

Contra-L^AT_EX, or What Really Works in the Publishing World

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Abstract

An only slightly cynical view of the real interactions among authors, publishers, and T_EXnicians.

Introduction

My purpose in this article is to describe, as honestly as I can, how T_EX is and should be used in what we sometimes like to call the Real World (although those of you who have actually dealt with publishers may question the validity of that appellation).

Since few of my readers will know me, I feel that I should give a brief account of myself. I have been a technical writer for a small computer company; a production editor for a series of proceedings; an acquisitions editor for an international scientific publisher; and, for the past six years, the head of a T_EXnical typesetting and production house. Thus, I have some experience of every part of the process of publishing, from the time a writer gets an idea or an assignment to the time the finished product is sent to the bookstores.

My company is one of the very few commercial typographers to use T_EX for all its typesetting tasks, from initial keyboarding to final layout. As far as I can judge from advertisements in *TUGboat*, there are fewer than a half dozen similar firms, although there are many individuals and organizations which use T_EX in some way, whether writing macros or providing output services.

Most T_EX users, however, are salaried employees of commercial or educational organizations; as their incomes are not directly determined by the number of pages they are able to produce per day, and as their employers, not being publishers, are not concerned with the niceties of typographic style, our concerns—speed, efficiency, quality—are not necessarily theirs.

This undoubtedly explains the otherwise mystifying popularity of L^AT_EX.

The Promise of T_EX

For ten years or more, T_EX has promised authors full control of the typographical appearance of their books and publishers a way to turn out high-quality

books at a much lower cost. Unfortunately, the two promises too often remain unfulfilled.

First, authors, as a class, are completely ignorant of what Thomas Browne calls “the Trade and Mystery of Typographers.” Second, publishers are not interested in producing high-quality books; they are interested only in producing books that look good enough to sell. Many of you may have seen the article by Jacob Weisberg in the June 17 *New Republic* on the lamentable state of trade publishing. More personally, just before I left the editorial department of an international science publisher, I was reprimanded by the chairman because, as he put it, my standards were too high.

This is not to say that authors are idiots and publishers Scrooges; merely that an author’s first concern is the information he’s conveying and a publisher’s first concern is the money he’s making (or, more often, losing). It is clearly senseless to require authors to be typographers or publishers philanthropists—it’s nice when it happens, though.

The result, however, is that most books produced with T_EX are easily identifiable by their shoddy appearance.

Commercial T_EX

In order for T_EX to take what I believe to be its rightful place as the typographic language of choice for books and journals, more typesetting firms must adopt it and more production departments accept it. To illustrate how far we are from such a state, let me tell a more-or-less fictionalized little story.

Someone from T_EXnical T_EXtbooks Limited (we’ll call him Fred) calls the production director of Acme Worldwide Publishing Co., Inc. Assuming that he perseveres through phalanxes of secretaries and assistants, he might say, “Hello. I represent T_EXnical T_EXtbooks Limited, a T_EX-based typesetting firm. We can satisfy all your typesetting

needs, especially if you get books in electronic form prepared using \TeX .”

Now, the production director (we'll call her Ms. Constant Tradition) will say one of four things: (1) “We are perfectly happy with all our current vendors” (this is the usual response), (2) “We prefer not to use desktop publishing firms,” (3) “We don't publish technical books,” or (4) “We don't use cottage industry-type vendors.”

Assuming that he got one of the latter three responses, Fred will try (usually in vain) to convince Ms. Tradition that (a) \TeX is not “desktop publishing,” (b) \TeX can typeset anything, and (c) the “technological cottage” approach will save her money.

Now, why is Fred having such trouble? We will charitably discount the possibility that he is a lousy salesman. The primary reason is that most publishers' experiences with electronic publishing have been unhappy ones. If you have a trained eye, you can go into any bookstore and determine which books were typeset using DTP software—they're the ones whose appearance ranges from loathsome to just barely good enough to get by. Even most \TeX -set books do not measure up to any but the most minimal of standards. Therefore, production directors don't want to use electronic production techniques unless they absolutely have to, as when they're constrained by the budget or by the contract the editorial department signed with the author (which they will resent like blazes).

If Fred is lucky, he'll be able to send Ms. Tradition a sample book typeset with \TeX . Perhaps he can even send her two books, say, a novel and a mathematical monograph, just to show \TeX 's range. But even this may not convince her to hire him.

For production departments have an unreasonable prejudice against small shops (and most current \TeX —and, it must be confessed, DTP—shops are small). Publishers routinely use one-man shops (called freelancers) to do design, copy editing, and proofreading, but somehow typesetting must be done by large firms with hundreds of employees, huge overheads, and high prices. This problem is, of course, beyond the scope of this paper, but I hope to warn budding entrepreneurs of the problems they're headed for.

Even assuming that Ms. Tradition has been impressed by Fred's presentation thus far, she's unlikely to send him a manuscript to set; instead, he'll get a set of author's disks. Fred will then have the unenviable task of explaining why typesetting

from disks saves 10 to 50%, instead of 50 to 90%, of the cost of typesetting from paper.

There are many reasons for this, but they all boil down to one: the author.

\TeX nical Difficulties

It is an ancient joke among editors that their job would be a real pleasure if it weren't for authors. It is this attitude that explains why authors find themselves completely shut out of the decision-making process once the contract is signed and the book is delivered into the publisher's hands.

It may be that widespread use of electronic document preparation technologies like \TeX may change this attitude, but it is unlikely, since authors have more important things to do than learn the language, techniques, and requirements of fine typography.

For reasons completely opaque to the present writer, \LaTeX is the \TeX tool of choice for half or more of all writers who use \TeX . Why in the world, to borrow Dr. Lamport's metaphor, would someone voluntarily exchange a high-performance racing car for a beat-up old family sedan?

Thus, in order to undo what might be called \LaTeX 's sedanification of \TeX and create a professional product, the macro writer must spend much more time (and therefore money) than a publisher is likely to consider appropriate. For \LaTeX imposes several severe penalties upon its users.

First, a \LaTeX file will be 10% or more larger than an identical `plain.tex` file. Keyboard macros are, at best, only a partial solution, and, in any case, cannot be standardized among keyboarders who each use their own favorite word processor or text editor for data entry.

Second, it takes longer to run \LaTeX , both on each part of a book and, most importantly, on the entire book, especially since \LaTeX assumes that one will process an entire book at a time. Even when one uses an extremely fast computer (we use a 25-MHz 486 machine which can process a 27×42 pica page of `plain.tex` in under a quarter of a second), this is a tremendous handicap at the final stages of a job when one is trying to find and set the best page breaks in accordance with the publisher's style. The only solution I have found is to run \LaTeX on the entire book twice, save the `.aux` file, divide the job into several parts, and `\input` the `.aux` file at the beginning of every part of the job. Once all the page breaks are set, we then run \LaTeX twice more on the entire book, hoping that any

changes in cross-referencing will not affect the page breaks.

Third, inputting corrections, both from the copy editor and from the author and editor, becomes much more difficult. When we set a manuscript using `plain.tex`, we enter the equation numbers as numbers, so that, when we have to add a minus sign to equation 9.34.2, we can search for that equation number, find it quickly, and make the change. If we have a L^AT_EX file to contend with, we must either know the author's `\label` (an unlikely possibility) or search for some unique combination of words or mathematical symbols, such as `\root n \of{-\lambda}`, a penalty of 15 keystrokes and a bit of thought. Thought is very time-consuming, and therefore, as all production editors know, typesetters have always sought to do as little of it as possible.

Fourth, implementing the publisher's style is much more difficult to do on top of L^AT_EX than `plain.tex`. Recently, for example, I received a call from one of a client's authors asking me how to change the length of a page in L^AT_EX. He had been trying various machinations with no success for about a week. Once I received his files, I solved his problem in something under a minute. However, I have never received such a basic query from any author using `plain.tex`.

I have wasted so much (unbillable!) time trying to make L^AT_EX behave that I finally decided to convert whatever L^AT_EX projects I get to `plain.tex`, a process that takes less than an hour, and then write a `plain.tex` macro package. This has the additional advantage of enabling us to use our own output routine instead of L^AT_EX's, so that we can be sure of placing the vast majority of the floating insertions properly the first time through.

I usually keep the few L^AT_EX macros I have found to be both an improvement over `plain.tex` and impossible to convert: the `array` and `tabular` environments.

This is not to say that one cannot produce good-looking books with L^AT_EX, only that it will take longer and cost more. Truth to tell, however, the only L^AT_EX book I've seen that looked decent is *Introduction to Algorithms*, which was published by the MIT Press and McGraw-Hill. Amy Hendrickson provided the L^AT_EX macros. It should be said, however, that the MIT Press's style makes life much easier for the T_EXnician and layout person, as it uses *ragged bottoms*.

If L^AT_EX is such a mess, you may ask, why would anyone, even an author, use it? The usual reasons given are ease of use and standardization. But both

are illusory. L^AT_EX is no easier, and in some ways more difficult, to use than a special-purpose set of even moderately well-designed `plain.tex` macros. And standardization is not helpful unless every format in which a given file is to appear is the same width. (If the widths are different, or if there's a change of point size, all wide alignments and displays will have to be altered manually anyway; this is a far more time-consuming task than `\letting` a few macros to some other definitions.)

What Is to Be Done?

The easiest way to keep costs down and ensure that production will move as quickly as possible is simply to use `plain.tex` instead of L^AT_EX.

However, authors who use `plain.tex` are—returning to the famous L^Ampert analogy for a moment—often discovered to be truck drivers merely masquerading as sports car enthusiasts. One of my favorite masqueraders was the author who used his own definition of `\section` for every level of head from chapter openings to subsubsubheads. Others will begin paragraphs in display math mode or end display math mode with two carriage returns and a `\noindent`. However, even a novice T_EX user can produce perfectly acceptable files if he keeps a few simple rules in mind.

Of course, it could be said that I am arguing against my own best interests. So long as authors use L^AT_EX and misuse `plain.tex`, there will be a need for T_EX wizards to create silk purses out of sow's ears, and I can always charge more for working from L^AT_EX than from `plain.tex`. But I have a Puritan objection to redoing what should have been done right the first time, even if I *am* being paid for it.

The first rule is to avoid using T_EX primitives, especially those which control spacing (`\kern`, `\vskip`, `\hskip`), but always call them from macros (like `plain.tex`'s `\bigskip` etc.). `\vfill`, `\eject`, `\break`, etc., should also be avoided, as should explicit font calls in headings.

It is really not too much to say that the only place an author should use plain or primitive control sequences is in math mode, for the real power of T_EX consists in this: that all things are susceptible of change.

The second rule is to use a macro for every typographical or logical entity in your work. Examples are `\section`, `\subsect`, `\list`, `\example`, and `\theorem`. You need not define them, except as, say,

```

\newcount\sectcnt
\def\section#1{\par\global\advance
\sectcnt\@ne \the\sectcnt. #1\par}
or
\def\section#1#2{\par#1. #2\par}
or even
\let\section\relax

```

What about cross-referencing, you may ask. L^AT_EX's cross-referencing system is, perhaps, the feature of L^AT_EX that authors like best, even if it does pose problems for those who have to deal with the file after the author is finished. But cross-referencing is not difficult; the only advanced T_EXnique one needs to know is the `\csname ... \endcsname` primitive.

Those who are not yet convinced that L^AT_EX is so awful may wish to emulate a set of macros I once wrote to allow for automatic numbering and cross-referencing. I added one small, but important, function: the characters used as the label appeared in the margin on the proof copies. This could be added to L^AT_EX easily enough, but no one seems to have thought of it, as it is universally assumed that only the author is going to have anything to do with the creation of the document.

In the best of all possible worlds, the publisher would arrange for a T_EX consultant to write macros for the author as he writes his book. Given the way the publishing business works—especially given the traditional hostility between publishers' editorial and production departments—this is unlikely in the extreme, although it would provide publishers with the savings they have always expected from electronic production.

Speaking of money, authors should know that traditional typesetting costs anywhere from \$8 to \$50 per page, depending on the size of the page, the complexity of the material, and the complexity of the design. If an author does all or most of the work himself, he should ensure that the publisher either pays him a fair price or lowers the asking price of the finished product.

Not that he is likely to have much luck. The rule is, "whatever the market will bear," and so long as most purchasers of professional books pay for them with someone else's money, there will not be much pressure on publishers to lower prices. But there's always some—one of my former employers has become notorious recently for both the enormous amounts he charges for his books and journals and his penchant for suing anyone who criticizes his pricing policies.

Postconference Postscript

Introduction. In my preprint, I discussed several books from the standpoint of a critical typographer; as such a discussion has no merit if the readers have no access to the books, I shall here make some general observations about current typographic practices and a few responses to concerns raised by other speakers at the conference.

Typography Today. Of the fourteen books I took to the conference for discussion, four were traditionally set, two were set with DTP programs, six were set with T_EX at The Bartlett Press, and two were set with T_EX by others.

When one looks at traditionally composed books, one notices that the line breaks are often not as good as T_EX would produce and that several refinements which used to be taken for granted are now lost. There is one exceptional publisher which still produces extremely high-quality books: The Folio Society. The Society is a subscription publisher devoted to the art of fine bookmaking; anyone confused by prattle about "quality" is urged to examine some of their books.

The refinements I alluded to above include such things as avoidance of widows and orphans, avoidance of recto-to-verso hyphenation, alignment of pages (partly the printer's problem), and alignment of accents over letters.

Books produced by desktop publishing programs typically have lousy layouts (extremely variable space around figures and tables, ragged bottoms, insufficient number of lines below a head), ugly fonts, and an unnecessary, distracting, and ugly proliferation of design elements.

The Bartlett Press's books are, in general, pretty good. The major difficulty we have had is in using non-Computer Modern fonts in mathematics; often the kerning is not ideal. It is, however, quite good enough for most purposes and compares well with the kerning of other math setting systems. Books we have set with little or no math are, for all practical purposes, perfect.

I should confess that, overcome by a spirit of honesty, I brought the first book we ever did, which was produced while we were first learning T_EX—it had many of the problems I attribute above to traditionally composition methods. Of course, we did learn better. It also proves that someone knowledgeable in typography can get decent results with T_EX, even though someone trained in T_EX may produce something typographically awful.

The Bartlett Press often has the advantage of keying its books from MS; books that other companies have set are produced from the author's disks and, usually, on low budgets. It is in these cases that T_EX becomes a second-rate (or worse) typesetting system. This is especially obvious if the author is his own designer and if he uses only Computer Modern fonts. However, even high-budget books suffer if the T_EXnician is insufficiently thorough or insufficiently acquainted with the conventions of typography. For instance, consider the way vertical space is handled when two elements that each contribute space about one another. Publishers have rigorous standards for such cases, but no standard implementation of T_EX will perform properly. Of course, T_EX can handle this problem, but only if the T_EXnician is enough of a typographer to do it.

Reading over these comments, I see that they seem a bit churlish and self-aggrandizing. I should say, therefore, that many of our competitors do fine work. Yet it is important that publishers know that there is at least as much variation among T_EX typesetting firms as there is among traditional firms and, more importantly, that the use of T_EX does not, in and of itself, guarantee that a project will be either good or shoddy.

Some Solutions to Some Problems. Various speakers complained about T_EX's steep learning curve. But this is a problem only if one wants everyone who uses T_EX to be a wizard. We train our keyboarders to use T_EX in a day; after a week they're thoroughly used to it. But how do you handle something really difficult, you may ask. We tell the keyboarders to make up a macro, which they will not even try to define, with as many arguments as they think necessary. When the file arrives in house, we supply the necessary definition. Thus, one only needs one wizard for twenty or thirty users.

Another complaint often voiced had to do with costs and scheduling. A sore point. We cannot guarantee either until we have seen everything pertaining to a job: the complete manuscript, the complete set of files, and the finished design. An estimate based on the first few chapters cannot possibly include the cost of repairing the horrific mess the author made of the eighth chapter. Even so, I am baffled by the assertion that it is often cheaper to have a manuscript reset in the Far East than to have a domestic firm work with the author's files. Our experience tells us that it is a rare author indeed who can make that great a mess of a T_EX file.

The problem of fonts is still a serious one, but now that virtual fonts are a standard feature of device drivers, the problem will begin to disappear. Meanwhile, users should not be afraid of meddling with T_EX .pl files to tweak the kerning to their satisfaction. Be very sure, however, to send the resulting .tfm to your output service; otherwise, you will not get very good results.

The problem most often mentioned was that of page makeup. It is undeniably difficult to get T_EX to set page breaks that uniformly adhere to the publisher's standards. However, creative macro writing can solve all the problems. The simplest case — that of one-column text — is relatively simple, even though no standard set of macros (`plain.tex`, L^AT_EX, *A*M_S-T_EX) can handle it. The general case of multicolumn text is hard; one must do a lot of work to overcome some deficiencies in the design of T_EX itself.

Given our experience with setting multicolumn material, I suspect that T_EX will never be widely adopted for newspaper and magazine work unless it is substantially rewritten. This journal (*TUGboat*) is proof enough of that — the design and typesetting are serviceable, but hardly triumphs of the art.