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# L<sup>A</sup>T<sub>E</sub>X *with* Tears

*August 21, 2001*

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# What is L<sup>A</sup>T<sub>E</sub>X ?

- Document markup language
  - L<sup>A</sup>T<sub>E</sub>X is a wrapper around T<sub>E</sub>X, which is more obviously a programming language
  - CTAN is a tremendous resource for help and extensions
  - Let L<sup>A</sup>T<sub>E</sub>X handle formatting and fonts!!!
- Permits separation of content and design
- Different document classes for different purposes: article, letter, book.
- Works with BibTeX

# Why (or why not) L<sup>A</sup>T<sub>E</sub>X?

- Advantages
  - Text files  $\implies$  document corruption not an issue
  - Pure focus on document creation, designed for math
  - Good document design by default
  - Truly cross-platform
- Disadvantages
  - *Big* startup costs
  - Publishers may or may not want the format
  - L<sup>A</sup>T<sub>E</sub>X is not appropriate for true desktop publishing
  - Need to compile document to view it
  - Some tasks (e.g. table design) can be tedious
  - Document appearance can be hard to modify

# Creating a Document

- Create ASCII file with appropriate markups
- Compilation is multi-step process
  - Compile the file using latex.exe (often multiple passes to resolve cross-references).
    - MikTeX's texify.exe provides single pass compilation
  - This creates a .dvi file for which a dvi viewer (e.g. MikTeX's yap.exe) is necessary
  - Can print directly from dvi viewer or by converting the file to postscript with dvips.
  - SWP does all this “under the hood”
- Pdflatex and ps2pdf (from Ghostscript) can be used to create a pdf file. Multiple routes to pdf can be confusing.

# L<sup>A</sup>T<sub>E</sub>X Options under Windows

	Advantages	Disadvantages
Scientific Workplace	Simple Great equation editor Handles Windows formats	Costly Opaque Slow Clumsy Mediocre support (e.g. €)
PCTeX	Fonts Utilities	Costly Need to know L <sup>A</sup> T <sub>E</sub> X A bit opaque
MikTeX	Free Utilities	Need to know L <sup>A</sup> T <sub>E</sub> X Must piece things together

# A Complete L<sup>A</sup>T<sub>E</sub>X Installation

- MikTeX
- Ghostscript and Ghostview
- A text editor which understands L<sup>A</sup>T<sub>E</sub>X
  - Emacs (free)
  - Xemacs (free)
  - WinEdt (commercial)
- Plan on using the Windows command shell
- Make sure that MikTeX, Ghostview, and Ghostscript directories are in the path.

# MikTeX hints

- Set up a “localtexmf” directory.
  - This is where you keep style files you’ve added, apart from the main distribution
- Be sure to run “initexmf -u” after installing new style files
- Make sure to install Ghostview and Ghostscript
- Wmf graphics are *not* adequately supported in MikTeX.

# Scientific Workplace Hints

- In Tools|User Setup|Edit|Enter, set “Action” to “ignore”. This prevents excess space from appearing in the typeset document.
- In the View menu, make sure “invisibles” is checked. This enables you to see skips which SWP has inserted. (SWP inserts “\bigskip” commands, which add space to the typeset document.)



# MikTeX and Scientific Workplace

- You can edit the same document in both (simultaneously!)
- MikTeX
  - must have access to tcilatex.tex
  - cannot handle .wmf graphics
- SWP must be able to find MikTeX style files
  - You can edit `\swp35\TCITeX\TrueTeX\truetex.ini` to include MikTeX paths
- SWP detects file changes automatically (as do many editors)

# Examples

- **test1.tex** illustrates a simple tex document created from scratch in a text editor
- **test2.tex** illustrates the same document created from scratch in SWP
- **Graphtest.tex** illustrates different graphics file formats

# Creating a .pdf file

- Create the dvi file by running “latex fn”
- Create a .ps file by running “dvips -Ppdf -tletter fn”
  - The “-Ppdf” option controls fonts. For Prosper class, use “-Pcmz”
  - The “-tletter” option controls paper size
- Create a .pdf file by running “ps2pdf fn.ps fn.pdf”
- Here is a Windows batch file:

```
rem this file is for standard letter –size documents, not slides
texify %1.tex
dvips – tletter –Ppdf %1
call ps2pdf %1.ps %1.pdf
```