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# Colophon

This thesis was typeset using pdf $\LaTeX$ , a decision that was agonized over long and hard. The alternative was to use FrameMaker or Microsoft Word. But FrameMaker has been largely abandoned by Adobe and Microsoft Word has a horrible habit of corrupting large files that contain numerous images. After hearing several horror stories and suffering a few of them directly, the decision was made to use a document preparation system that kept its source files in ASCII text. As an added benefit, this allowed the use of the Subversion revision control system so that the same file could be simultaneously edited on three different computers.

The decision to use pdf $\LaTeX$  instead of  $\LaTeX$  was made after considering the capabilities of each program. The advantage of pdf $\LaTeX$  is that it can generate PDF files directly and, furthermore, can accept input graphics files in JPEG, PNG, or PDF format.  $\LaTeX$ , by contrast, can only accept input graphics as EPS files. It turns out that  $\LaTeX$  doesn't really understand the EPS format, but simply passes the files through to the dvi2ps program, where they are included in the PostScript file. Rather than going through this entire process, it was deemed easier, simpler, faster, and safer to dispense with PostScript entirely.

One problem with using  $\LaTeX$  or pdf $\LaTeX$  is that these programs are not actually a document preparation system, but instead a construction kit that can be used to create a multiplicity of document creation systems. The real power of pdf $\LaTeX$  comes not from the Knuth/Lamport  $\TeX$ / $\LaTeX$  execution environment, but from the packages that contributors in the greater  $\LaTeX$  community have created. Although many of these packages are documented in the various  $\LaTeX$  books that have been published, a cheaper and more comprehensive way to understand these packages is to read the excellent articles and reference papers that accompany them. This approach is highly recommended:

**titlesec** is a complete replacement for the  $\LaTeX$  section titles. It was used, among other things, to create the fancy headings at the beginning of each chapter. This package also let one tighten up the spacing before and after the section titles.

**titletoc** allowed one to precisely control the table-of-contents entries.

**graphicx** to place graphics in the body of the text. This package is superior to the “graphics”

package because it allows one to naturally specify the width and height of imported graphics using easy-to-read commands like: `width=4in` or, more commonly, `width=\textwidth`.

**ccaption** allows control over the font and size of the Figure and Table captions.

**epic** allowed the use of the `\drawline` command in pictures.

**tabularx** allows the “X” column specifier in tabular environments, which causes that column to expand to fill all available space. This produces nicer tables with less work!

**longtable** allows tables to span across multiple pages with running headers and footers. It sort of combines the `table` and `tabular` environments.

**fancyhdr** allows the use of chapter names in the footers.

**fancyvrb** a marvelous environment for code samples.

**afterpage** allows one to specify that a command will be executed after the current page is finished. It's commonly used for controlling floats with the idiom `\afterpage{\clearpage}`.

**xspace** allows the use of the `\xspace` directive, which automatically adds space unless the next character is a punctuation mark, in which case it doesn't.

**ulem** provides strikethrough.

The Roman text of this thesis was set in Bitstream Charter. The captions were set in Helvetica. The code examples were set in Courier.

This thesis has many screen shots. The Windows screen shots were created with HyperSnap-DX, while the Macintosh shots were created using the built-in Apple screen capture program. The Palm screenshots were shot with a digital camera, and they look pretty crummy, don't they? Adobe Illustrator CS proved invaluable, thanks to its ability to extract diagrams, illustrations and images from other PDF files; pdfTEX could then include these images directly.

The hard drives barchart was created with PyX, André Wobst's Python Graphics Package.[LW04] Most of the other diagrams were created with OmniGraffle.

This thesis was written and typeset to the music of Tori Amos, Ani DiFranco, Dido, Madonna, Alanis Morissette and Jill Sobule.

As of May 16th, the subversion repository for this dissertation and the related thesis projects totaled 1.6GB. The actual source consists of 28,757 lines of LaTeX code and 185 megabytes of images files. The PDF file that was used to print this thesis is approximately 30.9 megabytes in length.