1 TEX

Donald Knuth began writing the *TeX* typesetting engine in 1977 to explore the potential of printing equipment that was beginning to infiltrate the publishing industry at that time. The main job of *TeX* was to serve as a markup language.The version numbers of TEXare converging toward the mathematical constant π, with the current version being 3.1415926.

The tools TEXoffers out of the box are relatively primitive, and learning how to perform common tasks can require a significant time investment. Fortunately, document preparation systems based on TEX(such as LATEX), consisting of prebuilt commands and macros, do exist.

2 LATEXand engines

LATEXis a set of macros for TEXfor simplifying typesetting, especially for documents containing mathematical formulae. The purpose of LATEXwas to split the two aspects of TEX, typographical and logical markup, so that a typesetter can make a template and then the writers can just focus on LATEXlogical markup.

In addition to the commands and options LATEXoffers, many other authors have contributed extensions, called *packages* or *styles*, which you can use for your documents. Many of these are bundled with most TeX/LaTeX software distributions; more can be found in the Comprehensive TeX Archive Network.

XeTeX is a TEXengine which supports Unicode input and .ttf and .otf fonts. LuaTeX is a TEXengine with embedded Lua support, aiming at making TEXinternals more flexible. Like XeTeX, LuaTeX supports Unicode input and modern font files.

pdfTeX - generates PDF output.

tex, latex - the "original" TEXengine. Generates DVI output.

3 Installing LATEX

At a minimum, you'll need a TEXdistribution, a good text editor, and a PDF or DVI viewer. More specifically, the basic requirement is to have a TEXcompiler (which is used to generate output files from source), fonts, and the LATEXmacro set. Optional and recommended installations include an attractive editor and a bibliographic management program to manage references if you use them a lot.