

footmisc —
a portmanteau package
for customising footnotes in L^AT_EX*

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Copyright statement

Program: `footmisc.dtx`

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This work has the LPPL maintenance status ‘author-maintained’.

History

This package originated as support of a personal project, which i was switching to L^AT_EX 2_ε over the Christmas holiday period of 1993, using the first β release.

In its first form, it was known as the “footnote” package, but by the time I had released it to CTAN, that name had already been used by a package written by Mark Wooding. So the package is now known (as you can see) as “footmisc”.

1 User interface — package options

The `footmisc` package provides several different customisations of the way footnotes are represented in L^AT_EX 2_ε documents (the sources of the code in this package are various, but all of it has been massaged by the author; where the code comes from elsewhere, there are attributions given below, somewhere or other).

The interface to the package’s options is mostly rather simple — each one is presented as an option in the `\usepackage` command, and for most, nothing else needs to be done. For example, to use a useful and consistent set, the author invokes the package with the command `\usepackage[perpage,para,symbol*]{footmisc}`.

For a small number of options, there are additional parameters available; these are described in the subsections below.

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1.1 Option perpage

This option resets footnote numbering for each page of the document. It needs at least two passes to do this correctly (though it comes as close as possible on the first pass). You generally have to make two passes with L^AT_EX anyway, to get the cross-references right, so an additional pass for this purpose shouldn't cause any additional problem. The option includes code to report that '*Label(s) may have changed*', which will help the poor user to realise that (yet) another run is in order.

1.2 Option para

This option (derived from code by Dominik Wujastyk and Chris Rowley) causes footnotes to be typeset as a single paragraph at the bottom of the page on which they occur. In the case that there is only one footnote on the page, no effect will be observed. However, if there are several footnotes on the page, they will be run together in the page foot, each introduced by its footnote mark. The original demand for the option came from the needs of those preparing critical editions; such documents typically have large numbers of small footnotes, which look ridiculous if each is typeset in a paragraph of its own; in most other disciplines, such multiplicities of footnotes represent mere self-indulgence: the author of this package is disgracefully guilty of this.

Please note that “old” L^AT_EX installations may have problems with the algorithm for `para` footnotes on very wide pages (for example, those used by the `a0poster` class). Recent L^AT_EX installations use an improved technique that is believed not to be susceptible to this problem.

1.3 Option side

This option (suggested by Frank Mittelbach) causes footnotes to be typeset using the `\marginpar` command: this has the advantage that the note appears close to its “call-up”, but has all the disadvantages associated with the `\marginpar` command (which consumes ‘float’ slots, and doesn't always place itself correctly at the top of pages in two-sided documents). Since the measure in which the footnote is to be typeset is likely to be pretty narrow, users of the `side` option are recommended also to use the `ragged` option, to avoid ugly spacing and line breaks.

There is a further problem (apart from the occasional failure to place the marginal note on the correct side of the page) in two-sided documents: one would like ‘raggedness’ to appear differently in different margins (setting the left, rather than the right, side ragged in the left margin). (The author would welcome suggestions on means of addressing the problem.)

1.4 Option ragged and \footnotelayout

The package provides facilities for ragged right setting of footnotes (so long as the `para` option isn't in effect). The change is effected by use of the command `\footnotelayout`; the package inserts this command into the start of the argument of `\footnotetext` (in effect: `\footnote` works, roughly, by calling the guts of `\footnotetext` at its end).

If you want to use some special effect other than ragged right, feel free to change `\footnotelayout` yourself: some intriguing (and completely undesirable) results are no doubt available. Change the setting simply by use of `\renewcommand\footnotelayout{...}`. The `ragged` option simply sets `\footnotelayout` to set `\raggedright` or `\RaggedRight` as appropriate. (If you intend to use the `ragged2e` package, load it before `footmisc` — if `footmisc` finds `\RaggedRight` is available, it automatically uses it in place of `\raggedright`.)

1.5 Option `symbol`

This option simply establishes that footnotes are ‘labelled’ by a symbol sequence. The command used is equivalent to that suggested in \LaTeX manuals such as Lamport’s (the job performed by the option is very simple, and doesn’t really need a package).

Using symbols for ‘number’ your footnotes can be problematic: there is a limited number of symbols, and \LaTeX will report an error if your footnotes exceed that limit. To avoid such problems, consider the `symbol*` option, or the `\setfnsymbol` command (see the next two sections), or number your footnotes by the page (see section 1.1).

1.6 Option `symbol*`

This is the `symbol` option, but with protection against the tedium that arises because of the instability of the `perpage` option. When executing the `perpage` option, the package often allocates footnotes to the wrong pages, only to correct itself on a later run (having warned the user of the need for the later run with a ‘*Label(s) may have changed*’ message). In these circumstances the `symbol` option is prone to producing \LaTeX errors, which stop processing, and confound automatic generation procedures. In the same situation, the `symbol*` option produces information messages and a warning message at end document, and the user may scan the log for those messages *after* processing has stabilised. The option produces numbers (17 and higher, in the case of the default symbol set) in place of symbols, when the footnote number is too large.

1.7 The `\setfnsymbol` and `\DefineFNSymbols` commands

These commands permit the definition and use of alternative (ordered) sets of symbols for numbering footnotes. \LaTeX of course comes with such a set ready-defined, but the choice of symbols isn’t universally loved.

You may define a set of symbols with the `\DefineFNSymbols` command. \LaTeX ’s default set would be defined by the command:

```
\DefineFNSymbols*{lamport}{*\dagger\ddagger\S\P\|}%
{**}{\dagger\dagger}{\ddagger\ddagger}}
```

Defined this way, the symbol set produces a “counter too large” error; a robust version of the set (cf. the `symbol*` option (see 1.6) using the `\DefineFNSymbols` command without the optional `*`. You may select a set of symbols by use of the `\setfnsymbol` command; so to restore use of the default set, you would type:

```
\setfnsymbol{lamport}
```

This package defines a small selection of alternative sets of symbols, using `\DefineFNsymbol`:

```
bringhurst  * † ‡ § || ¶
chicago    * † ‡ § || #
wiley       * ** † ‡ § ¶ ||
```

together with a version of Lamport's original set that, with doubled versions of § and ¶, and tripled versions of everything but the vertical bars, provides a symbol range to cover counters up to 16.

This last set, known as `lamport*` is selected as the default symbol set by the package.

1.8 Option bottom

This option forces footnotes to the bottom of the page; this is only noticeably useful in case that `\raggedbottom` is in effect, when \LaTeX would normally set the footnotes a mere `\skip\footins` distant from the bottom of the text.

There's a further infelicity in \LaTeX 's placing of footnotes of the bottom of pages: if a bottom float appears on a page, \LaTeX places the footnote *above* it. The `bottom` option places the footnote at the foot of the page.

1.9 Option marginal

This option adjusts the position of footnote mark relative to the start of the line in which they appear (the the option is incompatible with option `para`, for obvious reasons).

When this option is in effect, the footnote is set `\footnotemargin` relative to the left margin of the page; the default setting for `\footnotemargin` is -0.8em, which means that the footnote mark will be set jutting 0.8em into the margin. If `\footnotemargin` is a positive length, the footnote mark will be set with its right edge `\footnotemargin` from the margin. (In the absence of the option, `\footnotemargin` is set to 1.8em; you may change that value with a `\setlength` command.)

1.10 Option flushmargin

This option is as option `marginal`, but sets the footnote marker flush with, but just inside the margin from, the text of the footnote.

1.11 Option hang

This option sets the footnote mark flush with the margin, and makes the body of the footnote hang at an indentation of `\footnotemargin` (if that is a positive distance), or the width of the marker (if `\footnotemargin ≤ 0`). The option code itself leaves `\footnotemargin` at its default value of 1.8em.

The footnote itself may of course be longer than one paragraph; if so, the paragraphs will be separated by the vertical space specified by `\hangfootparskip`, and the second and subsequent paragraphs are indented by `\hangfootparindent`. Default values are:

<code>\hangfootparskip</code>	<code>0.5\baselineskip</code>
<code>\hangfootparindent</code>	<code>0em</code>

The user may redefine these values (using `\renewcommand`): it is best to use the font-size-dependent measures (multiples of `\baselineskip` for the skip, multiples of `em` for the indent). Note that the default has only one of the two values non-zero; both zero may result in easily-missed paragraph breaks, and both non-zero is not generally thought to be a good-looking option.

1.12 Option `norule`

This option suppresses the ‘normal’ footnote rule, and advances `\skip\footins` a bit to compensate

1.13 Option `splitrule`

This option makes puts a full-width rule above the split-off part of a split footnote. (Remember that split footnotes don’t happen if you’re doing paragraph footnotes.)

The option provides three different `\footnoterule` commands:

<code>\mpfootnoterule</code>	for use in minipages
<code>\pagefootnoterule</code>	for normal footnotes on regular pages
<code>\splitfootnoterule</code>	for the tail of a split footnote

By default, `\mpfootnoterule` and `\pagefootnoterule` retain the original definition of `\footnoterule` (which may have been modified by a `norule` option), while `\splitfootnoterule` becomes a full-width rule.

1.14 The `stable` option

This option deals with the problem of placing footnotes in section titles (and so on). While there is (sometimes, just) justification for putting footnotes in titles, L^AT_EX’s treatment of the content of titles militates against them. Of course, the title argument is ordinarily a moving one, and `\footnote` is a fragile command, but the real problem comes from the way the argument actually moves — which is to two places. The argument moves to the table of contents, where the footnote will (at least) look odd. But the argument also moves to the marks that make up page headers, etc., and *there* it creates havoc, since page headers are executed in page make-up, and page make-up *must not* create footnotes.

If you use the `stable` option, the footnote won’t move to the table of contents or the page headers, but it will be typeset correctly within the title itself.

The situation with `\footnotemark` is less dire (it could in principle appear in page headers, for example); footnote marks appearing on pages other than where their text appears are none the less confusing, and the `stable` option treats `\footnotemark` in the same way that it treats `\footnote`.

1.15 The `multiple` option

This option deals with the case where the author needs to type things like

```
mumble\footnote{blah}\footnote{grumble}
```

Without special treatment, L^AT_EX would output something like

mumble¹³¹⁴

What the `multiple` option makes of the above is

mumble^{13,14}

which is what most people would expect. The comma separator actually derives from the definition of `\multfootsep`, which may be changed by `\renewcommand` if the option is in effect.

The option also treats `\footnotemark` in the same way.

1.16 User interface — miscellaneous commands

The package also defines some miscellaneous footnote-related commands. The present group provides alternative means of producing footnote marks: `\footref` and `\mpfootnotemark`.

When you're in a minipage, `\footnote` numbers run according to the minipage's own footnote counter, and the marks are set in italic letters. However, the numbers used by `\footnotemark` make reference to the 'main' footnote counter, and are set in whatever is the current style for that: this behaviour often surprises, and there's no obvious way in standard L^AT_EX to "get around" it. The command `\mpfootnotemark` gets around this problem in a minipage, by generating footnote marks in the same way as those used by `\footnote`.

In fact, making reference to footnotes in general can be problematic: it can be done by noting down the value of the footnote marker in a counter (or the like) and then using the value in a subsequent `\footnotemark` or `\mpfootnotemark`. This is a tedious way of going about things, and doesn't allow representation of all possible forms of footnote mark; `\footref` is a form of reference command that sets the reference as if it were a footnote. The label should be set *within* the argument of the footnote command that is being labelled:

```
...\footnote{Note text\label{fnlabel}}
...
... potato head\footref{fnlabel}
```

2 User interface — interactions with other packages

The `footmisc` package modifies several parts of the L^AT_EX kernel; what gets modified depends on the options you select. This behaviour can cause problems with other packages, particularly those that also modify the kernel.

Known interactions are:

setspace The `setspace` package modifies the way line spacing is calculated in footnotes. `Footmisc` knows about this, and preserves the change. However, you *must* load `setspace` *before* `footmisc`.

memoir class The class emulates `setspace`, but there may be problems with that emulation. If this happens, `footmisc` may produce warning messages: please notify the author of `footmisc` about such warnings.

hyperref The **hyperref** package has ambitions to make hyperlinks from footnote marks to the corresponding footnote body; naturally this causes grief to **footmisc**, and unfortunately no remedy is currently known. If you use **footmisc**, suppress **hyperref**'s hyper-footnotes, by loading it as:
`\usepackage[hyperfootnotes=false,...]{hyperref}`
 Further work on the interaction between the two packages is proposed, but not yet scheduled.

manyfoot The **manyfoot** package permits several independent sequences of footnotes. Some preliminary work towards interworking with **footmisc** has been completed, but more remains to be done at the time of writing.

3 Code: Preliminaries

Well — here we go: let's make the package file:

```

1 <{*package>
   Now declare what environment we need:
2 \NeedsTeXFormat{LaTeX2e}[1994/12/01]
   We need a token register in case we have to patch \@makecol:
3 \newtoks\FN@temptoken

\protected@writeaux This command is defined for future compatibility with Matt Swift's newclude pack-
age (still, after all this time, not out of beta status).
4 \providecommand\protected@writeaux{%
5   \protected@write\@auxout
6 }

\l@advance@macro We make the following (\@@dvance@macro) generalisable as follows (the global
@@dvance@macro form isn't used in this package ... yet):
\@advance@macro
7 \def\l@advance@macro{\@@dvance@macro\edef}
8 \def\@@dvance@macro#1#2#3{\expandafter\@tempcnta#2\relax
9   \advance\@tempcnta#3\relax
10  #1#2{\the\@tempcnta}%
11 }

   Now we define a jolly little macro to advance a macro count (#1) by a given
   amount (#2).
12 \let\@advance@macro\l@advance@macro

\ifFN@etex Check whether we're using etex
13 \newif\ifFN@etex
14 \ifx\dimexpr\undefined
15   \FN@etexfalse
16 \else
17   \FN@etextrue
18 \fi

\footnotemargin Finally, we define the length used by the marginal option, and initialise it as if
we've not had the option.
19 \newdimen\footnotemargin
20 \footnotemargin1.8em\relax

```

4 Package options

Most of the code of the package is contained within the option processing, one way or another (that which isn't, is executed after `\ProcessOptions` as a result of flags set in the option processing).

4.1 The `symbol` option

This is a declaration that appears in the original \LaTeX book. Since it appeared in the old `pagefoots.sty` (presumably since it goes so naturally with the `perpage` option), I've added this trivial piece of customisation to the package.

```
21 \DeclareOption{symbol}{\renewcommand\thefootnote{\fnsymbol{footnote}}}
```

4.2 The `symbol*` option

The robust version of the `symbol` option: if the current 'symbol' option doesn't provide enough variants, use arabic footnote number. We use a robust version of the "extended ordinary" symbol set, described later (in section 1.7).

```
22 \DeclareOption{symbol*}{%
23   \renewcommand\thefootnote{\@fnsymbol\c@footnote}%
24   \AtEndOfPackage{\setfnsymbol{\lamport*-robust}}}%
25 }
```

4.3 The `para` option

The basis of the code for this option comes from \TeX book, p.398 ff. ("Dirty Tricks"), though it does (of course) avoid redefining `\` which has some other (somewhat significant) uses in \LaTeX ! The user should be aware of Knuth's note on the limitations of this method of doing the job: the \TeX stack is used four times per footnote, and the stack is limited (see the \TeX book, p.300 ff.). If you have very large numbers of footnotes (in the hundreds), and encounter the error "`! TeX capacity exceeded, sorry (... save size ...)`", you may need to break your text into smaller sections and compile the separately. Fortunately (say the comments on the original `fnpara.sty`) this is very easy to do with \LaTeX , provided that you reset the footnote counter to make the joins seamless.

`\ifFN@para` Define the `para` option: now simply sets a marker for use later when defining the option's auxiliary code and when patching the output routine and so on.

```
26 \newif\ifFN@para \FN@parafalse
27 \DeclareOption{para}{\ifFN@sidefn
28   \PackageError{footmisc}{Option "\CurrentOption" incompatible with
29     option "side"}}%
30   {I shall ignore "\CurrentOption"}}%
31 \else
32   \FN@paratrue
33 \fi
34 }
```


4.4 The side option

`\ifFN@sidefn` Simply changes the behaviour of `\@footnotetext`; incompatible with paragraph footnotes.

```
35 \newif\ifFN@sidefn \FN@sidefnfalse
36 \DeclareOption{side}{\ifFN@para
37   \PackageError{footmisc}{Option "\CurrentOption" incompatible with
38     option "para"}%
39   {I shall ignore "\CurrentOption"}}%
40 \else
41   \FN@sidefntrue
42 \fi
43 }
```

4.5 The ragged option

`\footnotelayout` A very simple option that merely changes the definition of one macro. Note detection of the presence of the `ragged2e` package.

```
44 \let\footnotelayout\@empty
45 \DeclareOption{ragged}{%
46   \@ifundefined{RaggedRight}%
47   {\renewcommand\footnotelayout{\linepenalty50 \raggedright}}%
48   {\renewcommand\footnotelayout{\linepenalty50 \RaggedRight}}%
49 }
```

4.6 The perpage option

`\ifFN@perpage` A footnote-numbering modification: a new algorithm replacing one from Brian T. Schellenberger, which has proved to be flawed. We simply set a marker here, and define code later depending on the state of the marker (see section 5.4).

```
50 \newif\ifFN@perpage
51 \FN@perpagefalse
52 \DeclareOption{perpage}{%
53   \FN@perpagetrue
54 }
```

4.7 The PPdebug option

`\ifFN@pp@debug` Sets a flag; the messages are generated in various places throughout the code. The option is not available in the package as distributed: modify the `.ins` file to generate a version of the package that includes the option, if you feel you need it.

```
55 (*PPdebug)
56 \newif\ifFN@pp@debug \FN@pp@debugfalse
57 \DeclareOption{PPdebug}{\FN@pp@debugtrue}
58 \PPdebug
```

4.8 The bottom option

`\ifFN@bottom` All this needs to do is to set a flag to say that it should happen

```
59 \newif\ifFN@bottom \FN@bottomfalse
60 \DeclareOption{bottom}{%
61   \FN@bottomtrue
```

62 }

4.9 The marginal option

Again, the processing of the option is pretty trivial:

```
63 \DeclareOption{marginal}{%
64   \footnotemargin-0.8em\relax
65 }
```

4.10 The flushmargin option

Again, the processing of the option is pretty trivial:

```
66 \DeclareOption{flushmargin}{%
67   \footnotemargin0pt\relax
68 }
```

4.11 The hang option

`\iffN@hangfoot` We need a switch, since `\@makefntext` needs to be patched.

```
69 \newif\iffN@hangfoot \FN@hangfootfalse
70 \DeclareOption{hang}{%
71   \FN@hangfoottrue
72 }
```

`\hangfootparskip` Layout parameters for hanging footnotes; `\hangfootparskip` and `\hangfootparindent`
`\hangfootparindent` are (respectively) values to use for `\parskip` and `\parindent` when in hanging footnotes.

```
73 \newcommand*\hangfootparskip{0.5\baselineskip}
74 \newcommand*\hangfootparindent{0em}%
```

4.12 The norule option

Pretty simple too...

```
75 \DeclareOption{norule}{%
76   \renewcommand\footnoterule{}%
77   \advance\skip\footins 4\p@\@plus2\p@\relax
78 }
```

4.13 The splitrule option

`\split@prev` This is from a posting by Donald Arseneau dated 13 November 1996. The code relies on the fact that L^AT_EX only uses inserts for footnotes, so that if any insert is going to be split, it's going to be a footnote.

```
79 \DeclareOption{splitrule}{%
80   \gdef\split@prev{0}
```

`\pagefootnoterule` Define defaults for the three footnote rules: note, we inherit the current state of
`\mpfootnoterule` `\footnoterule` for the two 'regular' footnote defaults, and if we've been preceded
`\splitfootnoterule` by option `norule`, they will both become null...

```
81 \let\pagefootnoterule\footnoterule
82 \let\mpfootnoterule\footnoterule
83 \def\splitfootnoterule{\kern-3\p@ \hrule \kern2.6\p@}
```

Now redefine `\footnoterule` to distinguish the three situations.

```

84 \def\footnoterule{\relax
85   \ifx \@listdepth\@mplistdepth
      In a minipage
86     \mpfootnoterule
87   \else
88     \ifnum\split@prev=\z@
      Normal footnote on a regular page
89       \pagefootnoterule
90     \else
      Second part of a split footnote
91       \splitfootnoterule
92     \fi
      Remember a split for next page
93     \xdef\split@prev{\the\insertpenalties}%
94   \fi
95 }%
96 }
```

`\ifFN@stablefootnote` 4.14 The stable option

Simply set a flag: the code of this gets executed at the very end of the package.

```

97 \newif\ifFN@stablefootnote \FN@stablefootnotefalse
98 \DeclareOption{stable}{\FN@stablefootnotetrue}
```

4.15 The multiple option

`\ifFN@multiplefootnote` Again, simply set a flag, for code that gets executed at the very very very end of the package.

```

99 \newif\ifFN@multiplefootnote \FN@multiplefootnotefalse
100 \DeclareOption{multiple}{\FN@multiplefootnotetrue}
```

4.16 The start of the endgame

Exercise the options that the user has requested...

```

101 \ProcessOptions
```

5 Hacking kernel commands

Various standard commands (some of them internal ones) need to be hacked to achieve our effects, and we do all of this now, according to flags set in option processing.

5.1 The output routine

Now; do we need to mess about with the output routine? If either `para` or `bottom` has been invoked, we do.

```
102 \let \if@tempswa \ifFN@bottom
103 \ifFN@para \@tempwattrue \fi
104 \if@tempswa
```

... so we've patching to do.

First, we ensure that `\@makecol` is as expected from the time at which these macros were written: since we're going to patch it, we had better be sure that we're patching the right thing. (There was a minuscule change to the definition 1999, but this doesn't as far as I can tell make any difference to the semantics of the definition we base our patch on.)

```
105 \ifl@t@r\fmtversion{2005/12/01}{%
106   \CheckCommand*\@makecol{\ifvoid \footins
107     \setbox\@outputbox \box\@cclv
108   \else
109     \setbox\@outputbox \vbox{%
110       \boxmaxdepth \@maxdepth
111       \unvbox\@cclv
112       \vskip \skip\footins
113       \color@begingroup
114       \normalcolor\footnoterule
115       \unvbox\footins
116       \color@endgroup
117     }%
118   \fi
119   \let \@elt \relax
120   \xdef\@freelist{\@freelist\@midlist}%
121   \global\let\@midlist\@empty
122   \@combinefloats
123   \ifvbox\@kludgeins
124     \@makespecialcolbox
125   \else
126     \setbox\@outputbox \vbox to\@colht{%
127       \@texttop \dimen@ \dp\@outputbox
128       \unvbox\@outputbox
129       \vskip -\dimen@\@textbottom
130     }%
131   \fi
132   \global\maxdepth\@maxdepth
133 }
134 }{%
135 \ifl@t@r\fmtversion{2003/12/01}{%
136   \CheckCommand*\@makecol{\ifvoid \footins
137     \setbox\@outputbox \box\@cclv
138   \else
139     \setbox\@outputbox \vbox{%
140       \boxmaxdepth \@maxdepth
141       \@tempdima \dp\@cclv
142       \unvbox\@cclv
143       \vskip \skip\footins
144       \color@begingroup
```

```

145         \normalcolor
146         \footnoterule
147         \unvbox\footins
148     \color@endgroup
149 }%
150 \fi
151 \let \@elt \relax
152 \xdef\@freelist{\@freelist\@midlist}%
153 \global\let\@midlist\@empty
154 \@combinefloats
155 \ifvbox\@kludgeins
156     \@makespecialcolbox
157 \else
158     \setbox\@outputbox \vbox to\@colht{%
159         \@texttop
160         \dimen@\dp\@outputbox
161         \unvbox\@outputbox
162         \vskip -\dimen@
163         \@textbottom
164     }%
165 \fi
166 \global\maxdepth\@maxdepth
167 }%
168 }{%
169     \@ifl@t@r\fmtversion{1999/12/01}{%
170         \CheckCommand*\@makecol{\ifvoid \footins
171             \setbox\@outputbox \box\@cclv
172         \else
173             \setbox\@outputbox \vbox{%
174                 \boxmaxdepth\@maxdepth
175                 \@tempdima\dp\@cclv
176                 \unvbox\@cclv
177                 \vskip \skip\footins
178                 \color@begingroup
179                 \normalcolor\footnoterule
180                 \unvbox\footins
181                 \color@endgroup
182             }%
183         \fi
184         \xdef\@freelist{\@freelist\@midlist}%
185         \global\let\@midlist\@empty
186         \@combinefloats
187         \ifvbox\@kludgeins
188             \@makespecialcolbox
189         \else
190             \setbox\@outputbox \vbox to\@colht{%
191                 \@texttop \dimen@\dp\@outputbox
192                 \unvbox\@outputbox
193                 \vskip -\dimen@\@textbottom
194             }%
195         \fi
196         \global\maxdepth\@maxdepth
197     }%
198 }%

```

```

199 }{%
200   \CheckCommand*\@makecol{\ifvoid \footins
201     \setbox\@outputbox \box\@cclv
202   \else
203     \setbox\@outputbox \vbox{%
204       \boxmaxdepth\@maxdepth
205       \unvbox\@cclv
206       \vskip \skip\footins
207       \color@begingroup
208         \normalcolor\footnoterule
209         \unvbox\footins
210       \color@endgroup
211     }%
212   \fi
213   \xdef\@freelist{\@freelist\@midlist}%
214   \global\let\@midlist\@empty
215   \@combinefloats
216   \ifvbox\@kludgeins
217     \@makespecialcolbox
218   \else
219     \setbox\@outputbox \vbox to\@colht{%
220       \@texttop \dimen@\dp\@outputbox
221       \unvbox\@outputbox
222       \vskip -\dimen@\@textbottom
223     }%
224   \fi
225   \global\maxdepth\@maxdepth
226 }%
227 }%
228 }

```

If we're doing paragraph footnotes, the output routine needs different code to place the actual text. We prepare this code here, since it's potentially used in two different places.

We prepare the code in a token register to be used at the appropriate place in the patching of `\@makecol`; thus it becomes a token register containing code to place stuff in a token register

```
229 \ifFN@para
```

We make a box out of the paragraph of footnotes, and then stuff the contents of the box into that which is going to be `\shipped out`.

```

230   \FN@temptoken{%
231     \toks@\expandafter{\the\toks@
232     \vskip\skip\footins
233     \color@begingroup
234       \normalcolor\footnoterule
235     \global\setbox\FN@tempboxc\vbox{\makefootnoteparagraph}%
236     \unvbox\FN@tempboxc
237   \color@endgroup
238   }%
239 }%

```

If we're not doing paragraph footnotes, we insert the little bit of code that would have been replaced by the stuff above:

```
240 \else
```

```

241 \FN@temptoken{%
242 \toks@\expandafter{\the\toks@
243 \vskip\skip\footins
244 \color@begingroup
245 \normalcolor\footnoterule
246 \unvbox\footins
247 \color@endgroup
248 }%
249 }%
250 \fi

```

Now we start building up the revised version of `\@makecol`. The definition starts out in `\toks@`; first the `bottom` version:

```

251 \ifFN@bottom
252 \toks@{\setbox\@outputbox \box\@cclv
253 \xdef\@freelist{\@freelist\@midlist}%
254 \global\let\@midlist\@empty
255 \@combinefloats
256 \ifvoid\footins
257 \else
258 \setbox\@outputbox \vbox\bgroup
259 \boxmaxdepth\@maxdepth
260 \unvbox\@outputbox
261 \vfill\relax
262 }
263 \the\FN@temptoken
264 \toks@\expandafter{\the\toks@\egroup\fi}

```

Not putting stuff at the bottom: footnotes are placed using the kernel's algorithm.

```

265 \else
266 \toks@{\ifvoid\footins
267 \setbox\@outputbox\box\@cclv
268 \else
269 \setbox\@outputbox \vbox\bgroup
270 \boxmaxdepth\@maxdepth
271 \unvbox\@cclv
272 }
273 \the\FN@temptoken

```

Finally, close the `\setbox` and the `\ifvoid` and tag the parts of the definition of `\@makecol` up to the end of the definition of the `bottom` version on to `\toks@`.

```

274 \toks@\expandafter{\the\toks@
275 \egroup
276 \fi
277 \xdef\@freelist{\@freelist\@midlist}%
278 \global\let\@midlist\@empty
279 \@combinefloats
280 }%
281 \fi

```

Finally, create the new definition from the resulting object with the remainder of the original `\@makecol` tagged on at the end.

```

282 \toks@\expandafter{\the\toks@
283 \ifvbox\@kludgeins

```

```

284     \@makespecialcolbox
285   \else
286     \setbox\@outputbox \vbox to\@colht{%
287       \texttop \dimen@\dp\@outputbox
288       \unvbox\@outputbox
289       \vskip -\dimen@\textbottom
290     }%
291   \fi
292   \global\maxdepth\@maxdepth
293 }
294 \edef\@makecol{\the\toks@}

```

All of the above occurred conditionally on the ‘or’ of `\ifFN@para` and `\ifFN@bottom`, so we now close the conditional.

```
295 \fi
```

5.2 The requirements of `\@footnotetext`

`\ifFN@setspace` Whatever we do, we are going to patch `\@footnotetext`; so first of all, we’ll check it’s not been hacked by anyone other than `setspace.sty` (while we’re at it we also record whether `setspace` is loaded). so we do this here:

```

296 \newif\ifFN@setspace
297 \@ifpackageloaded{setspace}{%
298   \FN@setspacetrue
299 %   \@ifundefined{setspace@singlespace}{%
300 %     \@ifclassloaded{memoir}{%
301 %       \@ifundefined{m@m@singlespace}{%
302 %         \PackageWarning{footmisc}{Memoir class setspace problem}
303 %         \MessageBreak
304 %         see footmisc documentation}%
305 %       }{%
306 %         \let\setspace@singlespace\m@m@singlespace
307 %       }%
308 %     }{%
309 %       \PackageWarning{footmisc}{Setspace package spacing problem}
310 %       \MessageBreak
311 %       see footmisc documentation}%
312 %     }%
313 %   }%
314   \CheckCommand\@footnotetext[1]{%
315     \insert\footins{%
316       \def\baselinestretch {\setspace@singlespace}%
317       \reset@font\footnotesize
318       \interlinepenalty\interfootnotelinepenalty
319       \splittopskip\footnotesep
320       \splitmaxdepth \dp\strutbox
321       \floatingpenalty\@MM
322       \hsize\columnwidth
323       \@parboxrestore
324       \protected@edef\@currentlabel{%
325         \csname p@footnote\endcsname\@thefnmark
326       }%
327       \color@begingroup
328       \@makefntext{\rule\z@\footnotesep

```



```

329         \ignorespaces#1\@finalstrut\strutbox
330     }%
331     \color@endgroup
332 }%
333 }%
334 }{%
335     \FN@setspacefalse
336     \@ifl@t@r\fmtversion{1997/12/01}{%
337         \CheckCommand\@footnotetext[1]{%
338             \insert\footins{%
339                 \reset@font\footnotesize
340                 \interlinepenalty\interfootnotelinepenalty
341                 \splittopskip\footnotesep
342                 \splitmaxdepth \dp\strutbox
343                 \floatingpenalty\@MM
344                 \hsize\columnwidth
345                 \@parboxrestore
346                 \protected@edef\@currentlabel{%
347                     \csname p@footnote\endcsname\@thefnmark
348                 }%
349                 \color@begingroup
350                 \@makefntext{\rule{z@}{\footnotesep}
351                     \ignorespaces#1\@finalstrut\strutbox
352                 }%
353                 \color@endgroup
354             }%
355         }%
356     }{%
357         \CheckCommand\@footnotetext[1]{%
358             \insert\footins{%
359                 \reset@font\footnotesize
360                 \interlinepenalty\interfootnotelinepenalty
361                 \splittopskip\footnotesep
362                 \splitmaxdepth \dp\strutbox
363                 \floatingpenalty\@MM
364                 \hsize\columnwidth
365                 \@parboxrestore
366                 \protected@edef\@currentlabel
367                 {\csname p@footnote\endcsname\@thefnmark}%
368                 \color@begingroup
369                 \@makefntext{\rule{z@}{\footnotesep}
370                     \ignorespaces#1\@finalstrut\strutbox
371                 }

```

(The 1997/06/01 L^AT_EX source really doesn't have a comment mark after that closing brace.)

```

372         \color@endgroup
373     }%
374 }%
375 }%
376 }

```

There's substantial patching to be done if we're doing paragraph footnotes:

```

377 \ifFN@para

```

```

378 \renewcommand\@footnotetext[1]{%
379 \insert\footins{%
insert compatibility code with setspace.sty if necessary
380 \iffN@setspace
381 \def\baselinestretch {\setspace@singlespace}%
382 \fi
383 \reset@font\footnotesize
384 \interlinepenalty\interfootnotelinepenalty
385 \splittopskip\footnotesep
386 \splitmaxdepth \dp\strutbox
387 \floatingpenalty\@MM
388 \hsize\columnwidth
389 \@parboxrestore
390 \protected@edef\@currentlabel{\csname p@footnote\endcsname\@thefnmark}%
391 \color@begingroup

```

We set the paragraph in an `\hbox` and apply the fudge factor here:

```

392 \setbox\FN@tempboxa=\hbox{%

```

This needs a parameter; the rule should be moved to the beginning of the footnote paragraph, but the `\ignorespaces` should be left here.

```

393 \makefn-text{\ignorespaces#1\strut

```

We insert a penalty here to help line breaking in the footnote paragraph; the value is taken from the `TEXbook`.

```

394 \penalty-10\relax
395 \hskip\footglue
396 }% end of \makefn-text parameter
397 }% end of \hbox
398 \dp\FN@tempboxa=0pt
399 \iffN@etex
400 \ht\FN@tempboxa=\dimexpr\wd\FN@tempboxa *
401 \footnotebaselineskip / \columnwidth\relax
402 \else
403 \ht\FN@tempboxa=\fudgefactor\wd\FN@tempboxa
404 \fi
405 \box\FN@tempboxa
406 \color@endgroup
407 }%
408 \FN@mfb@prepare
409 }

```

If we're not doing paragraph footnotes, we now simply tag a `\FN@mfb@prepare` command on the end of the definition; of course, there are different definitions according as whether we're using *side* footnotes...

```

410 \else
411 \iffN@sidefn
412 \renewcommand\@footnotetext[1]{%
413 \marginpar{%
insert compatibility code with setspace.sty if necessary
414 \iffN@setspace
415 \def\baselinestretch {\setspace@singlespace}%
416 \fi

```

```

417         \reset@font\footnotesize
418         \protected@edef\@currentlabel{%
419             \csname p@footnote\endcsname\@thefnmark
420         }%
421         \color@begingroup
422             \@makefnmark{%
423                 \ignorespaces#1%
424             }%
425         \color@endgroup
426     }%
427     \FN@mfb@prepare
428 }%
429 \else
430     \renewcommand\@footnotetext[1]{%
431         \insert\footins{%
            insert compatibility code with setspace.sty if necessary
432             \ifFN@setspace
433                 \def\baselinestretch {\setspace@singlespace}%
434             \fi
435             \reset@font\footnotesize
436             \interlinepenalty\interfootnotelinepenalty
437             \splittopskip\footnotesep
438             \splitmaxdepth \dp\strutbox
439             \floatingpenalty\@MM
440             \hsize\columnwidth
441             \@parboxrestore
442             \protected@edef\@currentlabel{%
443                 \csname p@footnote\endcsname\@thefnmark
444             }%
445             \color@begingroup
446                 \@makefnmark{%
447                     \rule{z@}\footnotesep
448                     \ignorespaces#1\@finalstrut\strutbox
449                 }%
450             \color@endgroup
451         }%
452         \FN@mfb@prepare
453     }%
454 \fi
455 \fi

```

5.3 Support code for paragraph footnotes

This code used (most inefficiently) to be in the argument of the `\DeclareOption`; this no doubt comes of that code having been written over Christmas 1993...

Now all executed under the `para` conditional set in the option declaration.

```
456 \ifFN@para
```

```

\FN@tempboxa We need some temporary boxes, and LATEX only defines one
\FN@tempboxb 457 \let\FN@tempboxa\@tempboxa
\FN@tempboxb 458 \newbox\FN@tempboxb
459 \newbox\FN@tempboxc

```

`\footglue` A direct crib from the T_EXbook:

```
460 \newskip\footglue \footglue=1em plus.3em minus.3em
```

`\@makefntext` The standard classes set the footnote mark flush with the text of the footnote, but that's not appropriate for paragraph footnotes, we find.

There's not much point in patching this code from the original, since the only things it has in common with the original are the footnote mark and the footnote text (which last is the argument). Note that the `\leavevmode` isn't necessary except in the case of footnotes in minipages, which otherwise end up with the `\@makefnmark` being executed in restricted vertical mode, which results in its `\hbox` ending up in a line of its own.

```
461 \long\def\@makefntext#1{\leavevmode
462   \@makefnmark\nobreak
463   \hskip.5em\relax#1%
464 }
```

`\footnotebaselineskip` We need to record a value for the baseline skip when in footnotes:

```
465 \newdimen\footnotebaselineskip
466 {%
467   \footnotesize
468   \global
469   \footnotebaselineskip=\normalbaselineskip
470 }
```

`\fudgefactor` Now we derive a fudge factor from the `baselineskip` we've just established (we use `\dimexpr` if we're in etex, so there's no need for the fudge factor in that case).

```
471 \ifFN@etex
472 \else
473   \@tempdima=\footnotebaselineskip \multiply\@tempdima by 1024
474   \divide \@tempdima by \columnwidth \multiply\@tempdima by 64
475   \xdef\fudgefactor{\strip@pt\@tempdima }%
476 \fi
```

`\makefootnoteparagraph` For use in the output routine

```
477 \long\def\makefootnoteparagraph{\unvbox\footins \makehboxofhboxes
478   \setbox\FN@tempboxa=\hbox{\unhbox\FN@tempboxa \removehboxes}
```

Now we are ready to set the paragraph:

```
479   \hsize\columnwidth
480   \@parboxrestore
481   \baselineskip=\footnotebaselineskip
482   \noindent
483   \rule{\z@}{\footnotesep}%
484   \unhbox\FN@tempboxa\par
485 }
```

`\makehboxofhboxes` Support code for `\makefootnoteparagraph`

```
\removehboxes 486 \def\makehboxofhboxes{\setbox\FN@tempboxa=\hbox{}%
487   \loop
488     \setbox\FN@tempboxb=\lastbox
489     \ifhbox\FN@tempboxb
490     \setbox\FN@tempboxa=\hbox{\box\FN@tempboxb\unhbox\FN@tempboxa}%
491   \repeat
```

```

492 }
493 \def\removehboxes{\setbox\FN@tempboxa=\lastbox
494 \ifhbox
495 \FN@tempboxa{\removehboxes}%
496 \unhbox\FN@tempboxa
497 \fi
498 }
499 \fi

```

5.4 The other footnote commands

`\ifFN@pp@footnotehint` A conditional needed by the perpage code: must be defined outside the *perpage* conditional

```
500 \newif\ifFN@pp@footnotehint
```

`\c@pp@next@reset` Counter used to store information about the next reset of the footnote number, in perpage mode.

```
501 \newcounter{pp@next@reset}%
```

`\ifFN@pp@towrite` A conditional that mediates the interaction between the *perpage* option and the *multiple* option.

```
502 \newif\ifFN@pp@towrite
503 \FN@pp@towritefalse
```

`\ifFN@pp@lastseq` We prevent endless processions of diagnostics ‘footnote sequence lost’ by using this conditional (again, needs to be defined outside the *perpage* conditional:

```
504 (*PPdebug)
505 \newif\ifFN@pp@lastseq
506 \global\FN@pp@lastseqfalse
507 </PPdebug>

```

Now, do we need to patch `\footnote` for per-page footnotes?

```

508 \ifFN@perpage
509 \CheckCommand*\footnote{\@ifnextchar [%]
510 \@xfootnote
511 {%
512 \stepcounter\@mpfn \protected@xdef\@thefnmark{\thempfn}%
513 \@footnotemark \@footnotetext
514 }%
515 }
516 \renewcommand*\footnote{\@ifnextchar [%]
517 \@xfootnote
518 {%
519 \stepcounter\@mpfn \protected@xdef\@thefnmark{\thempfn}%
520 \FN@pp@footnote\@footnotemark

```

In case that we’re *not* running *multiple* option, `\@footnotemark` *won’t* have written details to the `.aux` file, so do it now:

```

521 \ifFN@pp@towrite
522 \FN@pp@writetemp
523 \FN@pp@towritefalse
524 \fi
525 \@footnotetext

```

```

526     }%
527   }
    And the analagous change for \footnotemark
528   \CheckCommand*\footnotemark{%
529     \@ifnextchar [%]
530     \@xfootnotemark
531     {%
532       \stepcounter{footnote}%
533       \protected@xdef\@thefnmark{\thefootnote}%
534       \@footnotemark
535     }%
536   }
537   \renewcommand*\footnotemark{%
538     \@ifnextchar [%]
539     \@xfootnotemark
540     {%
541       \stepcounter{footnote}%
542       \protected@xdef\@thefnmark{\thefootnote}%
543       \FN@pp@footnote\@footnotemark
    again, tidy up if we're not doing multiple option
544     \ifFN@pp@towrite
545       \FN@pp@writetemp
546       \FN@pp@towritefalse
547     \fi
548     }%
549   }

```

`\FN@pp@initialstab` Now the supporting commands...

if we encounter no information in the .aux file, we make a first stab resetting footnote on the page number counter

```

550   \gdef\FN@pp@initial@stab{\@addtoreset{footnote}{page}}
551   \AtBeginDocument{\FN@pp@initial@stab}

```

We use a counter to keep pace with the footnotes: this counter is used in the data that's written to the .aux file, and matched to create the correct footnote numbers on the second and subsequent passes.

```

552   \newcounter{@fnserial}

```

`\FN@pp@cpage` The package requires a “knowledge” of the current page number. It's kept in `\FN@pp@cpage`

```

553   \def\FN@pp@cpage{0}

```

`\footnotehint` However, the progress of page numbers isn't predictable, so we have a flag saying 'reset footnote number'. The flag is for indirect use by people who diddle with the page number, via the `\footnotehint` command, as well as various places where we *know* there could be a discontinuity.

```

554   \FN@pp@footnotehinttrue
555   \newcommand{\footnotehint}{%
556     \setcounter{footnote}{0}%
557     \protected@writeaux\relax{\protect\FN@pp@footnotehinttrue}%
558     \@tempcnta\c@fnserial
559     \advance\@tempcnta\@ne

```

```

560   \global\c@pp@next@reset\@tempcnta
561 }
562 \AtBeginDocument{\protected@writeaux\relax{%
563   \protect\providecommand{\protect\FN@pp@footnotehinttrue}{}}%
564 }%
565 }

```

`\FN@pp@lastfoot` Dummy value for the number of the last footnote we came across.

```

566 \def\FN@pp@lastfoot{-1}

```

`\FN@pp@footnote@aux` The command `\FN@pp@footnote@aux` is written to the `.aux` file for every footnote counter allocated (other than in minipages):

`#1` is the footnote serial number

`#2` is the page the footnote was actually written on

```

567   \newcommand{\FN@pp@footnote@aux}[2]{%
568     \ifnum\FN@pp@lastfoot<#1
569       \ifFN@pp@footnotehint
570         \FN@pp@resetfn{#1}{#2}%
571         \FN@pp@footnotehintfalse
572       \else
573         \gdef\@tempa{#2}%
574         \ifx\@tempa\FN@pp@cpage
575           \else
576             \FN@pp@resetfn{#1}{#2}%
577           \fi
578         \fi
579         \def\FN@pp@lastfoot{#1}%
580 (*PPdebug)
581       \else
582         \ifFN@pp@debug
583           \typeout{not considering footnote serial number #1
584             (last valid was \FN@pp@lastfoot)}%
585         \fi
586 (/PPdebug)
587       \fi

```

Since we've now had at least one item of footnote information from a `.aux` file, we can't allow footnote resetting per page.

```

588   \global\let\FN@pp@initial@stab\relax
589 }

```

`\FN@pp@resetfn` Set the flag to reset the footnote number; this constructs a chain through the footnote serial numbers at the start of each page

```

590   \newcommand{\FN@pp@resetfn}[2]{%
591     \gdef\FN@pp@cpage{#2}%
592     \expandafter\gdef
593       \csname FN@pp@next-\FN@pp@prev@foot\endcsname{#1}%
594     \def\FN@pp@prev@foot{#1}%
595     \expandafter\xdef
596       \csname FN@pp@next-\FN@pp@prev@foot\endcsname{\the\@MM}%
597   }

```

`\FN@pp@prev@foot` The base of the footnote serial number chain (this element is never looked at: footnote serial 1 must always have number 1)

```
598 \newcommand{\FN@pp@prev@foot}{root}
```

again, avoid confusion; also establish \FN@pp@footnote@aux in the .aux file

```
599 \AtBeginDocument{\protected@writeaux\relax{%
600   \protect\providecommand{\protect\FN@pp@footnote@aux}[2]{}}%
601   \c@pp@next@reset\@ne
602 }
```

At end document, establish a new \FN@pp@footnote@aux which checks whether numbers have changed during the scan of the .aux files for changed labels and the like

```
603 \AtEndDocument{\let\FN@pp@footnote@aux\FN@pp@footnote@endaux
604   \def\FN@pp@lastfoot{-1}%
605   \FN@pp@footnotehintfalse
606   \renewcommand{\FN@pp@prev@foot}{root}
607 }
```

\FN@pp@footnote@endaux The footnote analysis command for end document

```
608 \newcommand{\FN@pp@footnote@endaux}[2]{%
609   \ifnum\FN@pp@lastfoot<#1
610     \ifFN@pp@footnotehint
611       \FN@pp@resetfn@end{#1}{#2}%
612       \FN@pp@footnotehintfalse
613     \else
614       \gdef\@tempa{#2}%
615       \ifx\@tempa\FN@pp@cpage
616         \else
617           \FN@pp@resetfn@end{#1}{#2}%
618         \fi
619       \fi
620       \def\FN@pp@lastfoot{#1}%
621 (*PPdebug)
622     \else
623       \ifFN@pp@debug
624         \typeout{not considering footnote serial number #1
625           (last valid was \FN@pp@lastfoot)}%
626       \fi
627 (/PPdebug)
628     \fi
629 }
```

\FN@pp@resetfn@end Deal with the .aux file footnote details, at end document

```
630 \newcommand{\FN@pp@resetfn@end}[2]{%
631   \def\@tempa{#1}%
632   \expandafter\ifx\csname FN@pp@next-\FN@pp@prev@foot\endcsname\@tempa%
633   \else
634     \@tempswatrue
635 (*PPdebug)
636     \ifFN@pp@debug
637       \expandafter\ifx\csname FN@pp@next-\FN@pp@prev@foot\endcsname\relax
638         \ifFN@pp@lastseq\else
639           \typeout{footnote sequence lost between pages
640             \FN@pp@cpage\space and #2}%
641           \global\FN@pp@lastseqtrue
```



```

642         \fi
643     \else
644         \typeout{footnotes changed between pages \FN@pp@cpage\space and #2:
645             next was \csname FN@pp@next-\FN@pp@prev@foot\endcsname, now #1}%
646         \global\FN@pp@lastseqfalse
647     \fi
648 \fi
649 \PPdebug)
650 \fi
651 \gdef\FN@pp@prev@foot{#1}%
652 \gdef\FN@pp@cpage{#2}%
653 }

```

`\clearpage` Now, how do we cope with `\included` documents? We can't insert anything (the `\FN@pp@@clearpage` `includex` package offers `\AtBeginIncludedDocument` but there's no corresponding command for files included by the kernel `\include`. So we insert a footnote hint at every `\clearpage`

```

654 \let\FN@pp@@clearpage\clearpage
655 \renewcommand{\clearpage}{\footnotehint\FN@pp@@clearpage}

```

`\FN@pp@footnote` The business end of the option: a macro to decide on footnote numbers, called from `\footnote` and `\footnotemark` (see above).

```

656 \def\FN@pp@footnote{%
657     \if@minipage\else
658         \global\advance\c@@fnserial\@ne
659     \if@filesw

```

In case we're also doing multiple option, we now save up the command to write to the `.aux` file, and mark we've done so

```

660         \xdef\FN@pp@writetemp{%
661             \noexpand\protected@writeaux\relax{%
662                 \string\FN@pp@footnote@aux
663                 {\the\c@@fnserial}{\noexpand\thepage}%
664             }%
665         }%
666         \FN@pp@towritetrue
667     \fi
668     \ifnum\c@pp@next@reset>\c@@fnserial
669     \else
670         \global\expandafter\csname c@\@mpfn\endcsname\@ne
671         \protected@xdef\@thefnmark{\thempfn}%

```

Now look at the next element in the chain:

```

672         \expandafter\let\expandafter\@tempa
673         \csname FN@pp@next-\number\c@pp@next@reset\endcsname

```

If the chain is broken here, set the next reset point to something (one hopes) infeasibly large... a weak point?

```

674         \ifx\@tempa\relax
675             \global\c@pp@next@reset\@MM
676         \else
677             \global\c@pp@next@reset\@tempa
678         \fi
679     \fi
680 \fi

```

681 }

End of code loaded when `perpage` option is given

682 \fi

Finally, if we're not doing paragraph footnotes, we redefine `\@makefn` to take account of the value of `\footnotemargin`, to impose `\footnotelayout`, and to make the footnote body text hang, if appropriate.

683 \ifFN@para

684 \else

hanging footnote version:

685 \long\def\@makefn#1{%

686 \ifFN@hangfoot

687 \bgroup

get the marker so we can measure it:

688 \setbox\@tempboxa\hbox{%

689 \ifdim\footnotemargin>0pt

690 \hb@xt@\footnotemargin{\@makefnmark\hss}%

691 \else

692 \@makefnmark

693 \fi

694 }%

use the width of the box to set up hanging (potentially for more than one paragraph)

695 \leftmargin\wd\@tempboxa

696 \rightmargin\z@

697 \linewidth \columnwidth

698 \advance \linewidth -\leftmargin

699 \parshape \@ne \leftmargin \linewidth

700 \footnotesize

701 \parskip\hangfootparskip\relax

702 \parindent\hangfootparindent\relax

stop the `\parshape` being overwritten:

703 \@setpar{\@par}}%

and finally put the marker in its chosen place:

704 \leavevmode

705 \llap{\box\@tempboxa}%

706 \else

ordinary (non-hanging) footnote version:

707 \parindent1em

708 \noindent

709 \ifdim\footnotemargin>\z@

710 \hb@xt@\footnotemargin{\hss\@makefnmark}%

711 \else

712 \ifdim\footnotemargin=\z@

713 \llap{\@makefnmark}%

714 \else

715 \llap{\hb@xt@-\footnotemargin{\@makefnmark\hss}}%

716 \fi

717 \fi

```

718     \fi
719     \footnotelayout#1%
      if we're hanging, close the hang group
720     \ifFN@hangfoot
721         \par\egroup
722     \fi
723 }
724 \fi

```

6 Remaining requirements

We have to insert the code that executes the `stable` and `multiple` options. Since `stable` may suppress the setting of a footnote altogether, we put the `multiple` option first, as otherwise we might get isolated superscripted commas that separate footnotes that have otherwise been suppressed.

6.1 The code that executes the multiple option

`\multiplefootnotemarker` This (revised) code derives from a suggestion by Alexander Rozhenko (the author of the *manyfoot* package): the intention is that *footmisc* and *many-foot* should be able to ‘interwork’, in the sense that each would recognise the other’s footnote marks and behave appropriately. The trick is that both `\FN@mf@prepare` and `\FN@mf@check` `\footnote` and `\footnotemark` insert a marker (a cancelling pair of kerns of `\multiplefootnotemarker` (of opposite signs), which is detected in following `\footnote` or `\footnotemark` commands. Note we have to take special precautions to ensure that the kerns are the last things added to the horizontal list by the commands.

```

725 \ifFN@multiplefootnote
726   \providecommand*{\multiplefootnotemarker}{3sp}
727   \providecommand*{\multfootsep}{,}
728   \CheckCommand*\@footnotemark{%
729     \leavevmode
730     \ifhmode\edef\x@sf{\the\spacefactor}\nobreak\fi
731     \@makefnmark
732     \ifhmode\spacefactor\x@sf\fi
733     \relax
734   }
735   \renewcommand*\@footnotemark{%
736     \leavevmode
737     \ifhmode
738       \edef\x@sf{\the\spacefactor}%
739       \FN@mf@check
740       \nobreak
741     \fi
742     \@makefnmark

```

if we’re also doing option `perpage`, write its stuff to the `.aux` file for it, so the *wotsit* node doesn’t interfere with our `\kern` detection.

```

743   \ifFN@pp@towrite
744     \FN@pp@writetemp
745     \FN@pp@towritefalse

```

```

746 \fi
747 \FN@mf@prepare
748 \ifhmode\spacefactor\@x@sf\fi
749 \relax
750 }
751 \def\FN@mf@prepare{%
752 \kern-\multiplefootnotemarker
753 \kern\multiplefootnotemarker\relax
754 }
755 \def\FN@mf@check{%
756 \ifdim\lastkern=\multiplefootnotemarker\relax
757 \edef\@x@sf{\the\spacefactor}%
758 \unkern
759 \textsuperscript{\multfootsep}%
760 \spacefactor\@x@sf\relax
761 \fi
762 }

```

If we're not doing multiple, just create an empty \FN@mf@prepare

```

763 \else
764 \let\FN@mf@prepare\relax
765 \fi

```

6.2 The code that executes the stable option

```

\ifFN@stablefootnote The basic idea is to use the ‘original’ code of \footnote (which this package
\FN@sf@@footnote may have hacked around something chronic) only if we’re in typesetting mode
(as determined by the state of the \protect command. Otherwise, the command
becomes an elaborate multistage ‘gobble’.

766 \ifFN@stablefootnote
767 \let\FN@sf@@footnote\footnote
768 \def\footnote{\ifx\protect\@typeset@protect
769 \expandafter\FN@sf@@footnote
770 \else
771 \expandafter\FN@sf@gobble@opt
772 \fi
773 }

\FN@sf@gobble@opt Define \FN@sf@gobble@opt as a robust command that gobbles either an optional
\FN@sf@gobble@twobracket and a mandatory argument, or just a mandatory one.

774 \edef\FN@sf@gobble@opt{\noexpand\protect
775 \expandafter\noexpand\csname FN@sf@gobble@opt \endcsname}
776 \expandafter\def\csname FN@sf@gobble@opt \endcsname{%
777 \@ifnextchar[%]
778 \FN@sf@gobble@twobracket
779 \@gobble
780 }
781 \def\FN@sf@gobble@twobracket[#1]#2{}

\FN@sf@@footnotemark Now the same for \footnotemark
\FN@sf@gobble@optonly 782 \let\FN@sf@@footnotemark\footnotemark
\FN@sf@gobble@bracket 783 \def\footnotemark{\ifx\protect\@typeset@protect
784 \expandafter\FN@sf@@footnotemark

```

```

785 \else
786 \expandafter\FN@sf@gobble@only
787 \fi
788 }
789 \edef\FN@sf@gobble@only{\noexpand\protect
790 \expandafter\noexpand\csname FN@sf@gobble@only \endcsname}
791 \expandafter\def\csname FN@sf@gobble@only \endcsname{%
792 \ifnextchar[%]
793 \FN@sf@gobble@bracket
794 {}%
795 }
796 \def\FN@sf@gobble@bracket[#1]{}
797 \fi

```

7 Symbol option variants

\setfnsymbol
\FN@fnsymbol@lamport

Lamport’s choice of symbols for `\fnsymbol` wasn’t entirely “traditional”, so we (now) provide alternatives. The `\setfnsymbol` command offers a small number of choices, and the user may define more still, using the `\DefineFnsymbols` or `\DefineFnsymbolsTM` commands, defined below.

```

798 \newcommand\setfnsymbol[1]{%
799 \bsphack
800 \ifundefined{FN@fnsymbol@#1}%
801 {%
802 \PackageError{footmisc}{Symbol style "#1" not known}%
803 \@eha
804 }%
805 \expandafter\let\expandafter\@fnsymbol\csname
806 FN@fnsymbol@#1\endcsname
807 }%
808 \@esphack
809 }

```

The default selection is Lamport’s original, as represented in current L^AT_EX — we preserve it in case we need to “get back” to it.

```

810 \let\FN@fnsymbol@lamport\@fnsymbol
811 \endpackage

```

\if@tempswb
\@tempswbfalse
\@tempswbtrue
\DefineFnsymbols
\@DefineFnsymbols
\@DefineFnsymbols@
\FN@build@symboldef

We need another temp conditional

```

812 \newif\if@tempswb

```

The macro `\DefineFnsymbols` allows the user to define a set of footnote symbols, to be used with the `\setfnsymbol` command. Syntax:

```

\DefineFnsymbols[*]{\set name}{\style}{\symbol list}

```

If the optional asterisk is present, the set defined will produce an error if the symbol number is too large; otherwise it will quietly change to numbering in place of symbol use (a warning is produced at the end of the document). The set name is the future argument of `\setfnsymbol`. The style (default `text`) gives the style the symbols are typeset (this is the *correct* method, but unfortunately not all symbols, even for Lamport’s original set for L^AT_EX `\fnsymbol` may be expressed this way in a sufficiently old L^AT_EX distribution). The symbol list is a set of objects to be used when the set is selected.

Example of use:
define a direct replacement for Lamport's original `\fnsymbol` command —

```
\DefineFNSymbols*{lamport}[math]{*\dagger\ddagger\mathsection
\mathparagraph\|{**}{\dagger\dagger}{\ddagger\ddagger}}%
}
```

Note that doubled-up (and worse — see below) symbols need braces around them.

```
813 \newcommand{\DefineFNSymbols}{%
814     \ifstar{\@tempswbtrue\@DefineFNSymbols}%
815     {\@tempswbfalse\@DefineFNSymbols}%
816 }
817 \newcommand{\@DefineFNSymbols}[1]{%
818     \@ifnextchar[% ]
819     {\@DefineFNSymbols@{#1}}{\@DefineFNSymbols@{#1}[text]}%
820 }
821 \def\@DefineFNSymbols@#1[#2]#3{%
822     \expandafter\ifx\csname FN@fnsymbol@#1\endcsname\relax
823     \PackageInfo{footmisc}{Declaring symbol style #1}%
824     \else
825     \PackageWarning{footmisc}{Redeclaring symbol style #1}%
826     \fi
827     \toks@{ }%
828     \def\@tempb{\end}%
829     \FN@build@symboldef#3\end
830     \def\@tempc{math}%
831     \def\@tempd{#2}%
832     \expandafter\xdef\csname FN@fnsymbol@#1\endcsname##1{%
833         \ifx\@tempc\@tempd
834             \noexpand\ensuremath
835         \else
836             \noexpand\nfss@text
837         \fi
838         {%
839             \noexpand\ifcase##1%
840             \the\toks@
841             \noexpand\else
842             \if@tempswb
843                 \noexpand\@ctrerr
844             \else
845                 \noexpand\@arabic##1\noexpand\FN@orange##1%
846             \fi
847             \noexpand\fi
848         }%
849     }%
850 }
851 \def\FN@build@symboldef#1{%
852     \def\@tempa{#1}%
853     \ifx\@tempa\@tempb
854     \else
855         \toks@\expandafter{\the\toks@\or#1}%
856         \expandafter\FN@build@symboldef
857     \fi
858 }
```

`\DefineFNsymbolsTM` Now do the same job for the “modern” way of having both text and maths variants of everything.

`\@DefineFNsymbolsTM`

`\FN@build@symboldefTM`

```

859 \newcommand{\DefineFNsymbolsTM}{%
860     \ifstar{\@tempswbtrue\@DefineFNsymbolsTM}%
861     {\@tempswbfalse\@DefineFNsymbolsTM}}%
862 \newcommand{\@DefineFNsymbolsTM}[2]{%
863     \expandafter\ifx\csname FN@fnsymbol@#1\endcsname\relax
864     \PackageInfo{footmisc}{Declaring symbol style #1}%
865     \else
866     \PackageWarning{footmisc}{Redeclaring symbol style #1}%
867     \fi
868     \toks@{}%
869     \def\@tempb{\end}%
870     \FN@build@symboldefTM#2\end\@null
871     \expandafter\xdef\csname FN@fnsymbol@#1\endcsname##1{%
872         \noexpand\ifcase##1%
873             \the\toks@
874         \noexpand\else
875             \if@tempswb
876             \noexpand\@ctrerr
877             \else
878             \noexpand\@arabic##1\noexpand\FN@orange##1%
879             \fi
880         \noexpand\fi
881     }%
882 }%

Note that this version has two variants of every definition, so needs two stopper
codes above.

883 \def\FN@build@symboldefTM#1#2{%
884     \def\@tempa{#1}%
885     \ifx\@tempa\@tempb
886     \else
887         \toks@\expandafter{\the\toks@\or\TextOrMath{#1}{#2}}%
888         \expandafter\FN@build@symboldefTM
889     \fi
890 }
```

`\TextOrMath` This is a stripped down (e-TeX only) version of what appears in fixltx2e. If the command’s already defined, we assume it’s that version.

```

891 \@ifundefined{TextOrMath}{%
892     \@ifundefined{eTeXversion}{%
893         \PackageError{footmisc}{Can't define commands for footnote symbol}%
894         {Use e-LaTeX, or load package fixltx2e before
895         footmisc}%
896     }{%
897         \protected\expandafter\def\csname TextOrMath\space\endcsname{%
898             \ifmmode \expandafter\@secondoftwo
899             \else \expandafter\@firstoftwo \fi
900         }
901         \edef\TextOrMath#1#2{%
902             \expandafter\noexpand\csname TextOrMath\space\endcsname
903             {#1}{#2}%
904         }%

```

```

905 }%
906 {}

```

`\FN@orange` Macros to deal with footnote symbols going out of range (when they're allowed to—e.g., in the `symbol*` option).

```

\@fnsymbol@orange
\@diagnose@fnsymbol@orange 907 \def\FN@orange#1{%
908   \bsphack
909   \PackageInfo{footmisc}{Footnote number \number#1 out of range}%
910   \protect\@fnsymbol@orange
911   \esphack
912 }
913 \global\let\@diagnose@fnsymbol@orange\relax
914 \AtEndDocument{\@diagnose@fnsymbol@orange}
915 \def\@fnsymbol@orange{%
916   \gdef\@diagnose@fnsymbol@orange{%
917     \PackageWarningNoLine{footmisc}{Some footnote number(s)
918       were out of range
919       \MessageBreak
920       see log for details%
921     }%
922   }%
923 }

```

`\textbardbl` This is defined in recent L^AT_EX releases, but not in (for example) that distributed with the last release of t_EX. Since it's needed in some symbol set definitions (including Lamport's) we define it here.

```

924 \@ifundefined{textbardbl}{%
925   \DeclareTextSymbol{\textbardbl}{OMS}{107}%
926   \DeclareTextSymbolDefault{\textbardbl}{TS1}}{}%

```

(This definition comes from the L^AT_EX sources.)

`\FN@fnsymbol@bringhurst` These macros provide replacement orderings (and symbol sets) for footnote symbols, plus a robust version of the original Lamport set, and an extended version of Lamport's original

```

\FN@fnsymbol@chicago
\FN@fnsymbol@wiley
\FN@fnsymbol@lamport-robust
\FN@fnsymbol@lamport 927 \DefineFNSymbolsTM*{bringhurst}{%
928   \textasteriskcentered *
929   \textdagger \dagger
930   \textdaggerdbl \ddagger
931   \textsection \mathsection
932   \textbardbl \||%
933   \textparagraph \mathparagraph
934 }%
935 \DefineFNSymbolsTM*{chicago}{%
936   \textasteriskcentered *
937   \textdagger \dagger
938   \textdaggerdbl \ddagger
939   \textsection \mathsection
940   \textbardbl \||%
941   \#\#%
942 }%
943 \DefineFNSymbolsTM*{wiley}{
944   \textasteriskcentered *
945   {\textasteriskcentered\textasteriskcentered}{**}%

```



```

946 \textdagger \dagger
947 \textdaggerdbl \ddagger
948 \textsection \mathsection
949 \textparagraph \mathparagraph
950 \textbardbl \||
951 }%
952 \DefineFNSymbolsTM{\lamport-robust}{
953 \textasteriskcentered *
954 \textdagger \dagger
955 \textdaggerdbl \ddagger
956 \textsection \mathsection
957 \textparagraph \mathparagraph
958 \textbardbl \||
959 {\textasteriskcentered\textasteriskcentered}{**}%
960 {\textdagger\textdagger}{\dagger\dagger}%
961 {\textdaggerdbl\textdaggerdbl}{\ddagger\ddagger}%
962 }
963 \DefineFNSymbolsTM*\lamport*}{%
964 \textasteriskcentered *
965 \textdagger \dagger
966 \textdaggerdbl \ddagger
967 \textsection \mathsection
968 \textparagraph \mathparagraph
969 \textbardbl \||
970 {\textasteriskcentered\textasteriskcentered}{**}%
971 {\textdagger\textdagger}{\dagger\dagger}%
972 {\textdaggerdbl\textdaggerdbl}{\ddagger\ddagger}%
973 {\textsection\textsection}{\mathsection\mathsection}%
974 {\textparagraph\textparagraph}{\mathparagraph\mathparagraph}%
975 {\textasteriskcentered\textasteriskcentered\textasteriskcentered}{***}%
976 {\textdagger\textdagger\textdagger}{\dagger\dagger\dagger}%
977 {\textdaggerdbl\textdaggerdbl\textdaggerdbl}{\ddagger\ddagger\ddagger}%
978 {\textsection\textsection\textsection}%%
979 {\mathsection\mathsection\mathsection}%
980 {\textparagraph\textparagraph\textparagraph}%%
981 {\mathparagraph\mathparagraph\mathparagraph}%
982 }
983 \setfnsymbol{\lamport*}
984 \DefineFNSymbolsTM{\lamport*-robust}{%
985 \textasteriskcentered *
986 \textdagger \dagger
987 \textdaggerdbl \ddagger
988 \textsection \mathsection
989 \textparagraph \mathparagraph
990 \textbardbl \||
991 {\textasteriskcentered\textasteriskcentered}{**}%
992 {\textdagger\textdagger}{\dagger\dagger}%
993 {\textdaggerdbl\textdaggerdbl}{\ddagger\ddagger}%
994 {\textsection\textsection}{\mathsection\mathsection}%
995 {\textparagraph\textparagraph}{\mathparagraph\mathparagraph}%
996 {\textasteriskcentered\textasteriskcentered\textasteriskcentered}{***}%
997 {\textdagger\textdagger\textdagger}{\dagger\dagger\dagger}%
998 {\textdaggerdbl\textdaggerdbl\textdaggerdbl}{\ddagger\ddagger\ddagger}%
999 {\textsection\textsection\textsection}%%

```

```

1000     {\mathsection\mathsection\mathsection}%
1001     {\textparagraph\textparagraph\textparagraph}%
1002     {\mathparagraph\mathparagraph\mathparagraph}%
1003 }

```

8 Other miscellaneous commands

8.1 Footnote references

`\footref` Syntax: `\footref{<label-name>}`

One often wishes to refer to a footnote; in some circumstances, `\footnotemark` just isn't good enough (for example, inside a `minipage`, when `\footnotemark` creates a reference to footnotes outside the `minipage`).

`\footref` addresses this problem by making a label reference that actually looks like a `\footnotemark`. (The command is available in the `memoir` class, and we therefore `\providecommand` it rather than defining it “outright”.)

```

1004 \providecommand*{\footref}[1]{%
1005     \begingroup
1006     \unrestored@protected@xdef\@thefnmark{\ref{#1}}%
1007     \endgroup
1008     \@footnotemark
1009 }

```

8.2 Minipage \footnotemarks

`\mpfootnotemark` Syntax: `\mpfootnotemark[<number>]`

Here we define `\mpfootnotemark`, which has the same syntax as `\footnotemark`, and which applies the semantics of `\footnotemark` to the minipage footnote series.

```

1010 \newcommand\mpfootnotemark{%
1011     \@ifnextchar[%
1012         \@xmpfootnotemark
1013     {%
1014         \stepcounter\@mpfn
1015         \protected@xdef\@thefnmark{\thempfn}%
1016         \@footnotemark
1017     }%
1018 }
1019 \def\@xmpfootnotemark[#1]{%
1020     \begingroup
1021     \csname c@\@mpfn\endcsname #1\relax
1022     \unrestored@protected@xdef\@thefnmark{\thempfn}%
1023     \endgroup
1024     \@footnotemark
1025 }

1026 \endinput
1027 </package>

```

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