Social Scientific Typesetting

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1 How LaTeX Works

LaTeX is one way to prepare professional-quality documents with a mixture of text, mathematics, and graphics. Creating a document in LaTeX is a two-step process: first you write the LaTeX code with your content embedded; second you compile the code to produce an output file. This process may sound unfamiliar to those accustomed to WYSIWYG[1] document editors, but you'll adapt quickly. There are many compelling reasons to do so.

First, LaTeX is editor-independent. When you have a `.tex` file, you can open and edit it in any TeX editor without formatting issues (unlike opening a `.docx` file in Windows Notepad, e.g.). Like other simple text file formats, you need not worry about the `.tex` filetype becoming obsolete.

Second, LaTeX takes care of formatting for you, encouraging you to think more about the structure and content of your document. This, in turn, should produce better documents. In addition to this over-arching advantage, LaTeX enables you to include an extensive array of mathematical symbols, to create and include publication-quality tables, graphs, figures, enumerations, and the like. The flexibility of LaTeX means that you can also create your own symbols, control spacing and layout when necessary, and generate document components like title pages, abstracts, tables of contents, lists of figures, et cetera, with virtually zero additional effort. Another common task, moving tables and figures all to the end of a file, or moving them into the body of a paper, can be done in a single command.

Third, LaTeX has templates and many solutions for creating articles, books, dissertations, letters, reports, slides, posters, handouts, and more. In particular, LaTeX style files exist for formatting dissertations using the often-intricate standards required by many universities. Through BibTeX, LaTeX also enables powerful bibliography management. Using BibTeX, you can keep and augment a single bibliography file throughout your career, and include only the citations that you use or want in particular document's list of references. You can also change the bibliography style simply by pointing TeX to a particular style file. This enables you to control a document's bibliography style without changing by hand certain commas to periods, certain italics to underlines, certain source types' order of bibliographic

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[1] "What you see is what you get"

elements like author, year, et cetera, or the in-text reference style. Some journals require submission of the source LaTeX code for formatting.

2 How to Get Started with LaTeX: Installation

In order to use LaTeX, you need two components: a build of TeX, and an editor within which you will create, construct, and change your code and content. Note this nice feature: the code is independent of the editor. When one editor disappears, becomes obsolete, or simply doesn't offer the functionality you want, you can change editors without having to worry about document version problems. There's effectively no such thing as backward-, forward-, or platform-incompatibility. TeX code is TeX code.

2.1 Mac OSX

One free, straightforward document preparation solution for Mac OS X:

1. Download MacTeX.
2. Do one of the following:
   (a) Write in RMarkdown (a `.Rmd` file, in RStudio, then "Knit to PDF").
   (b) Download an editor, such as Aquamacs. I use and recommend Texpad.

2.2 Windows

One free, straightforward document preparation solution for Windows follows. (Please note that I have not implemented this myself since 2010.)

1. Download and install MiKTeX. During installation,
   (a) note the folder into which MiKTeX installs (see Point 3 below), and
   (b) Select "Yes" to install packages on the fly.
2. Download and install Texmaker or TeXnicCenter.
3. Open TeXnicCenter. When the Configuration Wizard emerges, the MiKTeX default executables folder starts with the MiKTeX folder (see Point 1 above), and ends with `\miktex\bin`. So, e.g., `C:\Program Files (x86)\MiKTeX 2.9\miktex\bin`.

3 Sample Files

You are ready to compile your first LaTeX file. Note that LaTeX will create several auxiliary files, and overwrite them when you compile.

1. Save my `sample.tex` and `samp.bib` files to a directory; for example, to the Desktop.

2. Open the `sample.tex` document in your editor.

3. Compile the `sample.tex` document in your editor. This should produce a PDF file.

4. (For TeXnicCenter) Change the output dialog box to "LaTeX⇒ PDF".

5. (For TeXnicCenter) Build `sample.tex` (Ctrl-F7). Do this 2 or 3 more times, and all of the bibliography components should be integrated.

6. (For TeXnicCenter) View the file (F5, or just click on the PDF). Note that you should close the PDF before trying to recompile.

7. In case you have difficulty, the output file should look like my `sample.pdf`.

4 References for LaTeX

Many good references for writing LaTeX code exist. Oetiker et al. (2008) and Goossens, Mittelbach and Samarin (1994) are two great places to get started. Also, if you have trouble finding the code for a particular symbol, Detexify can save the day.

Hope this helps!

References

Goossens, Michel, Frank Mittelbach and Alexander Samarin. 1994. *The LaTeXCompanion*. New York: Addison-Wesley.

Oetiker, Tobias, Hubert Partl, Irene Hyna and Elisabeth Schlegl. 2008. "The Not So Short Introduction to LaTeX2ε." *distributed with LaTeX2ε, Version* 4:24.