

**NAME**

`mpost`, `inimpost`, `virmpost` – MetaPost, a system for drawing pictures

**SYNOPSIS**

**mpost** [*options*] [*commands*]

**DESCRIPTION**

MetaPost interprets the MetaPost language and produces PostScript pictures. The MetaPost language is similar to Knuth’s METAFONT with additional features for including **tex**(1) or **troff**(1) commands and accessing features of PostScript not found in METAFONT.

Like  $\text{\TeX}$  and METAFONT, MetaPost is normally used with a large body of precompiled macros. This version of MetaPost looks at its command line to see what name it was called under. Both **inimpost** and **virmpost** are symlinks to the **mpost** executable. When called as **inimpost** (or when the **-ini** option is given) it can be used to precompile macros into a *.mem* file. When called as **virmpost** it will use the *plain* mem. When called under any other name, MetaPost will use that name as the name of the mem to use. For example, when called as **mpost** the *mpost* mem is used, which is identical to the *plain* mem. Other mems than *plain* are rarely used.

The *commands* given on the command line to the MetaPost program are passed to it as the first input line. (But it is often easier to type extended arguments as the first input line, since UNIX shells tend to gobble up or misinterpret MetaPost’s favorite symbols, like semicolons, unless you quote them.) The first line should begin with a filename, a *\controlsequence*, or a *&memname*.

The normal usage is to say *mpost figs* to process the file *figs.mp*. The basename of *figs* becomes the “jobname”, and is used in forming output file names. If no file is named, the jobname becomes *mpout*. The default extension, *.mp*, can be overridden by specifying an extension explicitly.

There is normally one output file for each picture generated, and the output files are named *jobname.nnn*, where *nnn* is a number passed to the *beginfig* macro. The output file name can also be *jobname.ps* if this number is negative.

The output files can be used as figures in a  $\text{\TeX}$  document by including

**\special{psfile=jobname.nnn}**

in the  $\text{\TeX}$  document. Alternatively, one can **\input epsf.tex** and then use the macro

**\epsfbox{jobname.nnn}**

to produce a box of the appropriate size containing the figure.

**btex TeX commands etex**

This causes *mpost* to generate a MetaPost picture expression that corresponds to the  $\text{\TeX}$  commands. If the  $\text{\TeX}$  commands generate more than one line of text, it must be in a *\vbox* or a *minipage* environment.

**verbatimtex TeX commands etex**

This is ignored by *mpost* except that the  $\text{\TeX}$  commands are passed on to  $\text{\TeX}$ . When using  $\text{\LaTeX}$  instead of  $\text{\TeX}$  the input file must start with a *verbatimtex* block that gives the *\documentstyle* and *\begin{document}* commands. You can use the ‘%&’ construct in the first *verbatimtex* block to ensure that the correct  $\text{\TeX}$  format is used to process the commands.

Since most  $\text{\TeX}$  fonts have to be downloaded as bitmaps, the *btex* feature works best when the output of *mpost* is to be included in a  $\text{\TeX}$  document so that **dvips**(1) can download the fonts. For self-contained PostScript output that can be used directly or included in a *troff* document,

start your MetaPost input file with the command *prologues:=1* and stick to standard PostScript fonts. T<sub>E</sub>X and MetaPost use the names in the third column of the file *trfonts.map*, which can be found in the directories with support files for MetaPost.

MetaPost output can be included in a *troff* document via the *-m pictures* macro package. In this case *mpost* should be invoked with the **-T** flag so that the commands between *btex* and *etex* or between *verbatimtex* and *etex* are interpreted as *troff* instead of T<sub>E</sub>X. (This automatically sets *prologues:=1* ).

## OPTIONS

This version of MetaPost understands the following command line options.

### **-file-line-error**

Print error messages in the form *file:line:error* which is similar to the way many compilers format them.

### **-no-file-line-error**

Disable printing error messages in the *file:line:error* style.

### **-file-line-error-style**

This is the old name of the **-file-line-error** option.

### **-halt-on-error**

Exit with an error code when an error is encountered during processing.

### **-help**

Print help message and exit.

### **-ini**

Be **inimpost**, for dumping bases; this is implicitly true if the program is called as **inimpost**.

### **-interaction** *mode*

Sets the interaction mode. The mode can be one of *batchmode*, *nonstopmode*, *scrollmode*, and *errorstopmode*. The meaning of these modes is the same as that of the corresponding commands.

### **-jobname** *name*

Use *name* for the job name, instead of deriving it from the name of the input file.

### **-kpathsea-debug** *bitmask*

Sets path searching debugging flags according to the bitmask. See the *Kpathsea* manual for details.

### **-mem** *mem*

Use *mem* as the name of the mem to be used, instead of the name by which MetaPost was called or a *%&* line.

### **-output-directory** *directory*

*directory* instead of the current directory. Look up input files in *directory* first, then along the normal search path.

### **-parse-first-line**

If the first line of the main input file begins with *%&* parse it to look for a dump name or a **-translate-file** option.

### **-no-parse-first-line**

Disable parsing of the first line of the main input file.

**-progrname** *name*

Pretend to be program *name*. This affects both the format used and the search paths.

**-recorder**

Enable the filename recorder. This leaves a trace of the files opened for input and output in a file with extension *.fls*.

**-T** Produce TROFF output.**-translate-file** *tcxname*

Use the *tcxname* translation table.

**-troff** As **-T**.**-version**

Print version information and exit.

**ENVIRONMENT**

See the Kpathsearch library documentation (the ‘Path specifications’ node) for the details of how the environment variables are use when searching. The **kpsewhich** utility can be used to query the values of the variables.

If the environment variable TEXMFOUTPUT is set, MetaPost attempts to put its output files in it, if they cannot be put in the current directory.

Here is a list of the environment variables affect the behavior of *mpost*:

**MPINPUTS**

Search path for *input* files.

**MFINPUTS**

Auxiliary search path for *input* files with *.mf* extensions.

**MPSUPPORT**

Directory for various tables for handling included *tex* and *troff*.

**MPXCOMMAND**

The name of a shell script that converts embedded typesetting commands to a form that MetaPost understands. Defaults: *makempx* for *tex* and *troffmpx* for *troff*.

**TEX** The version of  $\text{T}_{\text{E}}\text{X}$  – or  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$  – to use when processing *btex* and *verbatimtex* commands. Default *tex*. This version of MetaPost allows you to use a ‘%&format’ line instead.

**TROFF** The *troff* pipeline for *btex* and *verbatimtex* commands. Default *eqn -d\\$\\$ / troff*

**MPEDIT**

A command template for invoking an editor.

A *.mem* file is a binary file that permits fast loading of macro packages. *mpost* reads the default *plain.mem* unless another *.mem* file is specified at the start of the first line with an & just before it. There is also an *mfplain.mem* that simulates plain METAFONT so that *mpost* can read *.mf* fonts. (Plain METAFONT is described in *The METAFONTbook*).

Experts can create *.mem* files be invoking *inimpost* and giving macro definitions

followed by a *dump* command.

The MetaPost language is similar to METAFONT, but the manual *A User's Manual for MetaPost* assumes no knowledge of METAFONT. MetaPost does not have bitmap output commands or METAFONT's online display mechanism.

## FILES

*mpost.pool*

Encoded text of MetaPost's messages.

*\*.mem* Predigested MetaPost mem files.

*plain.mp*

The standard mem file.

*mfplain.mp*

The METAFONT-compatible mem file. This is loaded when *virmp* is invoked via a symbolic link as *mfmp*.

*\$TEXMFMAIN/metapost/base/\*.mp*

The standard MetaPost macros included in the original distribution.

*\$TEXMFMAIN/metapost/support/\**

Various tables for handling included *tex* and *troff*.

*\$TEXMFMAIN/metapost/support/trfonts.map*

Table of corresponding font names for *troff* and PostScript.

*psfonts.map*

Table of corresponding font names for *tex* and PostScript.

*\$TEXMFMAIN/doc/metapost/examples.mp*

The source file for a few sample figures that are part of a L<sup>A</sup>T<sub>E</sub>X document *\$TEXMFMAIN/doc/metapost/mpintro.tex* that describes the MetaPost system in a little more detail.

## NOTES

This manual page is not meant to be exhaustive. The complete documentation for this version of MetaPost can be found in the info manual *Web2C: A TeX implementation*. See also *mpman.pdf*, the manual written by John Hobby (it lives in the documentation directory).

**MetaPost** is the native graphics language for ConTeXt, a typesetting system built on top of the T<sub>E</sub>X family. See **texexec**(1).

## SUGGESTED READING

Donald E. Knuth, *The METAFONTbook* (Volume C of *Computers and Typesetting*), Addison-Wesley, 1986, ISBN 0-201-13445-4.

John D. Hobby, *A User's Manual for MetaPost*, CSTR 162, AT&T Bell Labs,

John D. Hobby, *Drawing Graphs with MetaPost*, CSTR 164, AT&T Bell Labs,

*TUGboat* (the journal of the T<sub>E</sub>X Users Group).

## SEE ALSO

**dvips**(1), **dvitomp**(1), **epstopdf**(1), **mf**(1), **mpto**(1), **mptopdf**(1), **pdftex**(1), **tex**(1), **tex-exec**(1).

## AUTHORS

MetaPost was designed by John D. Hobby, incorporating algorithms from METAFONT by Donald E. Knuth. It was originally implemented on Unix, incorporating system-dependent routines from **web2c**, while not relying on it except for the actual WEB-to-C translator.

Ulrik Vieth adapted MetaPost to take advantage of the advanced path searching features in more recent versions of **web2c** and worked towards fully integrating MetaPost into the canonical Unix T<sub>E</sub>X distribution. He also updated and extended this manual page.

The current maintainer of MetaPost is Taco Hoekwater.

## TRIVIA

Unlike T<sub>E</sub>X and METAFONT, MetaPost originally didn't use any fancy logo. John Hobby says he prefers the spelling "MetaPost", yet Don Knuth has updated the METAFONT *logo.mf* font to be able to typeset a proper MetaPost logo similar to the METAFONT logo. Feel free to use whatever you think is more appropriate!