The TEX 2^5 Anniversary book project

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Abstract   With the planned attendance of Donald Knuth and his crew of Stanford graduate students who helped develop TEX, some sort of a commemorative gift was needed for the TEX Users Group 2010 annual conference in San Francisco. Thus the book *TEX's 2^5 Anniversary: A Commemorative Collection* was conceived and compiled. The story of this effort is primarily about the steps and decisions that go into creating a book, with the use of LATEX being a minor part of the effort.

1   Content

Having decided to create a book to commemorate the thirty-second anniversary of TEX, the obvious next question was about the content of the book. We quickly decided that the primary content would be reprints of papers by Knuth and crew from the *TUGboat* archives, for example, three from Knuth and one from each of the others. It also made sense to include a brief introduction of each person for whom we were including a reprint, and also to ask one or two other people from the early days of TEX to write brief historical essays. As we searched through the *TUGboat* archives, it also felt right to include with each introduction a list of the *TUGboat* papers by the participant.

Thus, we began to pull together the skeleton of the book: the outline shown in Figure 1, the beginnings of a style file, a top level include file, and some placeholder pages containing notes for each chapter.

We decided we didn't really need to introduce Knuth, as he is so well known to the TEX community and he has written so much and so much has been written about him. We only needed content for the introductions of the students who helped Knuth in those early days.

We had interviews[1] for a couple of Knuth's students already, and we sought interviews with the rest of them on the excuse that it would be appropriate for

1. http://tug.org/intervews

Figure 1: First draft book outline

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title pages, etc.
table of contents
preface

part i
chapter 1 -- essay by early participant
chapter 2 -- another essay
...

part ii
chapter 4 -- reprint by knuth
chapter 5 -- reprint by knuth
chapter 6 -- reprint by knuth

part iii
chapter 7 -- other contributor introduction and reprint
chapter 8 -- other contributor introduction and reprint
...
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the TUG Interview Series to include them by the time of the TUG annual conference celebrating TeX's thirty-second anniversary. In addition to these interviews, we drew on Knuth's notes about various of his collaborators (e.g., in his *Digital Typography* book and other collections of his papers), and we googled on their names. In time we had enough content for an appropriate, introductory page for each of them.

The final set of contents for the book consisted of our preface, a foreword by Barbara Beeton, Part I containing four reprints by Knuth, and Part II containing the introductions and reprints of (alphabetically) David Fuchs, John Hobby, Frank Liang, Oren Patashnik, Michael Plass, Tomas Rokicki, Luis Trabb Pardo and Ignacio Zabala, and Howard Trickey.[2] This short article is not the place to to sketch the contributions of these people; read the book: *TeX's 2 Anniversary: A Commemorative Collection*.[3]

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2. You can see a sample of pages from the book including the contents pages at http://tug.org/store/tug10/inside.pdf
3. http://tug.org/store/tug10

2 Style

We also fairly quickly arrived at the idea of loosely mimicking the style of Knuth's *The T_EXbook*—some matching fonts, artwork by Duane Bibby (from the collection already in TUG's possession), and some of the look and feel of Knuth's book's chapters such as the placement of a Bibby illustration on the verso first page of each contributor's chapter and a quotation (in the style of the *The T_EXbook* and *The Art of Computer Programming* series) on the recto last page of each contributor's chapter. You can look at our top level LaTeX include file[4] and our style file.[5]

Having chosen the papers to reprint, we were faced with how to include them in our LaTeX-based book. Since the papers were mostly from fairly long ago, the original TeX or LaTeX source files were not trivially available to us (and we didn't want to ask the authors if they still had copies—that would spoil the surprise.) Also, in at least one instance the source file which we did find was from TeX78, and we didn't have a way to compile that. Therefore, for the most part, we started with the PDF files for the papers that are in the *TUGboat* archive,[6] some of which were scans from early issues and some of which were compiled from TeX, etc., source files.

We selected pages of text in these PDF files with Adobe® Acrobat®, and pasted them into plain text `.tex` files. (This worked even for scanned issues in the *TUGboat* archive; apparently as part of the scanning process an OCR option was used and the result was attached to the PDF of the scan.) Then we manually reinserted LaTeX commands to reproduce the original papers, albeit in the style of our book rather than the original *TUGboat* issues. Finally, Barbara Beeton and we proofread the papers. In the case of the reprint of a MetaPost paper by John Hobby, we also had to create his MetaPost examples and compile them.

It might have been easier to dig around and find more of the original source files, but our cut-and-paste and then re-LaTeXify approach had the advantage of being one we could straightforwardly grind through article by article.

Because each chapter required somewhat different sets of LaTeX commands to accomplish its formatting, we defined some useful-to-one-chapter TeX macros within an individual chapter instead of the overall style file, and we bracketed the

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4. http://dw2.tug.org/pubs/tug10/10book.tex
5. http://dw2.tug.org/pubs/tug10/10book.sty
6. http://tug.org/tugboat/contents.html

entire chapter in TeX command braces to keep the effects of those macros local to the chapter.

3   Cover

Eventually it became time to think about the cover. Our first conclusion was that, because this was a commemorative book, we should use a hard cover binding. Fortunately, the digital printer we assumed we would use (which we had used for our prior book[7]) had a hard cover trim size of 7 by 10 inches, and we had already chosen that trim size for the book.

We already had the model of mimicking *The TeXbook*. Thus, our front cover used that book's title font, color, and a drawing by Duane Bibby of Knuth and the others as lions involved with various aspects of early TeX development. This Bibby drawing was new for the book, unlike all but one of the rest of the Bibby drawings throughout the the book.

We decided the TUG10 publicity illustration by Bibby would be a colorful addition to the back cover, and we used Photoshop[8] to composite it on the cover's background color. The back cover, spine, and front cover are shown in Figure 2.

Because of our previous experience using PSTricks,[7] we again put the cover components together using PSTricks. In this instance we did more compositing of the graphical components with Illustrator[8] before using LaTeX/PSTricks to apply text to the graphical background.
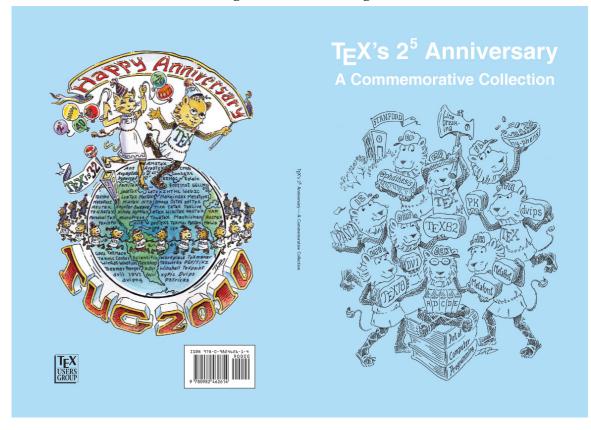
4   Last minute changes, printing, presentation, and distribution

After the cover illustration was already done and paid for, we became aware of Howard Trickey's contributions in the early days of TeX at Stanford and decided to add a chapter with his introduction and a reprint. We didn't want to reopen design of the cover illustration, so we had a separate new illustration drawn by Duane Bibby to go in Trickey's chapter and to be the final illustration of the book

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7. http://tug.org/TUGboat/tb30-2/tb95berry-interviews.pdf
8. A registered trademark of Adobe®.

Figure 2: Cover design

on the final recto page of Trickey's chapter. (And then, even later, after the book was printed, we learned of Joe Weening's contributions. We are sorry it was too late to include you, Joe.)

With the book and its pagination nearing completion, we found that the back side of the page containing the above mentioned illustration of Howard Trickey was blank. Rather than leave that verso page blank, we also added an additional set of Knuth-style quotations that we hoped sort of sketched the evolution of TeX.

For printing we used Lightning Source (LSI), the same printer we used for our *TeX People* book.[7] We uploaded the cover and interior files for this new book and had LSI send us a proof, which was quite pleasing. We then noticed, however, that we had not added Howard Trickey to the list of names in the introduction to the "Other participants" part of the book, and we also found another typo on

that page. Also, the interior margins and front cover text seemed like they could be a little closer to perfect. We made these changes, uploaded new cover and interior files to LSI, and had another proof sent to us. The interior was better but the cover was less good, so we re-uploaded the original good-enough cover submission and ordered a final proof.

With the printing now sufficiently well done, copies were ordered to give out at the TUG10 conference, they arrived in time, and Karl presented the copies to Knuth and the other honorees at the conference banquet.

With the conference over and the surprise for Knuth and his crew complete, Karl updated the TUG Store to make the book available there,[3] and Dave went back to LSI and selected the option that made the book available at Amazon.com and other bookstores around the world.

5 Reflections

There is not much to say about using LaTeX for this project. It continues to be a powerful and flexibly typesetting tool which we know sufficiently well. Not so much time was spent thinking about the capabilities of the typesetting system or writing new macros to extend its capabilities. Most of the project of producing a book comes in collecting or writing the content, deciding on the style, and then editing everything carefully — iterating multiple times at both the content and formatting levels.

Mimicking *The TEXbook* style may have saved as much time thinking about alternative styles as it cost in trying to match that book's style. In any case, it was a fun hack and a pleasure to be able to create the book and dedicate it

To Donald Knuth
and his Stanford collaborators
in creating the world of TEX

Acknowledgments

As well as writing the foreword, Barbara Beeton helped edit and proof read the book. (She declined being listed as co-editor.) Thank you again, bb.

Duane Bibby continued his fine work as the de facto "official" TeX artist.

Hans Hagen provided a few additional Bibby images, for which he controlled the rights, when we needed them.

Taco Hoekwater helped us figure out how to recompile a bit of MetaPost by John Hobby.

The Computer Science Department at the University of Aarhus in Denmark supports the main TUG server, where we developed the book (using Subversion for version control and to pass updates back and forth between our home computers). Thanks to Kaja Christiansen, Michael Glad, and everyone there.

Addendum

We were delighted to be passed a note from Don Knuth on January 17, 2011. He said, having "finally had a chance to 'come up for air' last night" (perhaps because volume 4A of *The Art of Computer Programming* was published a few days later), that it was a great pleasure to read the book in detail. He also conveyed his thanks to us. Most gratifying to us was receiving the list of seven corrections and additions that he said, "I've pencilled in to my copy of the 2^5 Anniversary book." It is a pleasure to be on the receiving end of Knuth's legendary pursuit of correctness.