

# Volunteer work for the L<sup>A</sup>T<sub>E</sub>X3 project\*

L<sup>A</sup>T<sub>E</sub>X3 project

Frank Mittelbach

Chris Rowley

Michael Downes

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## 1 Introduction

This is a call for volunteers to help in the development of L<sup>A</sup>T<sub>E</sub>X3. There are many tasks needing to be done in support of the L<sup>A</sup>T<sub>E</sub>X3 project which can be worked on concurrently with the development of the L<sup>A</sup>T<sub>E</sub>X3 kernel. Furthermore, some tasks require special expertise not found among the core programming team. Initial research, analysis, and work on these tasks by volunteers can greatly speed up the process of integrating a number of desirable features into L<sup>A</sup>T<sub>E</sub>X3. Many of these features can be extensively developed and tested under L<sup>A</sup>T<sub>E</sub>X2.09 even before the L<sup>A</sup>T<sub>E</sub>X3 kernel is available.

Therefore we are publishing a list of tasks to the L<sup>A</sup>T<sub>E</sub>X user community through various channels and we ask readers to consider contributing some time and effort (particularly, but not exclusively, readers with expertise in the various areas touched on). The task list is distributed in the form of a L<sup>A</sup>T<sub>E</sub>X article; it is fairly readable in electronic form, and it can be printed on paper if desired.

If you are interested in working on a particular task, the first step is to contact the volunteer list manager (see Appendix ?? for details). He will either immediately designate you as the ‘task coordinator’ for that task, and assist you in getting answers to any initial questions you may have, or if someone else is already serving as the task coordinator for that task, you will be put in touch with that person, who will discuss with you the current status of the work and ways in which you might contribute.

The task list will be updated in regular intervals. Time estimates are measured in man-days or man-weeks, the values are guesses according to our experiences.

## 2 General tasks

### 2.1 Volunteer list management

Organization, publication and maintenance of the general volunteer task list.

*Estimated time required:* ?.

*Undertaken:* 22 July 1992 by George Greenwade.

### 2.2 Validating L<sup>A</sup>T<sub>E</sub>X2.09

Writing test files for regression testing; checking bug fixes and improvements to verify that they don’t have undesirable side effects; making sure that bug fixes really correct the problem they were intended to correct; testing interaction with various document styles, style options, and environments.

We would like three kinds of validation files:

1. General documents.
2. Exhaustive tests of special environments/modules such as tables, displayed equations, theorems, floating figures, pictures, etc.
3. Bug files containing tests of all bugs that are supposed to be fixed (as well as those that are not fixed, with comments about their status).

A procedure for processing validation files has been devised; details will be furnished to anyone interested in this task.

*Estimated time required:* 2 to 3 weeks, could be divided up.

*Coordinator* [25 August 1992]:

Daniel Flipo `fl...@citol.citilille.fr`

*Other volunteers:*

Chris Martin `cs1...@sunc.sheffield.ac.uk`

## 3 Syntax questions

### 3.1 .sty metacomments for smart editors

Develop conventions for documentation of styles which could be picked up by editor packages to provide editing help.

The idea is to place metacomments in .sty files which smart text editors (in particular) can use to get information about the ‘exported’ (user interface) macros for that particular style. The information would be useful for word completion and spelling checking, at least. (The auc-tex package for GNU Emacs currently has such information hard-wired for a number of common styles.) If the editor has access to the `\documentstyle` line or suitable alternative instructions it can poke about in the appropriate style files rather than using its own database.

Such information could be written out by a run with `doc.sty` on the basis of `\Describe{Macro,Env}` commands in the .doc file and subsequently included in the `docstrip`ped .sty file. That’s easy enough, but if it’s to be generally useful the result

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ought to be somewhat standardized and in a form suitable for use by as many editors or other tools as possible.

Would conventions for supplying other information this way be useful (along the lines of the PostScript structuring conventions)?

*Estimated time required:* probably 2-5 days over a longer period of time.

*Coordinator* [25 August 1992]:

David Love JANET: d.l...@uk.ac.dl,  
BIT/INTERNET: d.l...@dl.ac.uk

*Other volunteers:*

### 3.2 Syntax proposal for bibliographical commands

Extensions of current  $\LaTeX$  syntax for `\cite` commands and bibliography commands. A number of specialties have conventions for citations and bibliographies that  $\LaTeX$  2.09 is ill equipped to handle.

David Rhead published several papers concerning the handling of bibliographies and citations [?, ?, ?, ?]. Some of them have been distributed via the `latex-1` mail list. Counter-proposals or further argumentation for David Rhead's ideas would be useful.

*Estimated time required:* 1-2 days.

*Coordinator* [18 September 1992]:

None yet

*Other volunteers:*

### 3.3 Research on syntax for tables

What features are important (and not covered)? Logical representation of tabular material versus visual representation. Syntax proposal and report.

About tabular material presentation many interesting papers are published. For example, general articles [?], [?],  $\LaTeX$  related [?], [?] [?], logical table representation [?]. Important work was done by Michael Spivak in [?] and of course in his "Tables to die for" (T2D4). Standard books on typesetting like [?], [?], [?], [?] to name only a few, also usually contain important information about tabular typesetting. What is necessary, is a survey of the requirements for tabular material in printing, a proposal for an extended standard syntax, and perhaps proposal for syntax of extra features that could be provided through a separate 'super tables' module that is not loaded until the user requests it.

*Estimated time required:* 2-6 weeks (could be shared by several volunteers).

*Coordinator* [18 September 1992]:

None yet

*Other volunteers:*

### 3.4 Research on syntax for chemistry

The typography of chemical texts is rather different from, say, mathematics. We need a taxonomist to classify the primary elements of an article or book on chemistry and suggest syntax for user commands to handle each element. What proportion of chemical diagrams can be constructed with primitive line

graphics such as given by the  $\LaTeX$  picture environment (with suitable extensions)? Or should diagrams be simply always done in some other graphics language and imported via `\special`?

*Estimated time required:* ?.

*Coordinator* [10 September 1992]:

Chris Carruthers ...@acadvm1.uottawa.ca

*Other volunteers:*

### 3.5 Research on syntax for commutative diagrams

Commutative diagrams occur often enough in mathematical literature that even the first version of  $\text{AMS-}\TeX$  back in 1983 or so included a rudimentary facility for constructing rectangular commutative diagrams. Since then several people have produced various alternatives, most involving special fonts with line segments slanted at various angles, and arrow heads. The commutative diagram macros of  $\text{LAMS-}\TeX$  have arrow directions specified as vectors with the units being rows and columns rather than distances, e.g., `\arrow(1,2)` means a diagonal arrow from the current element to the element one row over and two columns down.

There is a `catmac.sty` by Michael Barr that uses the line fonts of  $\LaTeX$  for drawing slanted arrows. The `XY-pic` package by Kristoffer Rose is reportedly usable with  $\LaTeX$  and comes with its own line and arrowhead fonts.

For  $\LaTeX$ 3 we would like to see an analysis of the logical structure of commutative diagrams and recommendations on user syntax.

*Estimated time required:* 2-4 days.

*Coordinator* [18 September 1992]:

None yet

*Other volunteers:*

## 4 Research tasks

### 4.1 Experimenting with `\emergencystretch`

Testing the new features of  $\TeX$ 3 where no experience is available so far. Writing up a report.

Research on `\emergencystretch`, in particular, is an important area where the  $\TeX$  community doesn't have enough experience so far, e.g., what are good values in what situations, why? What happens if... and so on. This would also make a good article for *TUGboat* if the report were given some finishing touches afterwards.

*Estimated time required:*  $\approx$  4 days plus 2 days for publication.

*Coordinator* [18 September 1992]:

None yet

*Other volunteers:*

### 4.2 Research on indexing commands

What kinds of indexes are needed for various fields? What kinds of indexes are needed for various specialties? What kind of `\index` commands/syntax need to be provided for marking entries? What kind of commands need to be provided for

printing indexes after they have been processed by a program like Makeindex?

*Estimated time required:*  $\approx$  1-2 weeks.

*Coordinator* [18 September 1992]:

None yet

*Other volunteers:*

### 4.3 Research footnote/endnotes conventions

What conventions are used for various specialties? What user commands and syntax would be recommended? Report about the results.

*Estimated time required:*  $\approx$  1-2 weeks perhaps divided into disciplines.

*Coordinator* [18 September 1992]:

None yet

*Other volunteers:*

### 4.4 Syntax diagrams

Designing a command syntax (and implementation in  $\LaTeX$ 2.09) for syntax diagrams used to illustrate programming language syntax.

Reference:

```
@article(tub:MP181,
  AUTHOR = {Michael F. Plass},
  TITLE = {Charting your Grammar with {\TeX}},
  JOURNAL = tub,
  YEAR = 1981,
  VOLUME = 2,
  NUMBER = 3,
  PAGES = {39-56},
  keywords = {TeX, Macros, Syntax diagrams}
)
```

The described syntax is probably not appropriate for  $\LaTeX$  and the implementation needs refinement since it was done for  $\TeX$ 79 but it is a good starting point.

*Estimated time required:* 1-2 days for syntax.

*Estimated time required:* 4-8 days for prototype implementation.

*Coordinator* [18 September 1992]:

None yet

*Other volunteers:*

### 4.5 BNF notation

Designing command syntax and prototype  $\LaTeX$ 2.09 implementation for BNF (Backus-Naur) notation used to describe syntax of programming languages.

*Estimated time required:* 1-2 days for syntax.

*Estimated time required:* 3-5 days for prototype implementation.

*Coordinator* [18 September 1992]:

None yet

*Other volunteers:*

## 5 Research tasks (cont.)

### 5.1 Research on use of shorthand forms

In SGML there is a concept called ‘short ref’ which means for example that the double quote character " can be defined to produce directional quotes, blank line can be interpreted as end of paragraph, and so forth.

What kind of similar shorthand forms in ASCII files may be desirable for  $\LaTeX$  users, e.g., => to be converted to  $\Rightarrow$ , /= or <> to be converted to  $\neq$ , ’? to be converted to upside-down Spanish question mark, "u to be converted to umlaut ü, and so forth. What conventions are currently in use for various kinds of documents?

Something along these lines is currently done in AMS- $\TeX$  with the @ character: @- is a shorthand meaning ‘nonbreaking hyphen’, @, is a shorthand meaning one-tenth of a thinspace, @> is a shorthand for an extensible right arrow, and so forth.

It is envisioned that in  $\LaTeX$ 3 the user will be allowed to designate certain characters to be shorthand initiator characters. For efficiency reasons, the set of allowed initial characters will probably be restricted to nonalphanumeric only.

*Estimated time required:* ?.

*Coordinator* [18 September 1992]:

None yet

*Other volunteers:*

### 5.2 Research on figures and captions

What rules are in common use for placement and formatting of floating figures and their associated captions? Propose syntax for user commands. Write report.

Placement rules for floats and their captions are so far very limited in batch formatters like  $\TeX$ . We are interested in rules for such placement which are used in practice, algorithms, and possible user syntax. What could be a good user syntax for putting captions above, below, on the side, centered or top or bottom or left or right? Do we need to allow different action for different classes of floats? What do we need for multi-figure groups and their captions?

*Estimated time required:* 2-4 weeks (could be divided in sub-tasks).

*Coordinator* [18 September 1992]:

None yet

*Other volunteers:*

### 5.3 Research on the use of ^^ conventions

Check the actual use of the ^^ convention for special characters in the  $\LaTeX$  community by polling as many users, organizations, mail-lists, usenet groups, etc. as possible. Write report.

In  $\TeX$  the ^^ notation is sometimes used for access to unusual characters (< 32 or > 126). It would be useful to separate this function from the superscript function by assigning it to some character other than ^, if that would not be too large an inconvenience for users. One application, for example, would be to change ^ and \_ to be active characters so that they can always keep track of current math style, which

would allow a better definition for `\mathchoice` and simplify many things having to do with math fonts. It seems that the `^^` notation is indispensable only when the character is used in a control sequence name or as a macro argument delimiter (or in hyphenation patterns?). Note: document styles are less concern since they will have to be mostly rewritten for  $\LaTeX_3$  anyway.

*Estimated time required:*  $\approx$  3-5 days.

*Coordinator* [18 September 1992]:

None yet

*Other volunteers:*

## 6 Misc items

### 6.1 Math font handling

Test math font handling in the latest release of NFSS and write up detailed comments.

Last year there was some discussion among the  $\LaTeX_3$  programmers and others on how to handle math fonts under an enhanced release of NFSS for  $\LaTeX_3$ . The discussion finally drifted off into areas that are far beyond the scope of the  $\LaTeX_3$  project but the actual questions that were raised have not yet been answered. The only contribution that came close was the detailed suggestion and experience report by Sebastian Rahtz about the alpha release for an extended text font handling which was sent around via the `latex-1` list.

*Estimated time required:* 1-2 days.

Thinking about a proper math font handling taking into account the papers already sent around.

*Estimated time required:* 2-4 days.

*Coordinator* [18 September 1992]:

None yet

*Other volunteers:*

### 6.2 Converting numbers to textual form

Currently counter values can be displayed in certain styles, e.g., as roman numerals. But it may be interesting to extend the available commands by cardinal and ordinal representations, e.g.,  $5 \rightarrow$  ‘five’ or ‘fifth’ (for example, if you wanted to refer to ‘the fifth item’ in a list using something like  $\LaTeX$ ’s `\ref`.) Spivak’s LAMS- $\TeX$  has `\cardinal` and `\ordinal` macros to do this, for handling cross-references such as ‘the fifth item in the list’ where ‘fifth’ is supposed to be generated by a `\ref` command. The main question: How much do we need this capability? Should it be standard, or merely a nice option for those who want it? Can it be easily extended to support various language conventions? Are there other significant uses besides the cross-reference idea?

*Estimated time required:* 1 day.

*Coordinator* [18 September 1992]:

None yet

*Other volunteers:*

## 7 Misc items (cont.)

### 7.1 Rewrite of MakeIndex in WEB

Convert/rewrite the C source code of MakeIndex. For consistency it would seem desirable to have all auxiliary programs designed for use with  $\LaTeX_3$  to be compilable in the same way as  $\TeX$ . Currently this means use of the WEB language, with or without the CWEB intermediate step.

Furthermore, the MakeIndex program could use some work to deal with a few shortcomings that have become evident with the passing of time and extended usage.

*Estimated time required:* ?.

*Coordinator* [18 September 1992]:

None yet

*Other volunteers:*

### 7.2 Write other auxiliary programs

Create programs for support tasks related to  $\LaTeX$  documents but not part of the primary typesetting functions.

Question: what other auxiliary programs do we need? Conjectures: Compiled version of `docstrip`? Programs to help designers in creating document styles? Program for dealing with graphics files in various formats (e.g., read Bounding Box comments from a PostScript file and compute scaling and translation numbers for passing to a  $\LaTeX$  `\special` command?) Checksum utility by R. Solovay for updating Nelson Beebe’s standardized file headers. Auxiliary program to help in constructing complicated tables (decimal point alignment, row spanning, other fancy effects that are hard to do in  $\TeX$  currently)? Auxiliary program similar to Type & Set to do interactive page-breaking/float placement?

*Estimated time required:* Arbitrarily long.

*Coordinator* [18 September 1992]:

None yet

*Other volunteers:*

### 7.3 Bibliography style programming

Write bibliography styles for  $\BIBTeX_1$ . The current version of  $\BIBTeX$  is 0.99. A reimplementaion of  $\BIBTeX$  for  $\LaTeX_3$  is under way, by Oren Patashnik. When this is finished, or perhaps even before, suitable standard bibliography styles for  $\LaTeX_3$  need to be written.

*Estimated time required:* 1-3 days per style.

*Coordinator* [18 September 1992]:

Robert Tolksdorf `t...@cs.tu-berlin.de`

*Other volunteers:*

### 7.4 Timing tests

Run tests to compare speed of various possibilities.

To make the  $\LaTeX_3$  kernel sufficiently fast it is necessary to write efficient code. This means testing several variants against each other to see which one is fastest. One example is the case of global versus local assignments for temporary registers. In

the recent issue of TUGboat [?] speed issues for token registers have been discussed.

*Estimated time required:* 2–3 days.

*Coordinator* [18 September 1992]:

None yet

*Other volunteers:*

## References

- [Bea85] Richard J. Beach. Setting tables and illustrations with style. Technical Report CSL-85-3, Xerox Corporation, Research Center, Palo Alto, California 94304, May 1985.
- [Bea86] R. J. Beach. Tabular typography. In J. C. van Vliet, editor, *Text processing and document manipulation*, British Computer Society Workshop Series, pages 18–33, Cambridge, April 1986. Cambridge University Press.
- [But81] Judith Butcher. *Copy editing: the Cambridge handbook*. Cambridge University Press, Cambridge, second edition, 1981.
- [Car90] David Carlisle. Some notes on the longtable environment. Available from T<sub>E</sub>X servers, December 1990.
- [Car91] David Carlisle. `narray.sty`. Available from T<sub>E</sub>X servers, July 1991.
- [Chi82] *The Chicago Manual of Style*. University of Chicago Press, Chicago, London, 13th edition, 1982.
- [Fin91] Jonathan Fine. Some basic control macros for T<sub>E</sub>X. Presented at a L<sup>A</sup>T<sub>E</sub>X3 workshop 1991 in London, February 1991.
- [Fin92] Jonathan Fine. Some basic control macros for T<sub>E</sub>X. *TUGboat*, 13(1):75–83, April 1992.
- [McL80] Ruari McLean. *The Thames and Hudson Manual of Typography*. Thames and Hudson, London, 1980.
- [Rhe90] David Rhead. Towards BIBT<sub>E</sub>X style-files that implement principal standards. *T<sub>E</sub>Xline*, (10):2–8, May 1990.
- [Rhe91a] David Rhead. How might L<sup>A</sup>T<sub>E</sub>X3 deal with citations and reference lists? *T<sub>E</sub>Xline*, (13):13–20, September 1991. Suggestions for L<sup>A</sup>T<sub>E</sub>X3.
- [Rhe91b] David Rhead. Some ideas for improving L<sup>A</sup>T<sub>E</sub>X. Suggestion for L<sup>A</sup>T<sub>E</sub>X3, July 1991.
- [Rhe92a] David Rhead. Short form citations: how a manual might describe the suggested user interface. University of Nottingham JANET: `d.rhead@uk.nottingham.ccc.vme`, May 1992.
- [Rhe92b] David Rhead. Short form citations: some examples. University of Nottingham JANET: `d.rhead@uk.nottingham.ccc.vme`, May 1992.
- [Sie92] L. Siebenmann. Elementary text processing and parsing in T<sub>E</sub>X — the appreciation of tokens —. *TUGboat*, 13(1):62–73, April 1992.
- [Spi89] Michael D. Spivak. *LAMS-T<sub>E</sub>X The Synthesis*. The T<sub>E</sub>Xplorators Corporation, Houston, 1989.
- [Van92] Christine Vanoirbeek. Formatting structured tables. In C. Vanoirbeek and G. Coray, editors, *Electronic Publishing '92*, pages 291–309, Cambridge, April 1992. Cambridge University Press.
- [Whi88] Jan White. *Graphic Design for the Electronic Age*. Watson-Guptill, Xerox Press, New York, 1988.

## A Volunteer list manager name and address

The manager of the volunteer list is:

George Greenwade  
Internet: bed\_...@SHSU.edu  
Bitnet: BED\_GDG@SHSU  
THEnet: SHSU::BED\_GDG  
Voice: (409) 294-1266  
FAX: (409) 294-3612

If you are interested in volunteering for one of the listed tasks, please start by contacting the coordinator for the task in which you are interested, if a coordinator name is given. Otherwise contact the volunteer list manager. The proposed organization of volunteers is as follows:

- The first person to volunteer for each task will automatically be accepted and designated ‘task coordinator’, without regard to their expertise. Responsibilities: keep in contact with any other volunteers that later volunteer for the same task; avoid duplication of effort; collect and organize the results of volunteer work on that task.
- The first job of a task coordinator is to gather together information relevant to the task (such as previous discussions on the LaTeX-L mail list, articles published or unpublished mentioned in the task list, etc.). For this you may need some assistance. If is not already subscribed to the LaTeX-L list, you should subscribe in order to receive announcements about the progress of the L<sup>A</sup>T<sub>E</sub>X<sub>3</sub> project. To do this, send mail to `lists...@vm.urz.uni-heidelberg.de`, with one line as the body of the message (substituting your own name):

```
subscribe LaTeX-L Your-first-name Your-surname
```

- The second job of a task coordinator is to write a ‘task specification’ containing more details than were in the volunteer task list. It should describe the goals and any restrictions that apply. This task specification will need to be reviewed by someone on the L<sup>A</sup>T<sub>E</sub>X<sub>3</sub> kernel team, and afterwards it can be sent out to any additional volunteers for the same task, as a guide for the work.
- If other persons volunteer later for the same task, the volunteer list manager will put them in contact with the task coordinator. Arrangements for dividing the work and keeping in touch should then be made by the task coordinator; in addition, if a later volunteer has greater expertise or more spare time or other useful qualifications, he/she may become the task coordinator by mutual agreement among the volunteers who are working on that task.