

Migration to ConT_EXt?

First experience with ConT_EXt typesetting

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Human beings are dependent on their environment. What will happen when they leave it? After a number of years spent in L^AT_EX civilisation, the author decided to fly the track and tried ConT_EXt for book publishing. He would like to share his first experience, i.e. feelings (positive, of course), reasons, problems, solutions, confusions, etc., which among other things might serve as feedback useful for writing documentation. This paper covers the author's experience with some necessary elements for typesetting books, e.g., layout setup, grid, structural markup, etc. For simplifying the typesetter's work, a few improvements have been proposed.

1. Introduction

In 1992 I was acquainted with T_EX, especially with L^AT_EX which was a new technology for Czechoslovak typesetters. Due to my long-term experience with programming, I was not surprised at having found the procedure to be composed of three independent steps: editing, compiling, and viewing, together covering a non-WYSIWYG way of typesetting work. The mathematically exact basis of Knuth's T_EX gave better results at that time than any WYSIWYG systems. Therefore I became a user of the L^AT_EX system and since that time I have been using this system for all text preparation work.

Penetrating through the L^AT_EX structures, I was sometimes caught unaware by unexpected error messages or strange behaviour of those structures. Unfortunately, as a beginner I did not distinguish between T_EX problems and L^AT_EX problems.

[6] expressed similar feelings in his philosophical-technical essay dealing with reasons why he dislikes L^AT_EX.

He formulated four basic reasons why in his opinion L^AT_EX has been created:

- to screen out the relative complexity of T_EX from "terminal" user;
- to create a language for input texts;
- to enable formatting of simple documents by prepared styles;
- to make easy exchange of documents and their new re-formatting.

All four reasons are very nice, however, as [6] described afterwards, they do not live up to expectations. He analysed in detail eleven aspects of L^AT_EX behaviour. (These are: T_EX language insufficiency, Screening out the complexity of T_EX, Secreting facts, Non-distinguishing between L^AT_EX and T_EX, Own language of input texts, Structural markup, Dividing the work, Prepared styles, Complexity of L^AT_EX macros, Portability of

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documents, and Differences in L^AT_EX versions.) Some of them are discussed in the next section, in comparison with ConT_EXt behaviour.

2. L^AT_EX v. ConT_EXt

2.1 Screening out the relative complexity of T_EX

L^AT_EX as a superstructure of T_EX aims at screening out the T_EX complexity from the user. A set of specific L^AT_EX macros would like to overlay the original structures for simplifying the work but the overlay has not been solved completely.

Beginners in using L^AT_EX may become confused when they use one extra column in a table. The following error message appears:

```
! Extra alignment tab has been changed to \cr
```

This happens even if there is no defined macro `\cr` in L^AT_EX superstructure. This follows from the fact that L^AT_EX is not able to detect “lower” T_EX errors.

In another situation, ConT_EXt also can make the user unhappy, e.g.:

```
! Misplaced \omit
!\ttuse #1->\ifnum #1>\plusone \omit
                                     \global \TABLEdivisionfalse ...
1.274 ... value \VL ... values\use{3}
                                     \MR\HL
```

Macro `\omit` (as well as `\cr` in the previous example) do not belong to ConT_EXt macros. In this point, there is (unfortunately) no difference between these two superstructures.

3. ConT_EXt as a Typographic System

3.1 Grid typesetting

T_EX and L^AT_EX have not been designed with grid typesetting in mind, and there is no simple, reliable way to enforce grid typesetting in general with L^AT_EX [3].

In L^AT_EX short documents like technical reports, papers, etc. medium vertical spaces are used very often between paragraphs. Flexible vertical spaces in L^AT_EX can fill some empty space in a page. This makes, however, grid typesetting more complicated.

Some works useful for grid typesetting have been published earlier. The solution, proposed by [5] and based on the sequential breaking of individual lines from the preprocessed vertical box, is written in plain T_EX but it can be used as well in L^AT_EX environment.

The fact that for improving L^AT_EX typesetting a completely plain solution has to be used confirms among other things Olšák's speculation on whether L^AT_EX is necessary for typesetting.

Another, complicated approach has been proposed by [4]. His algorithm intends to solve placement of floats in multicolumn documents which is also very complicated in basic L^AT_EX.

In contrast with the previous description, a solution for the user in ConT_EXt is not only working properly, but is also suprisingly very simple:

```
\cmd{setuplayout[grid=yes]}
```

This approach is very close to WYSIWYG systems where grid typesetting is accessible to each user by one click. It should be noted that this feature was the main point which persuaded me to start my experiments with ConT_EXt.

3.2 Layout maintenance

ConT_EXt contains very effective and comfortable tools for basic work, with the layout settings macro `\setuplayout` covering all layout parameters. This is connected with the macro `\showlayout` displaying clearly arranged dimensions and its values.

The L^AT_EX way consists of direct setting commands (`\textheight`, `\textwidth`), which together with pdfsettings or “\special-way”, is very complicated and not suitable for beginners.

Therefore, this point in ConT_EXt belongs to the most useful tools for a typesetter’s work. Some improvement of the `\showlayout` output table could be based on a small inaccuracy of internal computations: it happens sometimes that the set value is a bit changed [see Table 1.

Set value	\showlayout values			
100pt	textwidth	3.5141cm	100.0pt	\textwidth
3.5141cm	textwidth	3.5136cm	99.9858pt	\textwidth

Table 1: Comparison between set values and `\showlayout` values

For comparison and check, it may, therefore, be useful to add an extra column containing the value that the user has defined. This might prevent some undesirable tiny overflows.

4. ConT_EXt as a Compiler

4.1 Elapsed time for compilation

[2] measured speed of plain T_EX, L^AT_EX and ConT_EXt. He found that ConT_EXt consumes more time than the other programmes because of processing a more sophisticated concept of commands and their options, and more complicated output routine.

On Linux (Centos 5.3, 5.6) with T_EXlive (2010) the ratio between L^AT_EX and ConT_EXt speed (timing measured in 2011) is similar. However, in larger projects it is partly caused by automation of repeated compilation.

Findings in this field can be extended so that elapsed time is not shorter in case of redirected standard output in command line processing.

4.2 Warning messages

In the case of tables mentioned above ConT_EXt does not produce any error message when the number of columns in a table does not correspond with the definition of the table.

Attentive users can find some warning messages directly printed on the output PDF file. This might be somewhat dangerous, especially in wider documents where there is no chance to check the whole document after each compilation.

To solve this problem, a macro for user defined configuration of compiling process might help, or some options for command-line execution.

4.3 Log file

In comparison with L^AT_EX, the logfile by ConT_EXt seems to be better arranged even as it contains more detailed information about all input and output events.

On the contrary, ConT_EXt standard output is (except, e.g., the header and some specific information) the same as the logfile. Although the detailed description is quite useful, for optimal work in a terminal window some user configuration tool for reducing the amount of outputted lines could be recommended.

5. ConT_EXt As a Superstructure over the Plain T_EX

The basic concept consists of pairs `\startname` and `\stopname` enclosing some part of a document. Although it looks less important, typing of commands without overused braces like in L^AT_EX is more comfortable and makes the typesetter's work faster.

Except for the pair `\starttext` and `\stoptext`, other start/stop commands open and close the groups as expected.

Great advantage are defining commands, e.g. `\definefloat`, producing specific start/stop pair, followed by `place`, `placelist` and `completelist` commands.

This is very useful and easier to use than `\csname ... \endcsname` structures joined with quite complicated programming of other auxiliary lists of objects.

From this point of view, ConT_EXt seems to me to be a real superstructure bringing new features and more sophisticated configuration tools for all these macros starting, in a number of cases, with a pair of `setup` commands, separately for all objects (in plural) and for one concrete instance (in singular), through `\definestartstop` to key-value configuration of all structures.

What's more, ConT_EXt does not endeavour to overlay the plain basis. Even plain programming is expected for solving details and given in examples [7].

The key-value description of typesetting objects is also available in L^AT_EX, usually based on `keyval.sty` [1] but it is not implemented systematically. Therefore, L^AT_EX users have to study different ways of adapting the layout, objects etc. depending upon specific packages which they have decided to use.

6. Conclusion

While in contact with Hans Hagen I got the idea to try ConT_EXt first to learn it and second to apply it to a real problem.

Having started typesetting the whole book instead of simple examples I experienced a quite interesting piece of knowledge – due to a straightforward configuration concept it seems that finalising the document is less time consuming than in L^AT_EX.

My first experience with ConT_EXt has resulted in a book publishing research results of the Institute of Lifelong Learning at our university. The text contains a lot tables and figures which were processed and placed without problems. It should be noted that some L^AT_EX additional packages simplifies the work with tables as well but including these, usually basic, properties directly in ConT_EXt is more compact.

The concept and systematic approach, both mentioned above, is in my opinion better for learning typesetting rules and building up the proper approach for typesetting generally, especially in comparison with L^AT_EX, and it might be utilised in teaching document processing.

I would like to close my first *excursion to ConT_EXt* by sharing that I have quite a positive impression of this typesetting system.

7. References

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8. Acknowledgement

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