 11 discusses which text and math fonts can be combined with good typographical results; this is illustrated with examples.

Evaluation

It is quite unclear to me what audience the author had in mind when writing this book. Newcomers will find the book impenetrable: it assumes prior knowledge of concepts like packages, character codes, and macro writing. To illustrate: without elaborating further, on page 24 the author suggests "Remember when using this package [...] that you have to embed this reset command in a `makeatletter ... makeatother` sequence though."

Advanced users, who are familiar with these concepts, may wish to use this book to find solutions to the question "How to code this particular mathematical formula in LaTeX?" If they do, they encounter a problem: the lack of organization of the book. Although the title mentions typesetting mathematics, the organization is not based on mathematical constructs at all (unless by accident, because most packages described *are* for specialized mathematical constructs). The index does not help here: if one does not yet know the name of the macro to use, exhaustive search (of the book, not of the index!) seems the only way to find it.

Organization aside: one expects a book on typesetting mathematics to be meticulously copy-edited. Unfortunately, that is not the case here. Already in the Preface (p. vii), the reader is confronted with an unresolved page reference **(??)**; there are several more of these. In the (brief) index of persons, N.B. Taylor can be found under *N* rather than *T*. The cover uses American spelling, while the book uses British English.

Surprisingly, the bibliography does not include Lamport's book [Lamport, 1994]. Both Lamport and Knuth are absent from the index of persons.

In summary, it is not clear what category of users can benefit from this book. There is certainly a need for a book that helps beginning users, versed in mathematics but not in typographical tools, to convert their ideas into beautifully typeset documents. This is not that book.

Typesetting mathematics with LaTeX , Herbert Voss, UIT Cambridge Ltd., 2010, 304 pagina's, ISBN 978-1-906860-17-2.

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