

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

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Support

Some support of this package is available *for unchanged copies of the package* via email to me at the address given in the footnote. Support will remain available at least as long as the address remains valid. I don't guarantee anything, but I will probably look at any bug reports you may submit, and may correct problems reported (either in my code or in yours...).

Copyright statement

Program: `footmisc.dtx`

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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.ⁱ

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. The `ragged` option simply sets `\footnotelayout` to `\raggedright`. (Hint: if you intend to use the `ragged2e` package, load it before `footmisc` — if `footmisc` finds `\RaggedRight` available, it 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 L^AT_EX manuals such as Lamport’s `the` job performed by the option is very simple, and doesn’t really need a package).

Using symbols to ‘number’ your footnotes can be problematic: there is a limited number of symbols, and L^AT_EX 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 L^AT_EX 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. L^AT_EX 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. L^AT_EX’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:

`\hangfootparskip` `0.5\baselineskip` 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.

`\hangfootparindent` `0em`

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:

`\mpfootnoterule` for use in minipages
`\pagefootnoterule` for normal footnotes on regular pages
`\splitfootnoterule` 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, \LaTeX ’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, \LaTeX 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 line spacing is calculated in footnotes. `Footmisc` knows about this, and preserves the change. However, you *must* load `setspace` *before* `footmisc`.

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` package (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 form isn’t used in this package ... yet):

```
@@dvance@macro
\@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 L^AT_EX 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 T_EXbook, p.398 ff. ("Dirty Tricks"), though it does (of course) avoid redefining `\` which has some other (somewhat significant) uses in L^AT_EX! The user should be aware of Knuth's note on the limitations of this method of doing the job: the T_EX stack is used four times per footnote, and the stack is limited (see the T_EXbook, 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 L^AT_EX, 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\relax
45 \DeclareOption{ragged}{%
46   \@ifundefined{RaggedRight}%
47   {\def\footnotelayout{\linepenalty50 \raggedright}}%
48   {\def\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 `\@makefn` 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@tempwa \ifFN@bottom
103 \ifFN@para \@tempwattrue \fi
104 \if@tempwa
```

... 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{2003/12/01}{%
106   \CheckCommand*\@makecol{\ifvoid \footins
107     \setbox\@outputbox \box\@cclv
108     \else
109       \setbox\@outputbox \vbox{%
110         \boxmaxdepth\@maxdepth
111         \@tempdima\dp\@cclv
112         \unvbox\@cclv
113         \vskip \skip\footins
114         \color@begingroup
115           \normalcolor\footnoterule
116           \unvbox\footins
117         \color@endgroup
118       }%
119     \fi
120     \let \@elt \relax
121     \xdef\@freelist{\@freelist\@midlist}%
122     \global\let\@midlist\@empty
123     \@combinefloats
124     \ifvbox\@kludgeins
125       \@makespecialcolbox
126     \else
127       \setbox\@outputbox \vbox to\@colht{%
128         \@texttop \dimen@\dp\@outputbox
129         \unvbox\@outputbox
130         \vskip -\dimen@\@textbottom
131       }%
132     \fi
133     \global\maxdepth\@maxdepth
134   }
135 }{%
136 \@ifl@t@r\fmtversion{1999/12/01}{%
137   \CheckCommand*\@makecol{\ifvoid \footins
138     \setbox\@outputbox \box\@cclv
139     \else
140       \setbox\@outputbox \vbox{%
141         \boxmaxdepth\@maxdepth
142         \@tempdima\dp\@cclv
143         \unvbox\@cclv
144         \vskip \skip\footins
```

```

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

```

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

```
195 \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`.

```
196 \FN@temptoken{%
197   \toks@\expandafter{\the\toks@
198     \vskip\skip\footins
199     \color@begingroup
200       \normalcolor\footnoterule
201       \global\setbox\FN@tempboxc\vbox{\makefootnoteparagraph}%
202       \unvbox\FN@tempboxc
203     \color@endgroup
204   }%
205 }%
```

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

```
206 \else
207   \FN@temptoken{%
208     \toks@\expandafter{\the\toks@
209       \vskip\skip\footins
210       \color@begingroup
211         \normalcolor\footnoterule
212         \unvbox\footins
213       \color@endgroup
214     }%
215   }%
216 \fi
```

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

```
217 \ifFN@bottom
218   \toks@{\setbox\@outputbox \box\@cclv
219     \xdef\@freelist{\@freelist\@midlist}%
220     \global\let\@midlist\@empty
221     \@combinefloats
222     \ifvoid\footins
223     \else
224       \setbox\@outputbox \vbox\bgroup
225         \boxmaxdepth\@maxdepth
226         \unvbox\@outputbox
227         \vfill\relax
228     }
229   \the\FN@temptoken
230   \toks@\expandafter{\the\toks@\egroup\fi}
```

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

```
231 \else
232   \toks@{\ifvoid\footins
233     \setbox\@outputbox\box\@cclv
234   \else
```

```

235     \setbox\@outputbox \vbox\bgroup
236     \boxmaxdepth\@maxdepth
237     \unvbox\@cclv
238   }
239   \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@`.

```

240   \toks@\expandafter{\the\toks@
241     \egroup
242     \fi
243     \xdef\@freelist{\@freelist\@midlist}%
244     \global\let\@midlist\@empty
245     \@combinefloats
246   }%
247   \fi

```

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

```

248   \toks@\expandafter{\the\toks@
249     \ifvbox\@kludgeins
250       \@makespecialcolbox
251     \else
252       \setbox\@outputbox \vbox to\@colht{%
253         \@texttop \dimen@\dp\@outputbox
254         \unvbox\@outputbox
255         \vskip -\dimen@\@textbottom
256       }%
257     \fi
258     \global\maxdepth\@maxdepth
259   }
260   \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.

```

261 \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:

```

262 \newif\ifFN@setspace
263 \@ifpackageloaded{setspace}{%
264   \FN@setspacetrue
265   \CheckCommand\@footnotetext[1]{%
266     \insert\footins{%
267       \def\baselinestretch {\setspace@singlespace}%
268       \reset@font\footnotesize
269       \interlinepenalty\interfootnotelinepenalty
270       \splittopskip\footnotesep
271       \splitmaxdepth \dp\strutbox
272       \floatingpenalty\@MM
273       \hsize\columnwidth

```

```

274     \@parboxrestore
275     \protected@edef\@currentlabel{%
276       \csname p@footnote\endcsname\@thefnmark
277     }%
278     \color@begingroup
279       \@makefntext{\rule\z@\footnotesep
280         \ignorespaces#1\@finalstrut\strutbox
281       }%
282     \color@endgroup
283   }%
284 }%
285 }{%
286   \FN@setspacefalse
287   \@ifl@t@r\fmtversion{1997/12/01}{%
288     \CheckCommand\@footnotetext[1]{%
289       \insert\footins{%
290         \reset@font\footnotesize
291         \interlinepenalty\interfootnotelinepenalty
292         \splittopskip\footnotesep
293         \splitmaxdepth \dp\strutbox
294         \floatingpenalty\@MM
295         \hsize\columnwidth
296         \@parboxrestore
297         \protected@edef\@currentlabel{%
298           \csname p@footnote\endcsname\@thefnmark
299         }%
300         \color@begingroup
301         \@makefntext{\rule\z@\footnotesep
302           \ignorespaces#1\@finalstrut\strutbox
303         }%
304         \color@endgroup
305       }%
306     }%
307   }{%
308     \CheckCommand\@footnotetext[1]{%
309       \insert\footins{%
310         \reset@font\footnotesize
311         \interlinepenalty\interfootnotelinepenalty
312         \splittopskip\footnotesep
313         \splitmaxdepth \dp\strutbox
314         \floatingpenalty\@MM
315         \hsize\columnwidth
316         \@parboxrestore
317         \protected@edef\@currentlabel
318         {\csname p@footnote\endcsname\@thefnmark}%
319         \color@begingroup
320         \@makefntext{\rule\z@\footnotesep
321           \ignorespaces#1\@finalstrut\strutbox
322         }
323       \color@endgroup
324     }%

```

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

```

325 }%
326 }%
327 }

```

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

```

328 \ifFN@para
329   \renewcommand\@footnotetext[1]{%
330     \insert\footins{%
insert compatibility code with setspace.sty if necessary
331       \ifFN@setspace
332         \def\baselinestretch {\setspace@singlespace}%
333       \fi
334       \reset@font\footnotesize
335       \interlinepenalty\interfootnotelinepenalty
336       \splittopskip\footnotesep
337       \splitmaxdepth \dp\strutbox
338       \floatingpenalty\@MM
339       \hsize\columnwidth
340       \@parboxrestore
341     \protected@edef\@currentlabel{\csname p@footnote\endcsname\@thefnmark}%
342     \color@begingroup

```

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

```

343     \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.

```

344     \@makefnintext{\ignorespaces#1\strut

```

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

```

345         \penalty-10\relax
346         \hskip\footglue
347     }% end of \@makefnintext parameter
348 }% end of \hbox
349 \dp\FN@tempboxa=0pt
350 \ifFN@etex
351   \ht\FN@tempboxa=\dimexpr\wd\FN@tempboxa *
352     \footnotebaselineskip / \columnwidth\relax
353   \else
354     \ht\FN@tempboxa=\fudgefactor\wd\FN@tempboxa
355   \fi
356   \box\FN@tempboxa
357 \color@endgroup
358 }%
359 \FN@mfb@prepare
360 }

```

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...

```

361 \else
362   \ifFN@sidefn
363     \renewcommand\@footnotetext[1]{%
364       \marginpar{%

```

```

insert compatibility code with setspace.sty if necessary
365     \ifFN@setspace
366     \def\baselinestretch {\setspace@singlespace}%
367     \fi
368     \reset@font\footnotesize
369     \protected@edef\@currentlabel{%
370     \csname p@footnote\endcsname\@thefnmark
371     }%
372     \color@begingroup
373     \@makefnfntext{%
374     \ignorespaces#1%
375     }%
376     \color@endgroup
377     }%
378     \FN@mf@prepare
379     }%
380 \else
381     \renewcommand\@footnotetext[1]{%
382     \insert\footins{%
insert compatibility code with setspace.sty if necessary
383     \ifFN@setspace
384     \def\baselinestretch {\setspace@singlespace}%
385     \fi
386     \reset@font\footnotesize
387     \interlinepenalty\interfootnotelinepenalty
388     \splittopskip\footnotesep
389     \splitmaxdepth \dp\strutbox
390     \floatingpenalty\@MM
391     \hsize\columnwidth
392     \@parboxrestore
393     \protected@edef\@currentlabel{%
394     \csname p@footnote\endcsname\@thefnmark
395     }%
396     \color@begingroup
397     \@makefnfntext{%
398     \rule\z@\footnotesep
399     \ignorespaces#1\@finalstrut\strutbox
400     }%
401     \color@endgroup
402     }%
403     \FN@mf@prepare
404     }%
405     \fi
406 \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.

```
407 \ifFN@para
```

```

\FN@tempboxa We need some temporary boxes, and LATEX only defines one
\FN@tempboxb
\FN@tempboxb

```

```

408 \let\FN@tempboxa\@tempboxa
409 \newbox\FN@tempboxb
410 \newbox\FN@tempboxc

```

`\footglue` A direct crib from the T_EXbook:

```

411 \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.

```

412 \long\def\@makefntext#1{\leavevmode
413   \@makefnmark\nobreak
414   \hskip.5em\relax#1%
415 }

```

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

```

416 \newdimen\footnotebaselineskip
417 {%
418   \footnotesize
419   \global
420   \footnotebaselineskip=\normalbaselineskip
421 }

```

`\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).

```

422 \ifFN@etex
423 \else
424   \@tempdima=\footnotebaselineskip \multiply\@tempdima by 1024
425   \divide \@tempdima by \columnwidth \multiply\@tempdima by 64
426   \xdef\fudgefactor{\strip@pt\@tempdima }%
427 \fi

```

`\makefootnoteparagraph` For use in the output routine

```

428 \long\def\makefootnoteparagraph{\unvbox\footins \makehboxofhboxes
429   \setbox\FN@tempboxa=\hbox{\unhbox\FN@tempboxa \removehboxes}

```

Now we are ready to set the paragraph:

```

430   \hsize\columnwidth
431   \@parboxrestore
432   \baselineskip=\footnotebaselineskip
433   \noindent
434   \rule{\z@}{\footnotesep}%
435   \unhbox\FN@tempboxa\par
436 }

```

`\makehboxofhboxes` Support code for `\makefootnoteparagraph`

```

\removehboxes 437 \def\makehboxofhboxes{\setbox\FN@tempboxa=\hbox{}%
438   \loop

```

```

439     \setbox\FN@tempboxb=\lastbox
440     \ifhbox\FN@tempboxb
441     \setbox\FN@tempboxa=\hbox{\box\FN@tempboxb\unhbox\FN@tempboxa}%
442   \repeat
443 }
444 \def\removehboxes{\setbox\FN@tempboxa=\lastbox
445   \ifhbox
446     \FN@tempboxa{\removehboxes}%
447   \unhbox\FN@tempboxa
448   \fi
449 }
450 \fi

```

5.4 The other footnote commands

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

```
451 \newif\ifFN@pp@footnotehint
```

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

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

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

```
453 \newif\ifFN@pp@towrite
454 \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:

```
455 (*PPdebug)
456 \newif\ifFN@pp@lastseq
457 \global\FN@pp@lastseqfalse
458 </PPdebug>

```

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

```

459 \ifFN@perpage
460   \CheckCommand*\footnote{\@ifnextchar [%]
461     \@xfootnote
462     {%
463       \stepcounter\@mpfn \protected@xdef\@thefnmark{\thempfn}%
464       \@footnotemark \@footnotetext
465     }%
466   }
467   \renewcommand*\footnote{\@ifnextchar [%]
468     \@xfootnote
469     {%
470       \stepcounter\@mpfn \protected@xdef\@thefnmark{\thempfn}%
471       \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:

```
472   \ifFN@pp@towrite
```

```

473     \FN@pp@writetemp
474     \FN@pp@towritefalse
475     \fi
476     \@footnotetext
477 }%
478 }

And the analagous change for \footnotemark
479 \CheckCommand*\footnotemark{%
480   \@ifnextchar [%]
481   \@xfootnotemark
482   {%
483     \stepcounter{footnote}%
484     \protected@xdef\@thefnmark{\thefootnote}%
485     \@footnotemark
486   }%
487 }
488 \renewcommand*\footnotemark{%
489   \@ifnextchar [%]
490   \@xfootnotemark
491   {%
492     \stepcounter{footnote}%
493     \protected@xdef\@thefnmark{\thefootnote}%
494     \FN@pp@footnote\@footnotemark

```

again, tidy up if we're not doing multiple option

```

495     \ifFN@pp@twrite
496     \FN@pp@writetemp
497     \FN@pp@towritefalse
498     \fi
499 }%
500 }

```

`\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

```

501 \gdef\FN@pp@initial@stab{\@addtoreset{footnote}{page}}
502 \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.

```

503 \newcounter{fnserial}

```

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

```

504 \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.

```

505 \FN@pp@footnotehinttrue
506 \newcommand{\footnotehint}{%

```

```

507 \setcounter{footnote}{0}%
508 \protected@writeaux\relax{\protect\FN@pp@footnotehinttrue}%
509 \@tempcnta\c@fnserial
510 \advance\@tempcnta\@ne
511 \global\c@pp@next@reset\@tempcnta
512 }
513 \AtBeginDocument{\protected@writeaux\relax{%
514 \protect\providecommand{\protect\FN@pp@footnotehinttrue}{}}%
515 }%
516 }

```

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

```
517 \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

```

518 \newcommand{\FN@pp@footnote@aux}[2]{%
519 \ifnum\FN@pp@lastfoot<#1
520 \ifFN@pp@footnotehint
521 \FN@pp@resetfn{#1}{#2}%
522 \FN@pp@footnotehintfalse
523 \else
524 \gdef\@tempa{#2}%
525 \ifx\@tempa\FN@pp@cpage
526 \else
527 \FN@pp@resetfn{#1}{#2}%
528 \fi
529 \fi
530 \def\FN@pp@lastfoot{#1}%
531 {*PPdebug}
532 \else
533 \ifFN@pp@debug
534 \typeout{not considering footnote serial number #1
535 (last valid was \FN@pp@lastfoot)}%
536 \fi
537 {/PPdebug}
538 \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.

```

539 \global\let\FN@pp@initial@stab\relax
540 }

```

`\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

```

541 \newcommand{\FN@pp@resetfn}[2]{%
542 \gdef\FN@pp@cpage{#2}%
543 \expandafter\gdef
544 \csname FN@pp@next-\FN@pp@prev@foot\endcsname{#1}%
545 \def\FN@pp@prev@foot{#1}%
546 \expandafter\xdef
547 \csname FN@pp@next-\FN@pp@prev@foot\endcsname{\the\@MM}%

```

548 }

`\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)

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

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

```
550 \AtBeginDocument{\protected@writeaux\relax{%
551   \protect\providecommand{\protect\FN@pp@footnote@aux}[2]{}%
552   \c@pp@next@reset\@ne
553 }
```

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

```
554 \AtEndDocument{\let\FN@pp@footnote@aux\FN@pp@footnote@endaux
555   \def\FN@pp@lastfoot{-1}%
556   \FN@pp@footnotehintfalse
557   \renewcommand{\FN@pp@prev@foot}{root}
558 }
```

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

```
559 \newcommand{\FN@pp@footnote@endaux}[2]{%
560   \ifnum\FN@pp@lastfoot<#1
561     \ifFN@pp@footnotehint
562       \FN@pp@resetfn@end{#1}{#2}%
563       \FN@pp@footnotehintfalse
564     \else
565       \gdef\@tempa{#2}%
566       \ifx\@tempa\FN@pp@cpage
567         \else
568           \FN@pp@resetfn@end{#1}{#2}%
569         \fi
570       \fi
571       \def\FN@pp@lastfoot{#1}%
572 (*PPdebug)
573     \else
574       \ifFN@pp@debug
575         \typeout{not considering footnote serial number #1
576           (last valid was \FN@pp@lastfoot)}%
577       \fi
578 (/PPdebug)
579     \fi
580 }
```

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

```
581 \newcommand{\FN@pp@resetfn@end}[2]{%
582   \def\@tempa{#1}%
583   \expandafter\ifx\c@name\FN@pp@next-\FN@pp@prev@foot\endcsname\@tempa%
584   \else
585     \@tempswatruer
586 (*PPdebug)
587   \ifFN@pp@debug
588     \expandafter\ifx\c@name\FN@pp@next-\FN@pp@prev@foot\endcsname\relax
```

```

589     \ifFN@pp@lastseq\else
590     \typeout{footnote sequence lost between pages
591     \FN@pp@cpage\space and #2}%
592     \global\FN@pp@lastseqtrue
593     \fi
594     \else
595     \typeout{footnotes changed between pages \FN@pp@cpage\space and #2:
596     next was \csname FN@pp@next-\FN@pp@prev@foot\endcsname, now #1}%
597     \global\FN@pp@lastseqfalse
598     \fi
599     \fi
600 \end{PPdebug}
601     \fi
602     \gdef\FN@pp@prev@foot{#1}%
603     \gdef\FN@pp@cpage{#2}%
604 }

```

`\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`

```

605 \let\FN@pp@clearpage\clearpage
606 \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).

```

607 \def\FN@pp@footnote{%
608   \if@minipage\else
609     \global\advance\c@@fnserial\@ne
610     \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

```

611     \xdef\FN@pp@writetemp{%
612     \noexpand\protected@writeaux\relax{%
613     \string\FN@pp@footnote@aux
614     {\the\c@@fnserial}{\noexpand\thepage}}%
615     }%
616     }%
617     \FN@pp@towritetrue
618     \fi
619     \ifnum\c@pp@next@reset>\c@@fnserial
620     \else
621     \global\expandafter\csname c@\mpfn\endcsname\@ne
622     \protected@xdef\@thefnmark{\thempfn}%

```

Now look at the next element in the chain:

```

623     \expandafter\let\expandafter\@tempa
624     \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?

```

625     \ifx\@tempa\relax
626     \global\c@pp@next@reset\@MM
627     \else

```

```

628     \global\c@pp@next@reset\@tempa
629     \fi
630   \fi
631 \fi
632 }

```

End of code loaded when `perpage` option is given

```
633 \fi
```

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

```

634 \ifFN@para
635 \else
    hanging footnote version:
636   \long\def\@makefntext#1{%
637     \ifFN@hangfoot
638       \bgroup
        get the marker so we can measure it:
639       \setbox\@tempboxa\hbox{%
640         \ifdim\footnotemargin>0pt
641           \hb@xt@\footnotemargin{\@makefnmark\hss}%
642         \else
643           \@makefnmark
644         \fi
645       }%

```

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

```

646     \leftmargin\wd\@tempboxa
647     \rightmargin\z@
648     \linewidth \columnwidth
649     \advance \linewidth -\leftmargin
650     \parshape \@ne \leftmargin \linewidth
651     \footnotesize
652     \parskip\hangfootparskip\relax
653     \parindent\hangfootparindent\relax

```

stop the `\parshape` being overwritten:

```
654     \setpar{\@par}}%
```

and finally put the marker in its chosen place:

```

655     \leavevmode
656     \llap{\box\@tempboxa}%
657   \else

```

ordinary (non-hanging) footnote version:

```

658     \parindent1em
659     \noindent
660     \ifdim\footnotemargin>\z@
661       \hb@xt@ \footnotemargin{\hss\@makefnmark}%
662     \else
663       \ifdim\footnotemargin=\z@
664         \llap{\@makefnmark}%

```

```

665     \else
666         \llap{\hb@xt@ -\footnotemargin{\@makefnmark\hss}}%
667     \fi
668     \fi
669     \fi
670     \footnotelayout#1%
    if we're hanging, close the hang group
671     \ifFN@hangfoot
672         \par\egroup
673     \fi
674 }
675 \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` `\footnote` and `\FN@mf@check` `\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.

```

676 \ifFN@multiplefootnote
677   \providecommand*\multiplefootnotemarker}{3sp}
678   \providecommand*\multfootsep}{,}
679   \CheckCommand*\@footnotemark{%
680     \leavevmode
681     \ifhmode\edef\x@sf{\the\spacefactor}\nobreak\fi
682     \@makefnmark
683     \ifhmode\spacefactor\x@sf\fi
684     \relax
685   }
686   \renewcommand*\@footnotemark{%
687     \leavevmode
688     \ifhmode
689       \edef\x@sf{\the\spacefactor}%
690       \FN@mf@check
691       \nobreak
692     \fi
693     \@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.

```

694 \ifFN@pp@twrite
695 \FN@pp@writetemp
696 \FN@pp@towritefalse
697 \fi
698 \FN@mf@prepare
699 \ifhmode\spacefactor\@x@sf\fi
700 \relax
701 }
702 \def\FN@mf@prepare{%
703 \kern-\multiplefootnotemarker
704 \kern\multiplefootnotemarker\relax
705 }
706 \def\FN@mf@check{%
707 \ifdim\lastkern=\multiplefootnotemarker\relax
708 \edef\@x@sf{\the\spacefactor}%
709 \unkern
710 \textsuperscript{\multfootsep}%
711 \spacefactor\@x@sf\relax
712 \fi
713 }

```

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

```

714 \else
715 \let\FN@mf@prepare\relax
716 \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 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’.

```

717 \ifFN@stablefootnote
718 \let\FN@sf@@footnote\footnote
719 \def\footnote{\ifx\protect\@typeset@protect
720 \expandafter\FN@sf@@footnote
721 \else
722 \expandafter\FN@sf@gobble@opt
723 \fi
724 }

```

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

```

725 \edef\FN@sf@gobble@opt{\noexpand\protect
726 \expandafter\noexpand\csname FN@sf@gobble@opt \endcsname}
727 \expandafter\def\csname FN@sf@gobble@opt \endcsname{%
728 \@ifnextchar [%]
729 \FN@sf@gobble@twobraceket
730 \@gobble
731 }
732 \def\FN@sf@gobble@twobraceket[#1]#2{}

```

`\FN@sf@@footnotemark` Now the same for `\footnotemark`
`\FN@sf@gobble@optonly`
`\FN@sf@gobble@bracket`

```

733 \let\FN@sf@@footnotemark\footnotemark
734 \def\footnotemark{\ifx\protect\@typeset@protect
735   \expandafter\FN@sf@@footnotemark
736   \else
737   \expandafter\FN@sf@gobble@optonly
738   \fi
739 }
740 \edef\FN@sf@gobble@optonly{\noexpand\protect
741   \expandafter\noexpand\csname FN@sf@gobble@optonly \endcsname}
742 \expandafter\def\csname FN@sf@gobble@optonly \endcsname{%
743   \@ifnextchar [%]
744     \FN@sf@gobble@bracket
745     {}%
746 }
747 \def\FN@sf@gobble@bracket[#1]{}
748 \fi

```

```

\setfnsymbol
\FN@fnsymbol@lamport

```

7 Symbol option variants

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 (perhaps there's a future in letting the user loose here ... can't think of a syntax just now).

```

749 \newcommand\setfnsymbol[1]{%
750   \@bsphack
751   \@ifundefined{FN@fnsymbol@#1}%
752   {%
753     \PackageError{footmisc}{Symbol style "#1" not known}%
754     \@eha
755   }{%
756     \expandafter\let\expandafter\@fnsymbol\csname
757       FN@fnsymbol@#1\endcsname
758   }%
759   \@esphack
760 }
761 \let\FN@fnsymbol@lamport\@fnsymbol
762 \</package>

```

```

\if@tempwb We need another temp conditional
\@tempwbfalse 763 \newif\if@tempwb
\@tempwbtrue

```

```

\DefineFnsymbols The macro \DefineFnsymbols allows the user to define a set of footnote symbols,
\@DefineFnsymbols to be used with the \setfnsymbol command. Syntax:
\@DefineFnsymbols@ \DefineFnsymbols[*]{\set name}{\style}{\symbol list}
\FN@build@symboldef

```

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 `math`) gives the style the symbols are typeset (in principle, the *correct* method is to use `text` more, but not even Lamport's original set for \LaTeX `\fnsymbol` may be expressed this way. The symbol list is a set of objects to be used when the set is selected.

Example of use – define a replacement for Lamport’s original `\fnsymbol` command:

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

Note that doubled-up symbols need braces around them.

```
764 \newcommand{\DefineFNSymbols}{%
765     \ifstar{\@tempswbtrue\@DefineFNSymbols}%
766         {\@tempswbfalse\@DefineFNSymbols}%
767 }
768 \newcommand{\@DefineFNSymbols}[1]{%
769     \@ifnextchar [% ]
770     {\@DefineFNSymbols@{#1}}{\@DefineFNSymbols@{#1}[math]}%
771 }
772 \def\@DefineFNSymbols@#1[#2]#3{%
773     \expandafter\ifx\csname FN@fnsymbol@#1\endcsname\relax
774     \PackageInfo{footmisc}{Declaring symbol style #1}%
775     \else
776     \PackageWarning{footmisc}{Redeclaring symbol style #1}%
777     \fi
778     \toks@{#3}%
779     \def\@tempb{\end}%
780     \FN@build@symboldef#3\end
781     \def\@tempc{math}%
782     \def\@tempd{#2}%
783     \expandafter\xdef\csname FN@fnsymbol@#1\endcsname##1{%
784         \ifx\@tempc\@tempd
785             \noexpand\ensuremath
786         \else
787             \noexpand\nfss@text
788         \fi
789         {%
790             \noexpand\ifcase##1%
791             \the\toks@
792             \noexpand\else
793             \if@tempswb
794                 \noexpand\@ctrerr
795             \else
796                 \noexpand\@arabic##1\noexpand\FN@orange##1%
797             \fi
798             \noexpand\fi
799         }%
800     }%
801 }
802 \def\FN@build@symboldef#1{%
803     \def\@tempa{#1}%
804     \ifx\@tempa\@tempb
805     \else
806         \toks@\expandafter{\the\toks@\or#1}%
807         \expandafter\FN@build@symboldef
808     \fi
809 }
```

```

\FN@orange Macros to deal with footnote symbols going out of range (when they're allowed
\@fnsymbol@orange to –e.g., in the symbol* option).
\@diagnose@fnsymbol@orange 810 \def\FN@orange#1{%
811 \@bsphack
812 \PackageInfo{footmisc}{Footnote number \number#1 out of range}%
813 \protect\@fnsymbol@orange
814 \@esphack
815 }
816 \global\let\@diagnose@fnsymbol@orange\relax
817 \AtEndDocument{\@diagnose@fnsymbol@orange}
818 \def\@fnsymbol@orange{%
819 \gdef\@diagnose@fnsymbol@orange{%
820 \PackageWarningNoLine{footmisc}{Some footnote number(s)
821 were out of range
822 \MessageBreak
823 see log for details%
824 }%
825 }%
826 }

\FN@fnsymbol@bringhurst These macros provide replacement orderings (and symbol sets) for footnote sym-
\FN@fnsymbol@chicago bols, plus a robust version of the original Lamport set, and an extended version
\FN@fnsymbol@wiley of Lamport's original
\FN@fnsymbol@lamport-robust 827 \DefineFNSymbols*{bringhurst}{*\dagger\ddagger\S\|P}%
\FN@fnsymbol@lamport 828 \DefineFNSymbols*{chicago}{*\dagger\ddagger\S\|#}%
829 \DefineFNSymbols*{wiley}{**}\dagger\ddagger\S\|P}%
830 \DefineFNSymbols{lamport-robust}{*\dagger\ddagger
831 \mathsection\mathparagraph\|}%
832 **}{\dagger\dagger}{\ddagger\ddagger}%
833 }
834 \DefineFNSymbols*{lamport*}{*\dagger\ddagger
835 \mathsection\mathparagraph\|}%
836 **}{\dagger\dagger}{\ddagger\ddagger}%
837 {\mathsection\mathsection}{\mathparagraph\mathparagraph}%
838 **}{*\dagger\dagger\dagger}{\ddagger\ddagger\ddagger}%
839 {\mathsection\mathsection\mathsection}%
840 {\mathparagraph\mathparagraph\mathparagraph}%
841 }
842 \setfnsymbol{lamport*}
843 \DefineFNSymbols{lamport*-robust}{*\dagger\ddagger
844 \mathsection\mathparagraph\|}%
845 **}{\dagger\dagger}{\ddagger\ddagger}%
846 {\mathsection\mathsection}{\mathparagraph\mathparagraph}%
847 **}{*\dagger\dagger\dagger}{\ddagger\ddagger\ddagger}%
848 {\mathsection\mathsection\mathsection}%
849 {\mathparagraph\mathparagraph\mathparagraph}%
850 }

```

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”.)

```
851 \providecommand*\footref}[1]{%
852   \begingroup
853   \unrestored@protected@xdef\@thefnmark{\ref{#1}}%
854   \endgroup
855   \@footnotemark
856 }
```

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.

```
857 \newcommand\mpfootnotemark{%
858   \@ifnextchar[%
859     \@xmpfootnotemark
860     {%
861       \stepcounter\@mpfn
862       \protected@xdef\@thefnmark{\thempfn}%
863       \@footnotemark
864     }%
865 }
866 \def\@xmpfootnotemark[#1]{%
867   \begingroup
868   \csname c@\@mpfn\endcsname #1\relax
869   \unrestored@protected@xdef\@thefnmark{\thempfn}%
870   \endgroup
871   \@footnotemark
872 }

873 \endinput
874 </package>
```

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