The Joys of LaTeX: An Entry Guide for the Potentially Obsessive

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October 3, 2016

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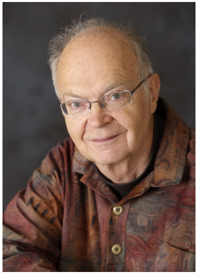
- It has been in use since the 1980s and remains the industry standard; nothing else compares in the quality of output and the huge range of symbols and images that can be produced—if you know how!!
- LaTeX allows you to format beautiful equations beautifully:

$$R_{\mu\nu} - {}^1\!/_2\, g_{\mu\nu} R = T_{\mu\nu} \tag{1}$$

TEX

- LATEX is based on TEX, created by Donald Knuth (1938–) in the 1970s.



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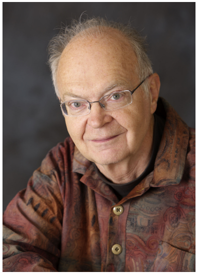
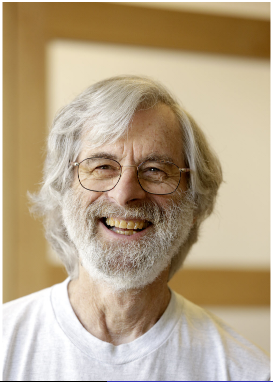


- N.b.: TEX is pronounced “tech” with a gutteral “ch” as in “Loch”. (It is derived from the Greek $\tau\epsilon\chi\nu\eta$, “techne.”)

LaTeX

- In 1986, Leslie Lamport (1941–) created LaTeX, a system of macros written in TeX designed to simplify document preparation.



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- Drawback: if all you want to do is write papers in logic etc., it is too much work to construct your documents entirely from scratch.
- So Lamport wrote a set of TEX commands (macros) which define standardized ways of setting up papers, books, etc. It has all the power of TEX if you want to use it but greatly speeds up most formatting tasks.

The LaTeX Community

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- There are several versions of LaTeX available *via* free download.

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- The output file can be in several forms but these days it is most commonly .pdf, which is almost universally used and very stable (unlike Word!!).

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- The file is processed by a compiler which generates an output file with all type, graphics as you commanded; usually in .pdf form.

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- `\end{document}`
- You can "store" templates, out-takes, or comments after the `\end{document}` since nothing after that statement is processed.

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- Just type: text will wrap automatically; LaTeX interprets an extra line as a paragraph break. But spaces between letters are ignored.

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- Structure can be defined using `\chapter` (in the book class), `\section`, `\subsection`, etc.

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- There are "list-making environments" that generate bulleted lists, numbered lists, etc.

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- The command `\dots` gives ellipsis . . .

Graphics

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- With the `graphicx` package it is quite easy to include illustrations.

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  - Use three hyphens to form em-dash, which is a punctuation dash used for an emphatic break. (“No candidate—not even Clinton—has said enough about climate.”)

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- Greek letters can be done in math mode: `$\alpha$` gives α.
- Or you can display your math in a huge variety of ways (especially using `amsmath`).

Display Math

```
\begin{equation}
   \int_{-\infty}^{\infty} \,e^{-x^2} dx = \sqrt{\pi}
\end{equation}
```

gives

$$\int_{-\infty}^{\infty} e^{-x^2} dx = \sqrt{\pi}. \tag{2}$$

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- Note: I put the whole line in `\text` because that gets the spacing right!
- Word to the wise: use math mode for symbols in text that are mathematical. E.g., say `let $p$ be a prime such that`, *not* `let p be a prime such that...`

Logic Symbols

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- There is a package that does Fitch notation, and several that do truth trees (though this remains a work in progress).

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- To get the Russell up-side-down iota, you can use `\newcommand{\Russell}{\rotatebox[origin=c]{180}{$\iota$}}` (This requires the `graphicx` package.)
- Example of usage: `$\Russell xFx$` gives ℩xFx, which is read, "The x such that Fx".

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- Use `\cite[p. 3316--7]{AA80}` to cite this reference.

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- Disadvantage: BibTeX can be temperamental and there is a learning curve to climb.

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- Warning! LaTeX is addictive!

LaTeX Resources

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