

## Abstracts

### *Typesetting the Qur'an and its specific challenges to the T<sub>E</sub>X family*

Hossam A.H. Fahmy, Cairo University

AlQalam (“the pen” in Arabic) is our freely available system intended for typesetting the Qur’an, other traditional texts, and any publications in the languages using the Arabic script. From a typographical point of view, the Qur’an is one of the most demanding texts. However, there is a long historical record of excellent quality materials (manuscripts and recent printings) to guide the work on a system to typeset it. Such a system, once complete, can easily typeset any work using the Arabic script, including those with mixed languages.

(The full paper will be printed in the proceedings of the TUG 2006 conference. *Ed.*)

### *How to deal with T<sub>E</sub>X in unfriendly situations*

Hans Hagen, Pragma ADE

Tools and methods for dealing with T<sub>E</sub>X in unfriendly situations, such as multiple trees, potentially conflicting environments, and strictly regulated web services.

### *Making better PDF*

Hartmut Henkel, pdfT<sub>E</sub>X team

Under normal circumstances, once the T<sub>E</sub>X part of pdfT<sub>E</sub>X is happy with the input, and all the required stuff like fonts and graphics is available, pdfT<sub>E</sub>X produces a valid PDF file. This talk is about PDF output, looking under the hood.

To learn about the general PDF file format and structure, we have a look at a PDF file generated from a short L<sup>A</sup>T<sub>E</sub>X example. We follow the steps of a simple virtual PDF viewer from opening the file over collecting required resources until text from a typical page is placed on the output medium. We see how the PDF file is made up from many objects that can be found in the file by consulting a cross reference table. The most important building blocks for objects (dictionar-

ies and streams) and data structures are described, and the basic operators for coordinate transforms, font selection and glyph placement are discussed.

Then we have a look at how pdfT<sub>E</sub>X implements precise glyph placement, taking into account that most movements are incremental, that there are two different coordinate systems involved (one for T<sub>E</sub>X’s internal calculations and one for the PDF output representation), and that coordinate values in PDF files are rounded to only a few decimal digits. As a PDF viewer knows only these rounded numbers (and not the exact T<sub>E</sub>X ones), there could be the risk of error accumulation; pdfT<sub>E</sub>X prevents this by keeping track of the rounded numbers it has output to the PDF file.

In the last part of the talk we do a little detective work: if one inspects a page stream generated by pdfT<sub>E</sub>X one can often spot tiny correction terms ‘)1(’ and ‘)-1(’ in the glyph placement array that, interestingly, are there only for the Computer Modern fonts, not for standard PostScript fonts like Times-Roman. The origin of these corrections is traced to the fact that the CM fonts are not designed on a 1/1000 font-size raster, as they predate PostScript. Finally, a tiny patch to pdfT<sub>E</sub>X is presented that makes these correction terms happen much less frequently while keeping precision, which leads to slightly tidier and smaller PDF files.

### *BibT<sub>E</sub>X, MLBibT<sub>E</sub>X, and bibliography styles*

Jean-Michel Hufflen, University of Franche-Comté

The first part of this talk about BibT<sub>E</sub>X will focus on some difficult points related to the syntax of bibliography files, e.g., the specification of person and organisation names. In addition, we show how some successors of BibT<sub>E</sub>X — the BibT<sub>E</sub>X8, Bibulus, and MLBibT<sub>E</sub>X programs — improve them. In a second part, we explain how bibliography styles are built. Some demonstrations of the BibT<sub>E</sub>X program are given, and some technical points could be made clearer by using some functions belonging to MLBibT<sub>E</sub>X.

(The full paper was printed in the proceedings of the BachoT<sub>E</sub>X 2006 conference. *Ed.*)

*Typography — the art of the letter system*

István Radó, Radó Kiadó and Szolgáltató MC

This talk will discuss the dialectic of the typographic print and the service of the ergonomics of reading, as well as the damage caused by malformed prints resulting from its partial or complete negligence—in the context of European Roman letters.

Writing is conserving human thought in a systematic order. Printing is the generator of intellect, and occasionally a bearer of real knowledge, too. For over a thousand years letters have been the means of representation of the creative human intellect on papyrus, then paper, and for some 30 years now on the computer screen, too.

The term ‘letter’ signifies the so-called Roman letters that emerged from ancient Greek and Roman culture. It was this type of letter that had as its destiny to be a primary carrier of knowledge and culture in Europe, and thus it has served a worldwide technical civilisation emerging from European culture, with all its well-known blessings and curses.

Today 60% of humanity is illiterate, and half of the rest is functionally illiterate. Halving again, we find the percentage of those who do not read anything except the news and tabloids—therefore it is a mere 20% of the entire population of the earth that seeks knowledge from letters. And there is an ever-growing proportion within this 20% representing Chinese speakers! This latter fact provides a peculiar (and alarming) future to the Roman letter.

However, the documentation of the past, present and near future remains a task for European Roman letters and numbers nearly exclusively. The appearance and the point of this form of expression is the dialectic harmony of form and content, or an apparent and highly disturbing lack of it. It is easy to express the gist of a given idea in letters: unity of thought

developing from contrapositions, opinion, reasoning, assertion, informative teaching, the obscuring of the point, plagiarism, incitement, forgery, lying etc.

Good, well-made and intelligent typography gives emphasis and order to the thought it represents. A printing type that is ostentatious, or one that neglects or consciously infringes a moderate proportionality is always a sign of the superficiality and false nature of the message itself. The blissful development of PCs regards as uniform and (perhaps unduly) degrades, too, all prints produced by repetitious use of the same font types and groups. The chaotic and disproportionate location of font size and spacing of lines are evidence of the damage made to the message, or its very worthlessness.

*pdfTEX — what was, is and will be*

Martin Schröder, pdfTEX team

This talk is a review of key pdfTEX features and primitives presented on a timeline from the beginning, including present versions (1.30 and 1.40), and through the features planned for the near future.

*L<sup>A</sup>T<sub>E</sub>X programming tutorial*

Péter Szabó, Budapest University of Technology and Economics

This tutorial is a practical introduction to L<sup>A</sup>T<sub>E</sub>X programming: implementing new features (writing L<sup>A</sup>T<sub>E</sub>X packages), writing packages accepting options, changing existing features, finding out what commands to change, finding the file containing the definition of the command, overriding the definition, extending the definition, debugging, writing code independent of catcode changes, string processing and .aux file tricks.