User's Guide

for

CMacTeX
Version 4.5

by

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Contents

1 Introduction

CMacTEX is an implementation of TEX for Mac OS X which includes pdftex, metafont, metapost, bibtex, makeindex, maketexpk, dvips, macdvi, and several utilities for manipulating TEX fonts, Postscript files and Postscript fonts. CMacTEX can be configured to work in an integrated fashion with BBEdit, TextWrangler, and Alpha. This version of CMacTEX requires at least OS 10.2 and universal binaries are available for Intel Macs.

- The CMacTeX program is the control center when typesetting a document. From it you issue commands to typeset the document, to convert dvi files to Postscript, to make indices and bibliographies, to convert Postscript to PDF, and to view dvi, Postscript, or PDF files.
- Pdftex can generate either pdf or dvi output.
- Maketexpk can generate pk files from Metafont sources and from pfb Postscript fonts. It can be called automatically by macdvi to generate missing pk files.
- Macdvi is the dvi previewer supplied with CMacTEX. It can display certain types of included eps graphics, has full support for color, and can display the Postscript fonts by converting them to pk format.
- Dvips has been upgraded to version 5.97 and provides better support for partial downloading of Postscript fonts. The dvips manual is available in pdf format.
- MacGhostView 4.5 is an independent suite of programs for viewing postscript files and converting postscript files to other formats. It is used by macdvi to display included eps graphic files and is used by maketexpk to convert postscript fonts to pk format. These programs are available as a separate download.

This manual only attempts to explain how CMacTEX works as a TEX installation. It does not try to explain any of the subtleties of TEX. For this kind of information you should consult any of the numerous books on TEX.

All of the programs included with CMacTEX share a common interface and this manual will discuss only a few of the programs in detail.

2 Shareware Registration and Warranty

The shareware registration fee for CMacTEX is US $35 for a single user. A site license (up to 100 users) is available for US $350. The fee is the same even if you are using only a part of CMacTEX. A registered user is entitled to free updates and technical support. When you pay the registration fee, I will send you a password via e-mail that will dismiss those nagging dialog windows. This password also works with MacGhostView. You can pay the registration fee by credit card through PayPal (*http://www.paypal.com*, my PayPal ID is tom@kiffe.com) or Kagi Shareware (*https://order.kagi.com/?TK*). I prefer registrations through PayPal since their processing fees are much lower than those of Kagi. If you are paying the registration fee by a check drawn on a US Bank or an international money order, you can send the payment directly to me and thus avoid the additional delay in receiving your password. If you send a check, make sure that it is payable to me.

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Any comments, suggestions, questions, and bug reports may be sent to me via e-mail. My address is *tom@kiffe.com*.

3 Installing CMacTEX

3.1 Installation

The installation of CMacTEX is really quite simple. CMacTEX comes with default search paths and, if you follow the steps below, you should not have to set any paths yourself in order to get CMacTEX up and running. Later you can set your own search paths after you have decided how to organize all of the files included in CMacTEX.

1. Unpack cmactex45.dmg.zip and move the *CMacTeX 4.5* folder to any location you wish.

2. If you are using BBEdit or TextWrangler open the *BBEdit support* folder and move the scripts to your Library/Application Support/BBEdit/Scripts folder.

3. Unpack macghostview.dmg.zip and move the *MacGhostView* folder to any location you wish.

CMacTEX 4.5 comes with two sets of programs. The **binaries** folder contains versions of the programs which run under any version of OS X. The **binaries-intel** folder contains universal binaries which require at least OS 10.4.11. Unless you have an Intel Mac I suggest that you use the programs in the **binaries** folder. The folder you don't use should be removed from the CMacTEX 4.5 folder.

3.2 Configuration

Launch the **setpaths** program to create the CMacTeX Preferences file.

Choose the **Initialize default search paths** item under the **File** menu. You will have to do this whenever you add any files or folder to the texmf-cmt, texmf-local or texmf folders. Now choose **Use databases for file searches** under the **File** menu.

4 SetPaths and File Searching

A typical TEX installation consists of thousands of support files distributed over hundreds of folders. The programs in a TEX distribution must be able to find these files efficiently. CMacTEX organizes its support files in accordance with the TEX Directory Structure implemented in most TEX installations. The support files common to any TEX installation are contained in a *texmf* folder. Inside this folder the files are organized by type. Generic files supplied by the user are organized in a similar fashion inside a folder called *texmf-local* or *texmf-user*. Files specific to CMacTEX are organized inside a folder called *texmf-cmt*.

The folders, if they exist, must have these names and they must be located in the same folder as the *binaries* folder. If you wish to keep a texmf tree outside of the *binaries* folder, make an alias to the folder and put the alias inside the *binaries* folder. The name of the alias must be one of *texmf-cmt*, *texmf-user*, *texmf-local*, or *texmf*. CMacTEX first searches the *texmf-cmt* folder, then the *texmf-user* folder, then the *texmf-local* folder, and finally the *texmf* folder.

The sole function of the setpaths utility is to set the search paths used by CMacTEX. The default search paths built into CMacTEX will work only if you have followed the installation instructions exactly so that all of the programs are in the *binaries* folder and all support files are in folders or aliases named *texmf*, *texmf-local*, *texmf-user*, and *texmf-cmt*. Setpaths resolves all aliases when it initializes search paths so you can use aliases to refer to particular folders located outside the texmf folders.

You must initialize search paths whenever you add new files or folders to any of the texmf folders. The expanded search paths are stored in the CMacTEX preferences file, *CMacTeX Preferences*, which is in your Preferences folder. If this file is not present or it is corrupted, CMacTEX will not be able to find any support files. I recommend that you periodically make a copy of *CMacTeX Preferences* and store it in a safe place. If *CMacTeX Preferences* becomes corrupted you will have a current replacement file and will not have to configure CMacTEX from scratch.

The characters /, %, and 'nonbreaking space' (option-space on a Macintosh, ascii code 202) are special and may not be used in file and folder names. CMacTEX uses Unix style path names internally and / is the Unix directory separator. If you are transferring, from a Unix platform, a complex document that contains Unix paths, CMacTEX will translate those paths automatically into Macintosh paths. Some TEX programs do not work correctly if a file or folder name contains a space character. Since a space character in a file or folder name is quite common on a Macintosh, CMacTEX internally converts a space character to a nonbreaking space and vice versa. The % symbol is used to specify special search paths for pk files. Make sure that no files or folders in your TEX tree have names containing a /, %, or 'nonbreaking space' before you run setpaths.

4.1 Search Variables

Here is a brief summary of the search variables used by CMacTEX. More detailed information on how a particular program uses a search path is included with that program.

TEXINPUTS	pdftex searches these folders for tex macro files and cfg files.

TEXFORMATS	pdftex searches these folders for format (.fmt) files, pool files, and cnf files.
TEXPOOL	pdftex searches these folders for pool files.
TEXFONTS	pdftex, dvips, macdvi, and metapost search these folders for tex font metric (.tfm) files.
PKFONTS	dvips, macdvi, and pdftex search these folders for pk font files.
VFFONTS	dvips, macdvi, and pdftex search these folders for virtual font files.
MFINPUTS	metafont and metapost look here for macro (.mf) files
MFBASES	metafont searches for base (.base) files and cnf files in these folders.
MFPOOL	metafont searches for pool files in these folders.
TEXCONFIG	dvips looks here for config and mapping files.
DVIPSHEADERS	these folders contain the header files and encoding files used by dvips and pdftex.
TYPE1FONTS	dvips and pdftex search these folders for Postscript fonts.
DVIPSEPSF	dvips searches these folders for epsf files.
BIBINPUTS	bibtex searches for .bib files in these folders. Bibtex also looks here for csf files.
BSTINPUTS	bibtex searches for .bst files in these folders.
ISTINPUTS	makeindex searches for .ist files in these folders.
MPINPUTS	metapost looks in these folders for macro (.mp) files.
MPMEMS	metapost searches these folders for mem (.mem) and cnf files.
MPPOOL	metapost looks here for pool files.
MTPKTMPFOLDER	maketexpk puts the pk files it generates in this folder.

The default folders that are used by these variables are listed in the file *default.paths*. If you are not using a TDS tree structure you can use this file as a template for creating your own search paths.

4.2 Initializing Search Paths

Under the **File** menu setpaths has two commands for initializing search paths. To set the default search paths select **Initialize default search paths**. If you have created your own *default.paths* file you can use it to set search paths by selecting **Initialize search paths from file**. Setpaths will expand all search paths, resolve any alias folders, and write the database files.

4.3 Database File Searches

CMacTEX can be configured to search databases for macro and font files rather than searching your hard drive. Database searching is considerably faster than disk searching, especially if a large number of files have to be found. The databases are used by pdftex, macdvi,

and dvips. The databases are created whenever you initialize search paths and they are placed in the *CMacTeX* folder inside your *Library:Application Support* folder. Database searching can be turned on and off with the **Use databases for file searches** item under the **File** menu.

4.4 Search Paths for pk Files

Dvips, macdvi, and pdftex can generate missing pk files from appropriate metafont sources by calling maketexpk. The default configuration for CMacTEX organizes pk files by metafont mode and dpi. It may be necessary for maketexpk to create new folders when generating pk files and these folders must be searched when programs are looking for pk files. Since setpaths can handle only existing folders when it initializes search paths, a method had to be created for handling new pk files and folders . This is done by creating the variable search path `texmf-cmt/pk/%m/%d/%f.%dpk`. Dvips, macdvi, and pdftex use this variable search path when looking for pk files and maketexpk uses it when creating pk files. The general rule is that if a % character is found in a path, the following substitutions will be made, and then a search will be made for the resulting file. `%f` is replaced by the font name, `%d` is replaced by the font size in dots per inch, and `%m` is replaced by the Metafont mode. Note that the variable search path must expand to the full file name, including the path from the pk folder, rather than just the name of a folder. If you just used `texmf-cmt/pk/%d` instead of `texmf-cmt/pk/%m/%d/%f.%dpk`, dvips, macdvi, and pdftex will try to open .../texmf-cmt/pk/329 when looking for cmr10.329pk, for instance, and this is not what is intended. This variable search path must expand to a file name after the substitutions are made.

5 CMacTeX

CMacTeX is the command center when typesetting a document and is probably the only program you will launch from the Finder. From CMacTeX you can issue commands to typeset your document with either the plain or latex format, launch the dvi previewer, convert the dvi file to Postscript, launch the Postscript viewer, convert Postscript to PDF, launch the PDF viewer, make indices and bibliographies, and build format files.

5.1 Menu Commands

5.1.1 File Menu

Typeset	Choose a file to be typeset.
Typeset xxx	Typeset the last file processed, provided that file still exists in its original location.
Typeset recent	Select a file for typesetting from a list of recently opened files.
Repeat last TeX command	Redo the last command executed by any TeX program.
Build format	This command can be used to build format files. You can modify the command line and use the "Set Directory" button to make sure that format files are placed in the correct folder.
bibtex xxx.aux	Run bibtex on the aux file created by tex.
View xxx.dvi	View the indicated dvi file.
dvips xxx.dvi	Convert the dvi file to Postscript by calling dvips.
View xxx.ps	Call a previewer to display the indicated Postscript file.
Ps2pdf xxx.ps	Convert the indicated Postscript file to PDF by calling macps2pdf, Distiller, or any other converter which responds to an "Open doc" event.
View xxx.pdf	Call a PDF viewer to display the indicated PDF file.
Save	Save the output written to the console in a file.

5.1.2 Edit Menu

Clear	Clear the console window.
Console font	Set the font to be used to display text in the console window.
Font size	Set the size of the font to be used to display text in the console window.
8-bit output	Use 8-bit characters in the console window and in .log files.
Info	View information about the selected program.
Open config file	Ask your text editor to open the selected configuration file.

5.1.3 Options Menu

TeX format	Choose the format to be used by pdftex.
DVI output	By default pdftex produces PDF output. When this item is checked it will produce traditional dvi otput.
Enable synctex	When this item is checked pdftex creates special code linking either the dvi file or pdf file created with the original source file. Macdvi uses this code to link the created dvi file to the tex source files. Some PDF previwers, like Skim, can use the code to link the created PDF file to the tex source files.
Turn on recorder	When this item is checked pdftex creates a file foo.fls which lists all the files opened by pdftex when typesetting foo.tex. It is useful when debugging your tex sources.
pdftex options	Set some options when using pk font files with PDF output.
Auto switch to previewer	This item tells CMacTeX to launch the dvi or pdf previewer automatically after it is finished processing a file. The switch occurs only if the tex program returns a zero exit code to CMacTeX.
Debug paths	If this item is checked, tex and pdftex will print the full names of all the files they are trying to open. This feature is useful if tex reports that it cannot find a file or you are trying to debug your installation.
Set search paths	This item launches setpaths, from which the user can set or change the search paths used by tex.
Set apps	This item allows you to set some of the programs that can be launched from CMacTeX.
bibtex options	Set options for running bibtex.
dvips options	Set options for running dvips.
mpost tex format	Set the format for pdftex to use when called by mpost.

The **Apps** Menu can be used to run selected programs from CMacTeX. When any item under this Menu is selected, a dialog window appears in which you specify input and output files for the selected program. The **Transfer** Menu simply allows the user to launch some other program.

6 Pdftex

CMacTeX includes pdftex for converting tex source files. It can produce either a traditional dvi file or a PDF file. The program has no useful interface. It is designed to be called by CMacTeX for typesetting a document and there is no reason to launch it directly.

When launched pdftex read a configuration file pdftex.cnf. This file has settings for various memory parameters used by pdftex and it is searched for in the folders specified by the TEXFORMATS variable. If this file is not found, the program will use built-in values for its memory parameters. If the program prints any error messages about its memory capacity being exceeded, you may want to increase some of the values specified in this file. Changing these parameters may require you to rebuild your format files.

CMacTeX includes two prebuilt formats, pdftex and pdflatex. You to easily build your own custom formats.

- The pdftex format is the plain format built with the extended features of eTEX.
- The pdflatex format is the latex format built with the extended features of eTEX.

Pdftex requires that a number of paths be set correctly in order for it to work at all. The paths used include TEXFONTS, TEXINPUTS, and TEXFORMATS. TEXFONTS is the list of folders in which pdftex looks for tfm files, TEXINPUTS is the list of folders for macro (.tex) and style files, and TEXFORMATS is the list of folders for format(.fmt) files.

6.1 Configuring pdftex

There are two default settings for pdftex that you may wish to change, paper size and hyphenation patterns.

- The default paper size used by pdftex is letter. To change to a4 or any other paper size you must edit **pdftexconfig.tex**.
- By default pdftex only includes hyphenation patterns for US English. To add hyphenation patterns for other languages you must edit **language.dat** for plain tex and **language.def** for latex.

All three of these files are located in the folder *texmf/tex/generic/config*. Changing either paper size or hyphenation patterns requires you to rebuild all pdftex format files.

6.2 Including graphics

When pdftex is in PDF mode it includes any graphic files in its final output. Most graphics programs produce encapsulated postscript files (eps) files. These files must be converted to PDF format before running pdftex. CMacTeX includes **epstopdf**, a utility for converting eps files to pdf format.

6.3 Embedding postscript fonts

When producing PDF output pdftex must embed the fonts used by the document into the PDF output. (Dvi files do not contain actual fonts; they only contain font metrics.) Pdftex looks in the folders specified by the DVIPSHEADERS and TYPE1FONTS paths for Postscript mapping, encoding, and font files. All tex-font-to-postscript-font mappings are listed in the file **pdftex.map** located in the *texmf-cmt/fonts/map* folder. If you add any fonts to CMacTeX you may have to add entries for those fonts to **pdftex.map**.

7 Metafont

Metafont reads the program in the specified files and outputs font rasters (in gf format) and font metrics (in tfm format). The Metafont language is described in The Metafont Book.

Like TEX, Metafont is normally used with a large body of precompiled macros, and font generation in particular requires the support of numerous macro files. To run Metafont, launch mf, choose **Execute** from the File Menu. Set the directory to any folder you wish and, in the command line dialog box, type

```
mf \mode=<printengine>; [mag=magstep(n);] input font
```

to start processing font.mf.

Unless you are a font designer the only reason you will launch mf directly is to build a base file. To build a base file, launch mf and select **Build base** from the File Menu. Set the directory to your *mfbases* folder and, in the command line dialog box, type

```
mf -ini -jobname=mf plain \input modes \dump
```

Mf will create a file called mf.base in the mfbases folder.

When it is launched, mf can read the configuration file *mf.cnf*, which has alternate settings for various memory parameters. It will search for *mf.cnf* in the folders specified by the MFBASES variable. If this file is not found, mf will use built-in values for these parameters. If mf prints any error messages about its memory capacity being exceeded, you may want to increase some of the values set in *mf.cnf*. Changing these parameters may require you to rebuild your base files.

7.1 Menu Commands

7.1.1 File Menu

Execute	Launch mf.
Build base	Build the "plain" base file for Metafont.
Save	Save the output written to the console in a file.

7.1.2 Edit Menu

Clear	Clear the console window.

7.1.3 Options Menu

Debug paths	If this item is checked, Metafont will print the full names of all the files it is trying to open. This feature is useful if Metafont reports that it cannot find a file or you are trying to debug your installation.
Set view window	This item allows the user to set the location and size of Metafont's viewing window. This window only appears if you are designing fonts instead of merely generating gf and tfm files for an existing font.

Metafont requires that a number of paths be set correctly in order for it to work at all. The paths used by Metafont include MFINPUTS, MFBASES, and MFPOOL. MFINPUTS is the list of folders in which Metafont will look for macro (.mf) files. MFBASES is the list of folders in which Metafont will look for base(.base) files. MFPOOL is the list of folders in which Metafont will look for pool files. These paths are set with the setpaths utility.

Metafont is also included as an OS X tool in the *binaries/bin* folder. It is this version of mf that is called by maketexpk when it is generating pk files. You can't launch the mf tool yourself.

8 Dvips

Dvips is the program that converts dvi files to Postscript files. It supports hyperpostscript and the partial downloading of Postscript fonts in either pfa or pfb format. Dvips is designed to be called by the CMacTeX program, just like pdftex.

8.1 Configuring dvips

Be sure to read config.ps carefully and modify it appropriately so that dvips uses the correct paper size for your installation. Like pdftex, dvips must include the actual fonts in its output. It reads the file **psfonts.map** in the *texmf-cmt/fonts/map* folder to translate tex fonts into postscript fonts. If a particular font is not found in **psfonts.map** then dvips will call maketexpk to generate a pk file for that font.

8.2 Automatic Font Generation

In order to generate the correct pk files dvips needs to know the resolution of your printer and the metafont mode for your printer. These values are entered in config.ps, the main configuration file for dvips. The default resolution is 600 and the default metafont mode is ljfour. Config.ps should contain the settings for your default printer. If you regularly use more than one printer, you should create printer-specific configuration files rather than change the values in config.ps. As an example, suppose that you occasionally print on a NeXT printer. Duplicate config.ps and rename it config.next. Open config.next and change the resolution to 400 and the metafont mode to nexthi. When you run dvips, use the Options Menu to load in the config.next file.

The available metafont modes are listed in modes.mf, which should be located in your *mfinputs* folder. If you ever have to build the metafont base file, be sure to include modes.mf.

9 Macdvi

Macdvi is the program for previewing dvi files. It automatically resolves virtual fonts and provides full support for color. Even if a dvi file contains no color commands you can still set foreground and background colors for easier viewing. Since macdvi draws an entire page in an offscreen bitmap before showing the page on a computer screen, colored text on a colored background is drawn correctly. Macdvi automatically redisplays an open dvi file if that file has been modified by another program. The redisplay occurs when macdvi is brought to the front.

9.1 Displaying fonts

Macdvi can only display fonts that are in pk format and it automatically generates any pk files it needs either from metafont sources or from postscript pfb files. When it encounters a font it first searches for an existing pk file for that font and size. If one is not found it calls **maketexpk** to generate a pk file of the appropriate size. Maketexpk first tries to build the pk file from metafont sources using **mf** and **gftopk**. If no metafont sources for the font are found maketexpk tries to generate the pk file from a postscript pfb file by calling **gsftopk**. To find the appropriate postscript font for the given tex font maketexpk reads **psfonts.map**, the same mapping file used by **dvips**. MacGhostView must be installed in order to convert postscript fonts to pk files.

9.2 Displaying graphics

It can't display any Postscript code included in a dvi file with a \special{} or with a package like pstricks. Macdvi is a dvi previewer, not a Postscript previewer. It can display included encapsulated Postscript files by converting them to PDF format and displaying the PDF graphics. MacGhostView must be installed in order to convert eps files to pdf files.

9.3 Src specials

If pdftex is run with the "Enable synctex" option, then the dvi file contains information linking it to the tex source files. If you option-click in a paragraph in a displayed page macdvi will print the line number and the name of the source file corresponding to the mouse click. If you are using either TextWrangler or BBEdit macdvi will ask your editor to open the source file and highlight the line. There is a TextWrangler-BBEdit script for jumping from a location in the tex source file to the corresponding position in the dvi file.

9.4 Menu Commands

9.4.1 File Menu

Open	Select a dvi file to preview.
Open xxx.dvi	Preview the current dvi file, xxx.dvi. This is the last dvi file created by any application. The item will be disabled if the current dvi file has been moved or deleted.

Open Recent	Select a file for previewing from a list of recently opened files.
Close dvi file	Close the currently open dvi file.
Page Setup	Set options for printing a dvi document.
Print	This command prints the selected pages. It sends each page to your printer as a bitmap image.
Convert to Postscript	Call dvips to convert the current dvi file to Postscript.
Save	Save the currently displayed dvi page as a PICT file or save the console output in a file.

9.4.2 Edit Menu

Copy	Place the currently displayed dvi page as a PICT resource on the Clipboard.
Clear	Clear the console window.

9.4.3 View Menu

First Page	View the first physical page of the document.
Previous page	View the previous page, if there is one.
Next page	View the next page, if there is one.
Last Page	View the last physical page.
Go to page	Select a page for previewing.
Go to last viewed page	This item tells macdvi to display the page having the same physical page number as the last page viewed in the last dvi file. It helps you return to a specific page after you have made changes to a tex file.
Redraw current page	If the display of the current page is not correct, selecting this item will redraw the page.
Zoom in	Increase the magnification of the current page.
Zoom out	Decrease the magnification of the current page.
Zoom back	View document at previous magnification.
Fit in view	Resize the current page so that it fits completely inside the previewing window.
Maximum size	Show the current page at maximum magnification.
View page as Postscript	Convert the displayed page into Postscript and open the Postscript previewer.
Console Window	Bring the console window to the front.
Display Window	Bring the display window to the front.

9.4.4 Page Menu

This menu is just a list of the pages in the current dvi file. Selecting one of them displays that page. Only the first 100 pages are listed under this Menu.

9.4.5 Options Menu

Display Page Geometry

Set page size, orientation, and resolution for previewing. The default resolution for previewing with macdvi is 300 dpi. The value you set here determines the size of the pk fonts macdvi will use to display the document. If you are printing on a 300 dpi Postscript printer, macdvi will use the same pk files for previewing as dvips would use for printing. You may use whatever resolution you wish for previewing and macdvi can be set to automatically generate any pk files it needs if you have installed CMacTEX's metafont package. The user can set the color depth used by macdvi when it displays a page. Macdvi can display color commands in the dvi file. These commands must follow the syntax for color commands used by dvips. The files colordvi.tex and colordvi.sty, supplied with dvips, explain how to include color commands in your TEX file so that they cab be used by dvips and macdvi. Any changes take effect the next time a dvi file is opened. If automatic pk font generation is turned on, macdvi must tell metafont which mode to use. This mode must be consistent with the dpi setting or metafont and gftopk will not create the correct pk file. If your resolution is set at 300 dpi, you should set the metafont mode to CanonCX or cx. See the file *modes.mf*, supplied with metafont, for a description of all standard modes and their corresponding resolutions.

Color preferences

With this item the user can set the foreground and background colors macdvi will use to display a page. Color commands included in the dvi file will overwrite these settings.

Screen font

If macdvi can't find a pk font of the correct size and you are not generating pk fonts, it will try to display the font characters using a Macintosh screen font. The default screen font is Geneva and the resulting display is truly awful.

Make pk fonts

If you have installed the metafont package, macdvi can automatically generate any pk files it needs for previewing. If you don't want to wait for macdvi to generate fonts, turn this option off and macdvi will record the missing fonts in a file called *missviewfont.log*. You can

	generate the fonts later with maketexpk.
Convert eps graphics	When this option is turned on, macdvi will convert an eps file to a PDF file for previewing graphics, provided the eps file does not already have a PICT 256 resource. It calls macps2pdf to do the actual conversion.
Debug paths	When this option is turned on, macdvi will print the name of every file it is trying to open. This is useful when you are debugging your search paths.
Debug \special	When this option is turned on, macdvi will print all \special commands to the console window and any eps graphics are enclosed in a box.
Dithering	If dithering is turned on, macdvi will render the displayed page in gray scale rather than black and white. This improves the display quality when the file is viewed at different magnifications.
Key mappings	This item allows you to change the keys used to move around a displayed page of your dvi file.
Slow scrolling	Use this option only if you insist on covering part of macdvi's display window with one or more floating windows.

9.5 Key Mappings

Pressing various keys while the display window is in front moves you around the page and the document as follows.

n	Go to the next page.
p	Go to the previous page.
f	Go to the first page.
l	Go to the last page.
g	Call the Goto Page Dialog Box.
h	Center the page horizontally.
v	Center the page vertically.
i	Zoom in (increase magnification).
o	Zoom out (decrease magnification.
u	Scroll upward one screen. If at the top of a page, scroll to the bottom of the previous page.
d	Scroll downward one screen. If at the bottom of a page, scroll to the top of the next page.

The four arrow keys also move you around a page in small increments. The "page up" and "page down" keys work just like the 'u' and 'd' keys respectively. The "home" key takes you to the upper left-hand corner of a page while the "end" key takes you to the lower right-hand corner.

10 Other Programs

CMacTEX includes several other programs usually found in any TEX installation.

10.1 Bibtex, MetaPost, and MakeIndex

Bibtex, metapost, and makeindex are described in the standard books concerned with TEX. Makeindex, mpost, and bibtex should be called from the CMacTeX program..

10.2 Epstopdf

This utility can used to convert a batch of eps files to PDF format. Just select the eps files in the Finder and drag the icons onto the epstopdf program.

10.3 Postscript Utilities

The type1 font utilities are useful when converting Postscript fonts between pfa, pfb, and Macintosh format. To convert a number of files you should use one of the Apple Scripts provided with CMacTEX.

10.4 OS X Tools

These tools are located in the *binaries/bin* folder. They can't be launched from the Finder. Maketexpk calls **mf**, **gftopk**, and **gsftopk** and metapost calls **dvitomp**. These binaries are implemented as tools rather than as programs for speed and efficiency.

10.5 MakeTeXPK

Maketexpk is a CMacTeX utility for generating pk files. It is called by macdvi, pdftex, and dvips when automatic font generation is activated. If automatic font generation is not activated, these programs generate a file called missfont.log or missviewfont.log which contains a list of commands for making any missing pk fonts. Later maketexpk can be run on this file and it generates the missing fonts.

If you have a collection of pk fonts to make, you can create a list of the fonts and their magnifications in a file and run maketexpk on that file. Each line in the file should consist of a font name, a design size, a base size, and an optional metafont mode. A typical line would be

```
cmr10 360 300 CanonCX
```

which would produce cmr10.360pk. If no metafont mode is given, the value of localfont, as defined in *modes.mf* when the metafont base file was created, will be used. The mode set by localfont can be overwritten by setting the metafont mode with the Options Menu. Of course, the Metafont mode must match the base size. To produce a family of pk files you could have the following lines in your file:

```
cmr10 300 300 CanonCX
```

cmr10 329 300 CanonCX
cmr10 360 300 CanonCX
cmr10 432 300 CanonCX
cmr10 518 300 CanonCX
cmr10 622 300 CanonCX

or just

cmr10 300 300
cmr10 329 300
cmr10 360 300
cmr10 432 300
cmr10 518 300
cmr10 622 300

if CanonCX is your localfont setting or if CanonCX was set with the Options Menu.

11 Working with Text Editors

CMacTEX can be fully integrated with Alpha, BBEdit, and TextWrangler and it is possible to run most of the programs from within either of these popular editors. With Menu selections in your editor, you can have TEX process the file displayed in the front window, return automatically to the editor and go to the offending line if TEX detects an error, preview the dvi file corresponding to the front window (if it exists), convert a dvi file to Postscript and view the Postscript file. These operations are handled quite differently in Alpha and BBEdit or Textwrangler.

For BBEdit or Textwrangler I have written seventeen Apple Scripts: Convert dvi to ps, Convert ps to pdf, Goto dvi page, Goto pdf page, latex, latex with src specials, Make bib, Make index, Open Log File, Open Macro File, pdflatex, pdftex, tex, tex with src specials, View dvi, View pdf, and View ps. These scripts should be placed in your BBEdit or TextWrangler Scripts Folder. You will have to edit all of the scripts with Script Editor to get them to work on your computer.

The scripts perform the indicated action on either the .tex file in the front window, or the dvi file or Postscript file associated with the front window. If you have returned to BBEdit from tex by typing an 'e' at a ? prompt, BBEdit will highlight the line tex reported as containing an error. If you are viewing a dvi file containing \src specials and option-click in a paragraph in a displayed page, macdvi will tell BBEdit to open the corresponding source file and BBEdit will highlight the first line of the selected paragraph. The "tex" script calls pdftex with the plain format, the "latex" script calls pdftex with the pdflatex format, both producing dvi output. The "pdftex" script calls pdftex with the pdftex format, and the "pdflatex" script calls pdftex with the pdflatex format, producing PDF output.

Alpha comes with its own set of commands for interacting with TEX.