

# The **footnotehyper** package

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## Abstract

The footnote package by MARK WOODING (1997/01/28 1.13) allows to gather footnotes (`\begin{savenotes}`) and later insert them (after `\end{savenotes}`) at the bottom of the page, even if the intervening material consists of tabulars, minipages or framed contents for example. One can also use the `\savenotes/\spewnotes` syntax.

Also, `footnote.sty` provides a footnote environment which allows to insert verbatim material.

Earlier releases of the present **footnotehyper** package added patches for `hyperref` compatibility and some bugfixes, addressing in particular the incompatibility with `color/xcolor`, and with `babel-frenchb`, and also fixing the footnote environment with optional argument [NUM]. Since v0.99 all macros are defined internally and the footnote package is not loaded at all.

The same user interface is kept. Since v1.0 it is possible to use **footnotehyper** also in absence of `hyperref` or when the latter is loaded with its `hyperfootnotes=false` option. The order of loading of **footnotehyper** and `hyperref` is inconsequential.

## 1 License

```
% Package: footnotehyper
% Version: 1.1a (2019/11/07)
% License: LPPL 1.3c
% Copyright (C) 2016-2019 Jean-Francois Burnol <jfbu at free dot fr>.
%
% This Work may be distributed and/or modified under the conditions
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%
% The Author of this Work is: Jean-Francois Burnol `<jfbu at free dot fr>`
%
% This Work consists of the main source file footnotehyper.dtx and the
% derived files footnotehyper.sty, footnotehyper.ins, footnotehyper.tex,
% footnotehyper.pdf, footnotehyper.dvi.
```

## 2 Usage

Since v0.99, **footnotehyper** does not load package `footnote.sty`<sup>1</sup> anymore, and is even incompatible with it at it uses the same user interface.

Since v1.0, **footnotehyper** is usable also in absence of `hyperref` or when the latter was passed `hyperfootnotes=false` option.

Version v1.1 fixes a bug which arose when `savenotes` environment was used *inside* a `minipage`: footnotes were disappearing!<sup>2</sup> See related remarks at end of [section 3](#).

The package thus provides:

- a `savenotes` environment which re-routes footnotes and delivers them at the end (there is also the `\savenotes/\spewnotes` syntax; it does create a group like the environment),
- `footnote` and `footnotetext` environments to allow footnotes with verbatim material.

But the constructability of the `footnote/footnotetext` environments depends on how `\@makefnctx` has been customized by the class or other packages; a warning is issued if the situation appears to be desperate.<sup>3</sup>

It should be recalled that in case of `\footnotemark[N]` and `\footnotetext[N]{...}` mark-up `hyperref` creates no hyperlink. This is not changed by **footnotehyper** and applies also to the `\begin{footnotetext}[N]` case. Without optional argument the link is created, and the link is created also for `\footnote[N]` or `\begin{footnote}[N]`.

This package does not handle especially floating environments, except that one can always surround them in the source in a `savenotes` environment and one knows that the footnotes will be delivered at the `\end{savenotes}...` which may well be one page earlier than the actual location of the floating material in the produced document !

Environments typesetting multiple times their contents are the most hostile to footnotes. Currently, **footnotehyper** only handles especially the `amsmath` environments (as in `footnote.sty`.)

Finally there is a `\makesavenoteenv` command which takes as argument an environment name and patches it to do the `\savenotes/\spewnotes` automatically.<sup>4</sup> It is safer to avoid it, as one never knows what happens with such patches: for example the `[H]` specifier provided by the `float` package overwrites the `\end{table}` definition during the execution of `\begin{table}...` !

An example:

```
\begin{savenotes}
\begin{framed}
```

Inside <sup>5</sup> a	tabular <sup>6</sup>
-----------------------	----------------------

<sup>1</sup><http://ctan.org/pkg/footnote>

<sup>2</sup>Thanks to François Pantigny for reporting the bug. A later suggestion of the same is to let the package do nothing under Beamer class, and this is what v1.1a 2019/11/07 does.

<sup>3</sup>original `footnote.sty` could end up in a low level  $\TeX$  error.

<sup>4</sup>For the record the syntax is either `\makesavenoteenv{foo}` which patches environment `foo` or `\makesavenoteenv[bar]{foo}` which defines environment `bar` as this patched version of `foo`.

## 2 Usage

Please refer to the documentation of the `|footnote|` package.%  
`\footnote{\url{http://ctan.org/pkg/footnote}}`

Particularly you may check its `|savenotes|` environment.%  
`\footnote{It doesn't bring any`  
feature to especially handle the issues related to footnotes in floating  
environments, though.}

`\end{framed}`  
`\end{savenotes}`

and the present frame has `\footnote`'s from inside a `tabular` and is inside a `savenotes` environment.<sup>7</sup> Let's test an `amsmath` environment with `\intertext`. As

$$E = mc^2, \tag{1}$$

was too easy<sup>8</sup>, let's try:

$$a^n + b^n = c^n. \tag{2}$$

And a footnote with some verbatim material<sup>9</sup>.

The last one was coded as:

<sup>5</sup>Notice that as frame extended to the next page, the end of the `savenotes` environment delivered its footnotes only here.

<sup>6</sup>Alternatively a `\savenotes/\spewnotes` pair could have been used.

<sup>7</sup>Here is an issue which has nothing (as I finally figured out) to do with `footnote`, and only indirectly with  $\text{\LaTeX}$ : if you embed a *full-width* `minipage` (with initial `\noindent`) in any environment not doing `\ignorespacesafterend`, be careful to add a % either immediately after the `\end{minipage}` (or a `\relax` or a `\par`) or after the surrounding environment `\end{foo}` or use `\end{minipage}\end{foo}` else the output may have an extra blank line if the source has a blank line after the `foo` environment. Here is a typical example, with a `tabular` rather:

```
\newenvironment{foo}{}{}

\noindent\begin{tabular}{p{\dimexpr\linewidth-2\tabcolsep\relax}}
  A\dotfill B
\end{tabular}

C

\begin{foo}
\noindent\begin{tabular}{p{\dimexpr\linewidth-2\tabcolsep\relax}}
  A\dotfill B
\end{tabular}
\end{foo}

C
```

If you try it out you will see an extra blank line in PDF output above the second C. Starting with v0.99 the `\end{savenotes}` emits an `\ignorespacesafterend` which avoids this generic  $\text{\TeX}/\text{\LaTeX}$  problem. For good measure there is now an `\ignorespaces` in `\begin{savenotes}`.

<sup>8</sup>There is also  $E = h\nu$ .

<sup>9</sup>`&${}^{\%}[]$`

### 3 Notes

And a footnote with some verbatim material%

```
\begin{footnote}
  \verb|&$^%\[]$|
\end{footnote}.
```

Now some use of `\footnotemark`<sup>10</sup> followed by a `footnotetext` environment. And use of `\footnotemark[99]`<sup>99</sup> in association with a `footnotetext` environment using the same optional argument [99]. No hyperfootnote link was inserted. And a final footnote, done with `\begin{footnote}[57]`<sup>57</sup>. There is no problem with the hyperlink, then.

### 3 Notes

A few items worth of mention:

- the footnote package patches the L<sup>A</sup>T<sub>E</sub>X kernel `\parbox`. **footnotehyper** doesn't (but the code can be found commented-out at the end of the present file).
- the footnote package defines a `minipage*` environment which is `minipage` patched by `\makesavenoteenv`, **footnotehyper** doesn't.
- the footnote environment from `footnote.sty` does a `\leavevmode\unskip` which **footnotehyper** doesn't: hence if one locates `\begin{footnote}` at start of a line in the L<sup>A</sup>T<sub>E</sub>X source, one will typically need a % at end of text on previous line to avoid the end-of-line space.
- the hyperref package inserts no hyperlink in case of `\footnotemark[N]/\footnotetext[N]`. This is not modified by **footnotehyper**.
- side-note: there is an interference between hyperref and frenchb regarding the footnote marker when using the syntax `\footnotemark[NUM]`. For the record here is a patch (last tested briefly with hyperref 2016/06/24 v6.83q and frenchb 2017/01/30 v3.2g):

```
\AtBeginDocument{%
  \let\xfootnotemarkORIFB \xfootnotemark
  \def\xfootnotemarkFB {\leavevmode\unskip\unkern\,\xfootnotemarkORIFB }%
  \ifHy@hyperfootnotes\ifFBAutoSpaceFootnotes
    \let\xfootnotemark\xfootnotemarkFB
  \fi\fi
}%
```

- some environments typeset multiple times their contents, which causes issues; **footnotehyper** takes provisions only to handle the `amsmath` measuring step.

<sup>10</sup>This one uses the normal footnote counter and the hyperlink works.

<sup>99</sup>hyperref creates no hyperlink in this case, or in the `\footnotemark[N]/\footnotetext[N]{<foo>}` case. It does when the [N] is absent or when it is used with a `\footnote` command (or a `footnote` environment.)

By the way, **footnotehyper** v0.9f's `\footnotetext[N]` and `\begin{footnotetext}[N]` each had a bug and they were unusable *inside* the `savenotes` environment. There was no issue *outside*.

<sup>57</sup>

**footnotehyper** works since v1.0 also in absence of hyperref or when the latter was passed `hyperfootnotes=false` option.

### 3 Notes

- L<sup>A</sup>T<sub>E</sub>X2e has some “features” when using footnotes in `minipage`’s which are themselves in a `minipage` which may also have footnotes externally to the internal minipages... try it out with some `\fbboxes` around the sub-minipages, to see.

**footnotehyper** behaves like original package `footnote` when the `savenotes` environment is used *inside* a `minipage`. Only reasonable usage in case of nested minipages seems to use only a single top level (i.e. external) `savenotes` environment. But there will anyhow be collisions of the alphabetic enumerations. These collisions are there with or without **footnotehyper** (or `footnote.sty`.) I did not make any attempt, nor intend to in future, to address in an automatized manner these problematic contexts.

## 4 Implementation

```

1 \NeedsTeXFormat{LaTeX2e}
2 \ProvidesPackage{footnotehyper}%
3 [2019/11/07 v1.1a hyperref aware footnote.sty (JFB)]

```

no options    The package has no options.

```

4 \DeclareOption*%
5   {\PackageWarning{footnotehyper}{Option '\CurrentOption' is unknown}}%
6 \ProcessOptions\relax

```

v1.1a lets the package abort under Beamer class and warn user.

```

7 \@ifclassloaded{beamer}
8   {\PackageWarningNoLine{footnotehyper}{This package is
9     incompatible with the beamer class. Aborting input..}%
10    \endinput}
11   {}%

```

Versions up to v0.9f loaded `footnote.sty`, with lots of patching afterwards. Starting with v0.99, **footnotehyper** does everything by itself with `FNH@` prefix. Brief overview of some of the fixed issues:

- there was incompatibility with `hyperref`,
- and with `color`,
- if the `\@makefn` at the time of loading of `footnote.sty` does not have its argument visible at top level in its meaning, or is used multiple times there, then the footnote environment will lead to low level  $\TeX$  error,
- `footnote.sty` modifies `\parbox`,
- `footnote.sty` does some too early `\let`,
- the footnote environment from `footnote.sty` does not work if used with optional argument `[N]`.

Starting with v1.0, **footnotehyper** may be used also in absence of `hyperref`.

```

12 \newbox\FNH@notes
13 \newdimen\FNH@width
14 \let\FNH@colwidth\columnwidth
15 \newif\ifFNH@savingnotes
16 \AtBeginDocument {%
17   \let\FNH@latex@footnote \footnote
18   \let\FNH@latex@footnotetext\footnotetext
19   \let\FNH@H@@footnotetext \@footnotetext
20   \let\FNH@H@@mpfootnotetext \@mpfootnotetext
21   \newenvironment{savenotes}
22     {\FNH@savenotes\ignorespaces}{\FNH@spewnotes\ignorespacesafterend}%
23   \let\spewnotes \FNH@spewnotes
24   \let\footnote \FNH@footnote
25   \let\footnotetext \FNH@footnotetext
26   \let\endfootnote \FNH@endfn
27   \let\endfootnotetext\FNH@endfn
28   \ifpackageloaded{hyperref}
29     {\ifHy@hyperfootnotes
30       \let\FNH@H@@footnotetext\H@@footnotetext
31       \let\FNH@H@@mpfootnotetext\H@@mpfootnotetext
32     }
33     {\let\FNH@hyper@fntext\FNH@nohyp@fntext
34     }
35   \fi}%

```

## 4 Implementation

```
35 \let\FNH@hyper@fntext\FNH@nohyp@fntext}%
36 }%
```

\FNH@hyper@fntext These are the **footnotehyper** replacement for \@footnotetext inside the savenotes environment. There  
 \FNH@nohyp@fntext is a version creating an hyperlink and another one not creating an hyperlink. The \FNH@fntext macro serves  
 \FNH@fntext as general dispatch. This may be a place to customize if one wants to handle environments doing multiple  
 passes; but the footnote counter must have been taken care of elsewhere. The code currently handles only the  
 case of amsmath environments.

```
37 \def\FNH@hyper@fntext{\FNH@fntext\FNH@hyper@fntext@i}%
38 \def\FNH@nohyp@fntext{\FNH@fntext\FNH@nohyp@fntext@i}%
39 \def\FNH@fntext #1{\ifx\ifmeasuring@\@undefined
40 \expandafter\@secondoftwo\else\expandafter\@firstofone\fi
41 {\ifmeasuring@\expandafter\@gobbletwo\fi}#1%
42 }%
```

\FNH@hyper@fntext@i We do the \ifHy@nesting test although hyperref's manual says "Allows links to be nested; no drivers  
 currently support this."

```
43 \long\def\FNH@hyper@fntext@i#1{%
44 \global\setbox\FNH@notes\vbox
45 {\unvbox\FNH@notes
46 \FNH@startnote
47 \@makefntext
48 {\rule\z@\footnotesep\ignorespaces
49 \ifHy@nesting\expandafter\ltx@firstoftwo
50 \else\expandafter\ltx@secondoftwo
51 \fi
52 {\expandafter\hyper@@anchor\expandafter{\Hy@footnote@currentHref}{#1}}%
53 {\Hy@raisedlink
54 {\expandafter\hyper@@anchor\expandafter{\Hy@footnote@currentHref}%
55 {\relax}}}%
56 \let\@currentHref\Hy@footnote@currentHref
57 \let\@currentlabelname\@empty
58 #1}%
59 \@finalstrut\strutbox
60 }%
61 \FNH@endnote
62 }%
63 }%
```

\FNH@nohyp@fntext@i The original \fn@fntext had no \long.

```
64 \long\def\FNH@nohyp@fntext@i#1{%
65 \global\setbox\FNH@notes\vbox
66 {\unvbox\FNH@notes
67 \FNH@startnote
68 \@makefntext{\rule\z@\footnotesep\ignorespaces#1\@finalstrut\strutbox}%
69 \FNH@endnote
70 }%
71 }%
```

\FNH@startnote Same as original (the code comment is kept from original.)

```
72 \def\FNH@startnote{%
73 \hsize\FNH@colwidth
```

## 4 Implementation

```

74 \interlinepenalty\interfootnotelinepenalty
75 \reset@font\footnotesize
76 \floatingpenalty\@MM% Is this right???
77 \@parboxrestore
78 \protected@edef\@currentlabel{\csname p@\@mpfn\endcsname\@thefnmark}%
79 \color@begingroup
80 }%

```

`\FNH@endnote` Fixed from original.

```
81 \def\FNH@endnote{\color@endgroup}%
```

`\FNH@savenotes` Same as original apart from using `hyperref-aware` `\FNH@hyper@fntext`, and taking into account `hyperref's` custom `\@xfootnotetext`. This was missed by v0.9f hence `\footnotetext[N]{...}` did not work inside `savenotes` environment. Fixed for v0.99.

Maybe I should change the way `\@minipagerestore` is handled.

```

82 \def\FNH@savenotes{%
83   \begingroup
84   \ifFNH@savingnotes\else
85     \FNH@savingnotesttrue
86     \let\@footnotetext\FNH@hyper@fntext
87     \let\@mpfootnotetext\FNH@hyper@fntext
88     \let\H@@mpfootnotetext\FNH@nohyp@fntext % fool hyperref's \@xfootnotetext
89     \FNH@width\columnwidth
90     \let\FNH@colwidth\FNH@width
91     \global\setbox\FNH@notes\box\voidb@x
92     \let\FNH@thempfn\thempfn
93     \let\FNH@mpfn\@mpfn
94     \ifx\@minipagerestore\relax\let\@minipagerestore\@empty\fi
95     \expandafter\def\expandafter\@minipagerestore\expandafter{%
96       \@minipagerestore
97       \let\thempfn\FNH@thempfn
98       \let\@mpfn\FNH@mpfn
99     }%
100   \fi
101 }%

```

`\FNH@spewnotes` This uses `\FNH@H@@footnotetext` which is the `\H@@footnotetext` `hyperref's` preserved original meaning of `\@footnotetext` not creating a link target.

v1.1 fixes the bug about disappearing footnotes if `savenotes` environment is used inside a `minipage`. I had never really considered such usage, hence missed realizing there was a bug.

```

102 \def\FNH@spewnotes {%
103   \endgroup
104   \ifFNH@savingnotes\else
105     \ifvoid\FNH@notes\else
106       \begingroup
107       \let\@makefntext\@empty
108       \let\@finalstrut\@gobble
109       \let\rule\@gobbletwo
110       \ifx\@footnotetext\@mpfootnotetext
111         \expandafter\FNH@H@@mpfootnotetext
112       \else
113         \expandafter\FNH@H@@footnotetext

```



## 4 Implementation

```

114     \fi{\unvbox\FNH@notes}%
115     \endgroup
116     \fi
117     \fi
118 }%
```

`\FNH@footnote` We now take care of `footnote.sty`'s footnote environment. The original `\fn@endfntext` is lacking a `\fn@endnote`, and this meant that `footnote.sty` was incompatible with `color/xcolor` packages. Also this `\fn@endnote` was `\let` to `\color@endgroup` which is wrong.

Furthermore, independently of presence of the `\color/xcolor` issue, the `footnote.sty`'s footnote environment raised an error if used with an optional argument. `v0.9f` addresses this issue.

The `footnotetext` environment adds a complication, in case of optional argument we should not try to set up a link due to the fact that `hyperref` does not support it for the `\footnotemark[N]/\footnotetext[N]` syntax. And we need to make sure that the `footnote` and `footnotetext` environments obey the `\savenotes/\spewnotes` mechanism.

To handle all of this we code things completely differently from `footnote.sty`.

The `v0.9f \begin{footnotetext}[N]` inside `savenotes` tried to create an `hyperref` target. Fixed for `v0.99`.

Note: the `footnote.sty` code did a `\leavevmode\unskip` at entrance of footnote environment, which **footnotehyper** has not kept.

```

119 \def\FNH@footnote@envname    {footnote}%
120 \def\FNH@footnotetext@envname{footnotetext}%
121 \def\FNH@footnote{%
122     \ifx\@currenvir\FNH@footnote@envname
123         \expandafter\FNH@footnoteenv
124     \else
125         \expandafter\FNH@latex@footnote
126     \fi
127 }%
128 \def\FNH@footnoteenv{%
129     \@ifnextchar[%
130         \FNH@footnoteenv@i [%]
131         {\stepcounter\@mpfn
132         \protected@xdef\@thefnmark{\thempfn}%
133         \@footnotemark
134         \def\FNH@endfntext@fntext{\@footnotetext}%
135         \FNH@startfntext}%
136 }%
137 \def\FNH@footnoteenv@i[#1]{%
138     \begingroup
139     \csname c@\@mpfn\endcsname #1\relax
140     \unrestored@protected@xdef\@thefnmark{\thempfn}%
141     \endgroup
142     \@footnotemark
143     \def\FNH@endfntext@fntext{\@footnotetext}%
144     \FNH@startfntext
145 }%
146 \def\FNH@footnotetext{%
147     \ifx\@currenvir\FNH@footnotetext@envname
148         \expandafter\FNH@footnotetextenv
149     \else
150         \expandafter\FNH@latex@footnotetext
```

## 4 Implementation

```

151 \fi
152 }%
153 \def\FNH@footnotetextenv{%
154 \ifnextchar[%
155 \FNH@footnotetextenv@i %]
156 {\protected@xdef\@thefnmark{\thempfn}%
157 \def\FNH@endfntext@fntext{\@footnotetext}%
158 \FNH@startfntext}%
159 }%
160 \def\FNH@footnotetextenv@i[#1]{%
161 \begingroup
162 \csname c@\mpfn\endcsname #1\relax
163 \unrestored@protected@xdef\@thefnmark{\thempfn}%
164 \endgroup
165 \ifFNH@savingnotes
166 \def\FNH@endfntext@fntext{\FNH@nohyp@fntext}%
167 \else
168 \def\FNH@endfntext@fntext{\FNH@H@@footnotetext}%
169 \fi
170 \FNH@startfntext
171 }%

```

\FNH@startfntext This is used for the environmental form of the footnote environments. The use of \box\z@ originates in footnote.sty, should I change that ?

\FNH@endfntext Both of \endfootnote and \endfootnotetext are aliases for \FNH@endfntext.

\FNH@endfntext@fntext The \FNH@endfntext@fntext may be \@footnotetext (which will be \FNH@hyper@fntext in savenotes environment), or \FNH@H@@footnotetext, or \FNH@nohyp@fntext if in savenotes scope.

```

172 \def\FNH@startfntext{%
173 \setbox\z@\vbox\bgroup
174 \FNH@startnote
175 \FNH@prefntext
176 \rule\z@\footnotesep\ignorespaces
177 }%
178 \def\FNH@endfntext {%
179 \@finalstrut\strutbox
180 \FNH@postfntext
181 \FNH@endnote
182 \egroup
183 \begingroup
184 \let\@makefntext\@empty\let\@finalstrut\@gobble\let\rule\@gobbletwo
185 \FNH@endfntext@fntext {\unvbox\z@}%
186 \endgroup
187 }%

```

\@makefntext The definitions of \FNH@prefntext and \FNH@postfntext (which are needed for the footnote environment, \FNH@startfntext and \FNH@endfntext) are extracted from a somewhat daring analysis of \@makefntext. Contrarily to footnote.sty's original code (which may result in low level T<sub>E</sub>X errors when the footnote environment is executed) the method here will alert the user if the argument of \@makefntext is not visible at top level in its meaning or is used there multiple times. We also insert here some code to handle especially the case of babel-frenchb.

```

188 \AtBeginDocument{\let\FNH@@makefntext\@makefntext
189 \ifx\@makefntextFB\undefined

```

## 4 Implementation

```

190 \expandafter\@gobble\else\expandafter\@firstofone\fi
191 {\iffBFrenchFootnotes \let\FNH@makefntext\@makefntextFB \else
192 \let\FNH@makefntext\@makefntextORI\fi}%
193 \expandafter\FNH@check@a\FNH@makefntext{1.2!3?4,}%
194 \FNH@@@1.2!3?4,\FNH@@@\relax
195 }%
196 \long\def\FNH@check@a #1.2!3?4,#2\FNH@@@#3{%
197 \ifx\relax#3\expandafter\@firstoftwo\else\expandafter\@secondoftwo\fi
198 \FNH@bad@makefntext@alert
199 {\def\FNH@prefntext{#1}\def\FNH@postfntext{#2}\FNH@check@b}%
200 }%
201 \def\FNH@check@b #1\relax{%
202 \expandafter\expandafter\expandafter\FNH@check@c
203 \expandafter\meaning\expandafter\FNH@prefntext
204 \meaning\FNH@postfntext1.2!3?4,\FNH@check@c\relax
205 }%
206 \def\FNH@check@c #1.2!3?4,#2#3\relax{%
207 \ifx\FNH@check@c#2\expandafter\@gobble\fi\FNH@bad@makefntext@alert
208 }%
209 \def\FNH@bad@makefntext@alert{%
210 \PackageWarningNoLine{footnotehyper}%
211 {^^} The footnote environment will not be fully functional, sorry.^^}
212 You may try to email the author this meaning of \string\@makefntext:^^}
213 \meaning\@makefntext^^}
214 together with the used preamble}%
215 \let\FNH@prefntext\@empty\let\FNH@postfntext\@empty
216 }%

```

`\makesavenoteenv` Same as original. Not recommended. Safer to use explicitly `savenotes` environment.

```

217 \def\makesavenoteenv{\@ifnextchar[\FNH@msne@ii\FNH@msne@i}%
218 \def\FNH@msne@i #1{%
219 \expandafter\let\csname FNH$#1\expandafter\endcsname %$
220 \csname #1\endcsname
221 \expandafter\let\csname endFNH$#1\expandafter\endcsname %$
222 \csname end#1\endcsname
223 \FNH@msne@ii[#1]{FNH$#1}%$
224 }%
225 \def\FNH@msne@ii[#1]#2{%
226 \expandafter\edef\csname#1\endcsname{%
227 \noexpand\savenotes
228 \expandafter\noexpand\csname#2\endcsname
229 }%
230 \expandafter\edef\csname end#1\endcsname{%
231 \expandafter\noexpand\csname end#2\endcsname
232 \noexpand\expandafter
233 \noexpand\spewnotes
234 \noexpand\if@endpe\noexpand\@endpetrue\noexpand\fi
235 }%
236 }%

```

Original `footnote.sty` patches `\parbox`, we don't touch it. Also it defines a `minipage*` environment, we don't do it.

```

237 % \makesavenoteenv[minipage*]{minipage}

```

#### 4 Implementation

```
238 % \let\fn@parbox\parbox
239 % \def\parbox{\@ifnextchar[{\fn@parbox@i{}}{\fn@parbox@ii{}}}
240 % \def\fn@parbox@i#1[#2]{%
241 %   \@ifnextchar[{\fn@parbox@i{#1[#2]}}{\fn@parbox@ii{#1[#2]}}}%
242 % }
243 % \long\def\fn@parbox@ii#1#2#3{\savenotes\fn@parbox#1{#2}{#3}\spewnotes}
244 \endinput
```