# user groups
# TUG '99, Vancouver

Siep Kroonenberg
Kluwer, Dordrecht
siepo@cybercomm.nl

The twentiest meeting of the TeX User Group was held from monday 16 to thursday 19 august in Vancouver, at the University of British Columbia, UBC in short. The NTG was represented by Erik Frambach and me.

UBC is situated on a beautiful, spacious campus with large trees and some spectacular architecture.

Vancouver makes the most of its American Indian heritage. Souvenir shops sell items decorated with Indian patterns, and totem poles, old and new, are popular as decoration. On the UBC campus there is an anthropological museum with a very nice collection of Indian and Eskimo sculpture and other art.

Vancouver is mostly a sprawling city, with much greenery. However, the downtown area, situated on a peninsula, contains a lot of high-rise buildings, mostly new and handsome. There is also an older section of the downtown area, Gastown, with many places for going out.

Going downtown for dinner involved a long and grueling bus ride, with stops at just about each of the many intervening blocks. Unless, of course, you have a car, in which case it still isn't a quick trip.

### Monday: 'TeX and Math on the Web'

Stephen Fulling, a math professor who tries to leverage internet for his classes, described his frustration with all the available not-quite-good-enough options for representing math in web pages. Subsequent talks suggested that his frustrations may rapidly diminish in the time to come.

The next few paragraphs are a combined summary of background material presented in those subsequent talks.

SGML, short for Standard Generalized Markup Language, has been in use for a long time by large publishers and by corporations which need to manage large amounts of documentation. SGML is not exactly a file format, but a language to define document formats. HTML is such a format defined in SGML terms.

SGML is meant to define document structure, not appearance. Defining the latter requires a second formalism, DSSSL. In the case of HTML, the browser decides how a document is to be rendered.

HTML brought SGML under the attention of a large public, and now there is an enormous surge in activity around SGML. One development is the emergence of XML (eXtensible Markup Language), which is simpler and a lot more manageable (both for computers and for humans) than SGML, and many people have great hopes for XML as an exchange format for documents.

For formatting, the counterpart of DSSSL for XML is XSL, eXtensible Stylesheet Language. It allows specification of transformations from one XML 'vocabulary' into another, in particular from a content-oriented vocabulary into a presentation-oriented one. Software support for XML and XSL is rapidly growing.
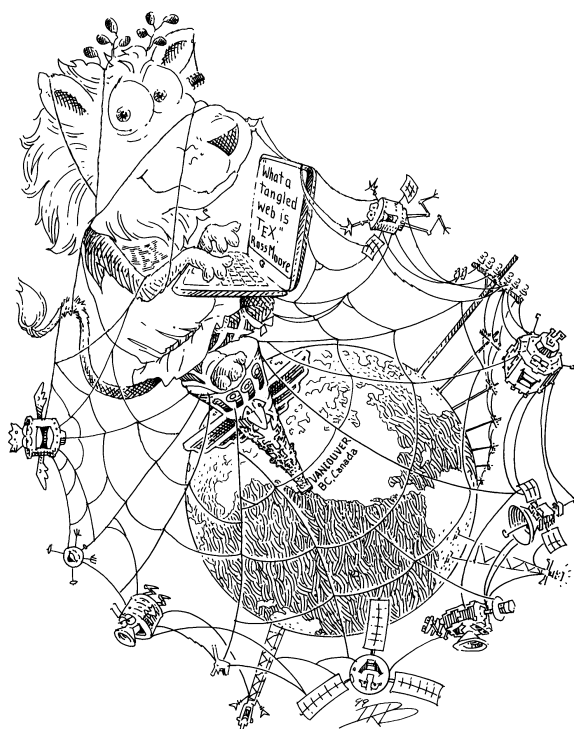
Patrick Ion gave a talk about MathML, Mathematical Markup Language, which should provide math capabilities for web pages. He is a member of the W3 Math Working Group (WG), which is responsible for the MathML specification. This WG contains representatives from a broad section of the information industry, including e.g. IBM, HP, Mathematica, Netscape, Boeing, Microsoft and the AMS. Work on version 2.0 is now underway.

MathML is designed as an XML application, with the familiar angle brackets, and bears no similarity to TeX markup. He showed a MathML content coding and a presentation coding of a very simple equation. What both codings had in common was their extreme verbosity: clearly, MathML is not designed for hand-coding. It is, on the other hand, designed to be read and written by computers. As a consequence, there is a lot of work underway to build MathML support into web browsers, wordprocessors and math software.

Doug Lovell described TeXml, an XML vocabulary for representing TeX source together with a Java program TeXMLatté for translating TeXml into TeX, which can be run as a browser plug-in or as a program on the web server. The rendering of the resulting TeX code can be provided by IBM's techexplorer program, which is another browser plugin.

The next talk, by Paul Topping from Design Science, about generating MathML with the MathType equation editor, unfortunately had to be canceled.

Eitan Gurari and Sebastian Rahtz discussed conversions

□ since obviously XML/MathML is far from ideal for hand-coding, there might be a role for LaTeX as an input format to be converted to XML

□ there certainly seems to be a role for TeX as typesetting backend for XML

□ it was hoped that there would be adequate coordination between the various people working on conversions between (La)TeX and XML

**Tuesday: Customizing Document Layout**

Jean-Luc Doumont uses TeX for typesetting all kinds of documents for which TeX is not the obvious choice, such as newsletters and promotional brochures. He uses his own collection of macros. He tells his clients that he uses 'a system he programmed himself', which seems to inspire more confidence than mention of TeX and the name of Donald Knuth. Other independent typesetters at the meeting confirmed that it is unwise to tell clients that you are using TeX. Printers are even willing to blame TeX when they select the wrong Pantone color!

Peter Flynn presented a macro package Vulcan for LaTeX for filling in some obvious omissions from the LaTeX standard classes: better author information, such as addition of entries for affiliation and email, and publication-oriented metadata such as `\journal` and `\vol`. Vulcan also provides improved formatting.

Some vendors introduced new versions of their programs:

Richard Kinch's TrueTeX now supports Omega and Unicode, and the algorithms of the font program MetaFog have been dramatically improved.

Blue Sky's Textures TeX implementation for the Macintosh now also has something to offer as a QuarkXPress plug-in: math equations embedded in regular text, and improved line breaking.

PCTeX now can print PostScript graphics to arbitrary printers.

The LaTeX3 team reported on new features in LaTeX. A new version of LaTeX, possibly to be named LaTex2e*, should be released some time next year. Chris Rowley demonstrated the new template syntax, with a keyword–value syntax. This should become available later this year as a package running under LaTex2e. There are thoughts about making this a replaceable frontend. A replacement candidate would be an XML parser. David Carlisle discussed work underway for more predictable handling of the vertical list, and improved float handling.

from LaTeX to XML and HTML, with special attention to tex4ht. This program requires the use of a stylefile that places specials in the dvi file, which are needed for the conversion process. Gurari also gave a demonstration of different styles of markup and of corresponding XSL transformations, using a cookbook recipe as an example. In the course of this presentation, the coding of the recipe acquired more and more database features.

Subsequently, Chris Rowley gave his amusing views on TeX and XML.

Donald P. Story presented interactive teaching material – including tutorials, technical papers and games – created with the aid of (La)TeX, Acrobat and occasionally JavaScript. Check out his website: `www.math.uakron.edu/~dpstory/acrotex.html`.

The business part of the day was concluded with a panel discussion. Points raised:

□ rendering of MathML by web browsers

□ inclusion of math equations in web search engines

□ a concern that a MathML standard with accompanying fonts might stifle the development of new mathematical notation

Later that day there were workshops on using docstrip by Michael Doob and on converting LaTeX2.09 stylefiles to LaTeX2e classfiles by Anita Hoover.

### Wednesday: TeX in publishing

Kaveh Bazargan runs an independent typesetting firm Focal Image, which does a lot of work for large publishers. More and more, publishers require different kinds of output for a single publication: besides printed output, they might require hyperlinked pdf or html. Focal Image makes sure that such output can be generated from the LaTeX they produce.

He had some things to say about what publishers might do to induce their authors to produce good LaTeX. He proposed an author kit, *not* including the actual class file but only a generic version, and also including an authors guide and a copy of Lamport's book. He also proposed an 'Editor's Guide', which would enable copy editors to treat LaTeX-generated text more intelligently.

For new editions of books, it frequently happens that the author uses the Focal Image versions of the electronic files of the previous edition as a starting point.

Frederick Bartlett described his activities for Springer Verlag regarding XML conversions.

Harry Payne had a tale from the trenches about putting together the proceedings of a conference which also had to appear as web pages. Better preparation and better guidelines for authors could have saved him an enormous amount of work.

Conversion to html was done with latex2html, which was the best option at the time. Converting the entire book at one go would take 750 MB of memory and the better part of an afternoon.

He advised to send the manuscript to the publisher only after the web edition was done, as a protection against 'gigantic blind spots'.

He edited papers as stand-alone documents, and used a script to turn them into 'include'-versions. The document as a whole was compiled with a makefile.

Robert Kruse presented a system PreTeX for managing the production of large-scale technical books such as math and science textbooks, textbooks on programming or documentation for large software projects. Such a project often involves the production of additional material, such as answers to exercises or source code. There also may be lots of graphics from various sources.

The file format used is called preTeX. The preTeX preprocessor can generate the various items, including TeX source, from this format. Partial compilation and file management facilities are provided.

In another talk, Paul Mailhot showed how interactive pdf's can be produced with this system. His example was a book on programming with clickable examples of source code.

Art Ogawa discussed the use of TeX for database publishing and the specific requirements and possibilities of such TeX applications.

Hu Wang demonstrated a setup for authors to submit abstracts in LaTeX format via a web page. This setup will validate the LaTeX code, but also provides for authors who don't want to use LaTeX. Inclusion of figures is also possible. This system allows automated typesetting of abstract books.

Peter Sojka described methods for creating custom hyphenation patterns, which can be very useful for productions such as dictionaries.

This day's final talk was on Jonathan Fine's Active TeX (all characters are made active) and DOT input syntax, conceptually similar to SGML. Art Ogawa served as virtual Jonathan Fine. A quote (from Ogawa as Ogawa): 'Not seeing the backslash for long stretches does strange things to your head'.

Points raised during the day's panel discussion:

- Nadia Molozian from Harcourt Publishers noted a strong increase in the use of LaTeX in production at her company. An advantage of LaTeX is that copy editing involves less work.
- Generally, LaTeX submissions by authors also appear to be up, although this is not true everywhere.
- Production of conference proceedings is a messy business; often, quick-and-dirty measures such as photographic resizing must provide a semblance of consistency.
- The publisher has little chance of influencing the coding style of monographies. Often, the author has been working on his book for years before a publisher gets his hands on it.
- An interesting speculation by Frederick Bartlett on why authors like to use bad LaTeX coding: writing is hard work; authors cast about for distraction and find it in fiddling with appearances.
- The same speaker encouraged the audience to complain to publishers about bad-looking books; this would give publishers an incentive to let their TeX specialists do something about it.

In the evening, the results from a poetry contest were pre-

sented. The declamation of poetry required one to dress up as the TeX lion, with a knee-length t-shirt and sprigs of greenery tied to one's head. Some of samples:

Richard Kinch:

A young maid desired to woo:
'Give me TeX', she would heatedly coo
his code became tangled
in her macros new-fangled
in a passion of boxes and glue

Christina Thiele: *Under the volcano*

Those daring young men and their computing machines,
All night long new code they dispute.
All day in their dreams
screen flow extremes
beat the code till it pleads, 'Please reboot!'

Sebastian Rahtz: *A TeX Haiku*

```
\expandafter\def
\csname def\endcsname
{\message{farewell}}\bye
```

The full collection should appear eventually on the tug99 web site: `www.tug.org/tug99`.

**Thursday: Fonts, Graphics and New Developments**
Jean-Luc Doumont, whose work we had already seen on the second day, now showed us his TeX macros for producing graphics. The results were as handsome as the work he had shown on the previous occasion. He is more than willing to make his macros available if people are interested; you can contact him at `JL@JLConsulting.be`.

Wendy McKay and Ross Moore developed a package WARMreader to add TeX text labels to graphics, using a flexible system for anchoring and formatting those labels. Contrary to psfrag, their system works for arbitrary graphics, since the text labels float on a separate layer. They also created a utility Zephyr running on the Macintosh to interactively add those text labels.

Michael Doob presented AcroDVI from Lesenko and Siebenmann. Since he failed to get the program to run on his own system, we was limited to a verbal presentation. In a fit of silliness, he found occasion to point out an instance of Brouwer's Fixed Point Theorem in a photograph taken at the conference which featured the screen it was projected on.

The next virtual speaker was Arthur Ogawa representing Alan Hoenig. The latter has developed a program MathKit to generate math fonts to combine with any commercial font family. Visual harmony was achieved by tuning the parameters of the Computer Modern MetaFont math fonts. Hoenig has put together a number of parameter sets. In most cases, one of those sets will be appropriate. MathKit is implemented in Perl scripts ('sufficiently idiosyncratic and quirky to make it a good match for TeX') which generate everything needed to use the results in TeX and LaTeX.

The morning session was concluded with demonstrations of the above-mentioned utility Zephyr and of techexplorer. The latter is a browser plug-in running on Windows and Unix platforms for rendering a subset of LaTeX, with some interesting interactive options. We saw a very nice demonstration of a book converted to techexplorer format.

Fabrice Popineau opened the afternoon session with a talk about fpTeX, his Win32 implementation of the standard Web2c TeX. When he started work on this, Christian Schenk had already a version of MikTeX, another free Win32 TeX implementation. However, the advantages of compatibility with the Unix web2c standard were sufficient reason to undertake this port. He described the technical issues that had to be dealt with: what compiler to use, what to replace shell scripts with, how to work around differences in file systems, whether or not to use the registry (the answer: not). The dvi-viewer windvi raised a lot of additional issues. He also gave us a glimpse of his new texconfig tool.

Jeffrey McArthur, who does a lot of database publishing, took us through the planning and setting up of a large TeX-based software project, and had some interesting war stories to tell.

The final speaker was Timothy Murphy, who is working on a web2java project. This project is unrelated to the NTS reimplementation of TeX in Java. He argued that the use of Java created a great opportunity to modularize dvi drivers. Along the way, he did his level best to provoke the audience, by labeling all efforts to extend TeX as schismatic, and claiming that dvi was the greatest format ever for formatted output, but the audience didn't take the bait.

The official meeting ended with a panel discussion on the future of LaTeX. Points raised were:

□ LaTeX is broken, people are fixing it in uncoordinated ways (Arthur Ogawa). The volume of the combined macro packages, even only the supported ones, dwarfes that of the LaTeX core.

- more modularity, more hooks (several speakers and members of the audience)
- LaTeX as backend for typesetting XML (Frank Mittelbach)
- A better designer interface (Steve Grathwohl). David Carlisle pointed out that this should be taken care of by the new template interface
- Frustration with floats (several people)
- Frank Mittelbach also pointed out that LaTeX had not exactly been created for professional publishing, and that building better internals would break a lot of packages. Arthur Ogawa pleaded for improving the internals anyway, and argued that package writers would certainly be willing to rewrite their packages to take advantage of the new internals.

Throughout the meeting, we could admire a collection of typographic experiments by Alban Grimm which Frank Mittelbach had brought with him. Alban Grimm, who is professor in Typography at the University of Mainz, used Metafont and text fragments from the Apocalypse to produce some striking calligraphic effects. At the end of the meeting, we could all select some sheets to take home.

The meeting was concluded with a banquet, which offered further opportunity for fraternization.

From this conference I got a definite impression that TeX is once again in an upswing, and that this may have something to do with its suitability as a web authoring tool for technical material and with the quick response of the TeX community to web developments.