

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: 1.1c (2021/01/29)
% License: LPPL 1.3c
% Copyright (C) 2016-2021 Jean-Francois Burnol <jfbu at free dot fr>.
%
% This Work may be distributed and/or modified under the conditions
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% LaTeX version 2005/12/01 or later.
%
% 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 Changes

v0.9c (2016/04/19) First release: adapt original package to be `hyperref` and `color/xcolor` compatible.

v0.9e (2016/04/30) Abort in absence of `hyperref`. Compatibility with `babel-french`.

v0.99 (2017/02/16) Do not load package `footnote.sty`¹ anymore.

From then on `footnotehyper` is incompatible with it as it uses the same user interface.

v1.0 (2017/03/07) Be usable also in absence of `hyperref` or when the latter was passed `hyperfootnotes=false` option.

v1.1 (2018/01/23) Fix bug which arose when `savenotes` environment was used *inside* a `minipage`: footnotes were disappearing!² See related remarks at end of [section 4](#).

v1.1a (2019/11/07) Abort under `beamer` (difficulty with `@makefntext` and suspicion `beamer` does not need `footnotehyper`).

v1.1b (2021/01/26) Fix incompatibility with the combination `memoir + babel-french`.

v1.1c (2021/01/29) Fix legacy bug of original package interfering with $\text{\LaTeX}2\text{e}$ mechanism to suppress indentation after mid-paragraph lists (when `savenotes` environment directly wraps the enclosed list environment, mid-paragraph).

3 Usage

As summarized in the abstract, the package provides:

- a `savenotes` environment which re-routes footnotes and delivers them at the end (there is also the `\savenotes/\spewnotes` syntax; which 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 `@makefntext` has been customized by the class or other packages; a warning is issued if the situation appears to be desperate.³

Some details: `footnotehyper` inherits from `footnote` original package the aim to convert the macro `@makefntext` into two parts, the first one to be inserted at the start of a footnote in environment form, the second one at its end. It thus hopes that the replacement text of `@makefntext` contains only once its parameter token `#1`, and that it is used unbraced.

¹<http://ctan.org/pkg/footnote>

²Thanks 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.

³original `footnote.sty` could end up in a low level \TeX error.

footnotehyper has a more robust, but still naive, way of analysing this than the original package. But even seemingly innocent redefinitions such as the one of `beamer` which was last time I checked (that was in 2019):

```
macro:#1->\def \insertfootnotetext {#1}\def \insertfootnotemark
{\@makefnmark }
\usebeamertemplate ***{footnote}
```

is not compatible. Since v1.1a, **footnotehyper** simply aborts under `beamer` class.

The package could possibly be much improved here, but at update v1.1b it simply adds a specific fix to handle a problem of another type arising with `memoir` together with `babel-french`⁴ This fix uses a bit daring `\scantokens` which could be useful to solve other incompatibilities of the similar nature, but we have limited the fix to those exact circumstances, until we get alerted by some bug report.

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.⁵ 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}...` !

Inside ⁶ a	tabular ⁷
-----------------------	----------------------

An example:

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

Particularly you may check its `|savenotes|` environment.%

⁴In the `babel-french` context, **footnotehyper** attempts to analyse `\@makefnmark` rather than `\@makefnmark` itself. The problem arose in that (automated) analysis.

⁵For 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`.

3 Usage

```
\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.⁸ Let's test an `amsmath` environment with `\intertext`. As

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

was too easy⁹, let's try:

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

And a footnote with some verbatim material¹⁰.

The last one was coded as:

```
And a footnote with some verbatim material%
\begin{footnote}
```

⁶If the frame extends to the next page, the end of the `savenotes` environment delivers its intercepted footnotes only there.

⁷Alternatively a `\savenotes/\spewnotes` pair could have been used.

⁸Here is an issue which has nothing (as I finally figured out) to do with `footnote`, and only indirectly with `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 `TEX/LATEX` problem. For good measure there is now an `\ignorespaces` in `\begin{savenotes}`.

⁹There is also $E = hv$.

¹⁰`&${}^{\%}\[]$`

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

Now some use of `\footnotemark`¹¹ followed by a `footnotetext` environment. And use of `\footnotemark[99]`⁹⁹ 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]`⁵⁷. There is no problem with the hyperlink, then.

4 Notes

A few items worth of mention:

- the footnote package patches the L^AT_EX 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^AT_EX 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
}%
```

On 2021/01/29 the interference (lost of some `babel-french` customization) is still there, as I checked now. This has nothing to do with **footnotehyper**.

¹¹This one uses the normal footnote counter and the hyperlink works.

⁹⁹`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*.

⁵⁷

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

4 Notes

- some environments typeset multiple times their contents, which causes issues; **footnotehyper** takes provisions only to handle the `amsmath` measuring step.
- \LaTeX 2e 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 `\fboxes` 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.

5 Implementation

```

1 \NeedsTeXFormat{LaTeX2e}
2 \ProvidesPackage{footnotehyper}%
3 [2021/01/29 v1.1c 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 \newtoks\FNH@toks % 1.1c
15 \let\FNH@colwidth\columnwidth
16 \newif\ifFNH@savingnotes
17 \AtBeginDocument {%
18   \let\FNH@latex@footnote \footnote
19   \let\FNH@latex@footnotetext\footnotetext
20   \let\FNH@H@@footnotetext \@footnotetext
21   \let\FNH@H@@mpfootnotetext \@mpfootnotetext
22   \newenvironment{savenotes}
23     {\FNH@savenotes\ignorespaces}\FNH@spewnotes\ignorespacesafterend}%
24   \let\spewnotes \FNH@spewnotes
25   \let\footnote \FNH@footnote
26   \let\footnotetext \FNH@footnotetext
27   \let\endfootnote \FNH@endfntext
28   \let\endfootnotetext\FNH@endfntext
29   \@ifpackageloaded{hyperref}
30     {\ifHy@hyperfootnotes
31       \let\FNH@H@@footnotetext\H@@footnotetext
32       \let\FNH@H@@mpfootnotetext\H@@mpfootnotetext
33     }
34   \let\FNH@hyper@fntext\FNH@nohyp@fntext

```

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```

35     \fi}%
36     {\let\FNH@hyper@fntext\FNH@nohyp@fntext}%
37 }%

```

`\FNH@hyper@fntext`
`\FNH@nohyp@fntext`
`\FNH@fntext`

These are the **footnotehyper** replacement for `\@footnotetext` inside the `savenotes` environment. There is a version creating an hyperlink and another one not creating an hyperlink. The `\FNH@fntext` macro serves 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.

```

38 \def\FNH@hyper@fntext{\FNH@fntext\FNH@hyper@fntext@i}%
39 \def\FNH@nohyp@fntext{\FNH@fntext\FNH@nohyp@fntext@i}%
40 \def\FNH@fntext #1{\ifx\ifmeasuring@\@undefined
41   \expandafter\@secondoftwo\else\expandafter\@firstofone\fi
42   {\ifmeasuring@\expandafter\@gobbletwo\fi}#1%
43 }%

```

`\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."

```

44 \long\def\FNH@hyper@fntext@i#1{%
45   \global\setbox\FNH@notes\vbox
46   {\unvbox\FNH@notes
47    \FNH@startnote
48    \@makefntext
49    {\rule\z@\footnotesep\ignorespaces
50     \ifHy@nesting\expandafter\ltx@firstoftwo
51     \else\expandafter\ltx@secondoftwo
52     \fi
53     {\expandafter\hyper@@anchor\expandafter{\Hy@footnote@currentHref}{#1}}%
54     {\Hy@raisedlink
55      {\expandafter\hyper@@anchor\expandafter{\Hy@footnote@currentHref}}%
56      {\relax}}}%
57   \let\@currentHref\Hy@footnote@currentHref
58   \let\@currentlabelname\@empty
59   #1}%
60   \@finalstrut\strutbox
61 }%
62 \FNH@endnote
63 }%
64 }%

```

`\FNH@nohyp@fntext@i`

The original `\fn@fntext` had no `\long`.

```

65 \long\def\FNH@nohyp@fntext@i#1{%
66   \global\setbox\FNH@notes\vbox
67   {\unvbox\FNH@notes
68    \FNH@startnote
69    \@makefntext{\rule\z@\footnotesep\ignorespaces#1\@finalstrut\strutbox}%
70    \FNH@endnote
71   }%
72 }%

```

`\FNH@startnote`

Same as original (the code comment is kept from original.)

```

73 \def\FNH@startnote{%

```


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```

74 \hsize\FNH@colwidth
75 \interlinepenalty\interfootnotelinepenalty
76 \reset@font\footnotesize
77 \floatingpenalty\@MM% Is this right???
78 \@parboxrestore
79 \protected@edef\@currentlabel{\csname p@\@mpfn\endcsname\@thefnmark}%
80 \color@begingroup
81 }%

```

`\FNH@endnote` Fixed from original.

```
82 \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 `\xfootnotenext`. 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.

```

83 \def\FNH@savenotes{%
84 \begingroup
85 \ifFNH@savingnotes\else
86 \FNH@savingnotestruer
87 \let\@footnotetext \FNH@hyper@fntext
88 \let\@mpfootnotetext \FNH@hyper@fntext
89 \let\H@@mpfootnotetext\FNH@nohyp@fntext % fool hyperref's \xfootnotenext
90 \FNH@width\columnwidth
91 \let\FNH@colwidth\FNH@width
92 \global\setbox\FNH@notes\box\voidb@x
93 \let\FNH@thempfn\thempfn
94 \let\FNH@mpfn\@mpfn
95 \ifx\@minipagerestore\relax\let\@minipagerestore\@empty\fi
96 \expandafter\def\expandafter\@minipagerestore\expandafter{%
97 \@minipagerestore
98 \let\thempfn\FNH@thempfn
99 \let\@mpfn\FNH@mpfn
100 }%
101 \fi
102 }%

```

`\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.

v1.1c 2021/01/29 fixes a legacy bug from `footnote` package: if used to enclose a list environment inside a paragraph, it broke the mechanism which suppresses indentation following the list.

Now, situation would be far simpler here if we did not have this extra `\begingroup \endgroup` pair in `\FNH@savenotes/\FNG@spewnotes`.

A priori, as far as I understand, testing the `\if@endpe` flag should be enough, but let's be extra cautious and check that `\par` is not `\@@par`. Attention here that this is not necessarily followed by `\end{savenotes}` and we have to support the `\savenotes/\spewnotes` syntax. The complication is added from it creating a group without being a genuine $\text{\LaTeX}2\epsilon$ environment.

```

103 \def\FNH@spewnotes {%
104 \if@endpe\ifx\par\@@par\FNH@toks{}\else
105 \FNH@toks\expandafter{\expandafter

```

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```

106         \def\expandafter\par\expandafter{\par}\@endpetrue}%
107     \expandafter\expandafter\expandafter
108     \FNH@toks
109     \expandafter\expandafter\expandafter
110     {\expandafter\the\expandafter\FNH@toks
111     \expandafter\def\expandafter\@par\expandafter{\@par}}%
112     \expandafter\expandafter\expandafter
113     \FNH@toks
114     \expandafter\expandafter\expandafter
115     {\expandafter\the\expandafter\FNH@toks
116     \expandafter\everypar\expandafter{\the\everypar}}\fi
117 \else\FNH@toks{}\fi
118 \expandafter
119 \endgroup\the\FNH@toks
120 \ifFNH@savingnotes\else
121 \ifvoid\FNH@notes\else
122 \begingroup
123 \let\@makefntext\@empty
124 \let\@finalstrut\@gobble
125 \let\rule\@gobbletwo
126 \ifx\@footnotetext\@mpfootnotetext
127 \expandafter\FNH@H@\@mpfootnotetext
128 \else
129 \expandafter\FNH@H@\@footnotetext
130 \fi{\unvbox\FNH@notes}%
131 \endgroup
132 \fi
133 \fi
134 }%

```

`\FNH@footnote`
`\FNH@footnotetext`

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.

```

135 \def\FNH@footnote@envname    {footnote}%
136 \def\FNH@footnotetext@envname{footnotetext}%
137 \def\FNH@footnote{%
138     \ifx\@currentenv\FNH@footnote@envname
139     \expandafter\FNH@footnoteenv
140     \else
141     \expandafter\FNH@latex@footnote
142     \fi

```

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```

143 }%
144 \def\FNH@footnoteenv{%
145   \@ifnextchar[%
146     \FNH@footnoteenv@i %]
147     {\stepcounter\@mpfn
148     \protected@xdef\@thefnmark{\thempfn}%
149     \@footnotemark
150     \def\FNH@endfntext@fntext{\@footnotetext}%
151     \FNH@startfntext}%
152 }%
153 \def\FNH@footnoteenv@i[#1]{%
154   \begingroup
155   \csname c@\@mpfn\endcsname #1\relax
156   \unrestored@protected@xdef\@thefnmark{\thempfn}%
157   \endgroup
158   \@footnotemark
159   \def\FNH@endfntext@fntext{\@footnotetext}%
160   \FNH@startfntext
161 }%
162 \def\FNH@footnotetext{%
163   \ifx\@currenvir\FNH@footnotetext@envname
164     \expandafter\FNH@footnotetextenv
165   \else
166     \expandafter\FNH@latex@footnotetext
167   \fi
168 }%
169 \def\FNH@footnotetextenv{%
170   \@ifnextchar[%
171     \FNH@footnotetextenv@i %]
172     {\protected@xdef\@thefnmark{\thempfn}%
173     \def\FNH@endfntext@fntext{\@footnotetext}%
174     \FNH@startfntext}%
175 }%
176 \def\FNH@footnotetextenv@i[#1]{%
177   \begingroup
178   \csname c@\@mpfn\endcsname #1\relax
179   \unrestored@protected@xdef\@thefnmark{\thempfn}%
180   \endgroup
181   \ifFNH@savingnotes
182     \def\FNH@endfntext@fntext{\FNH@nohyp@fntext}%
183   \else
184     \def\FNH@endfntext@fntext{\FNH@H@@footnotetext}%
185   \fi
186   \FNH@startfntext
187 }%

```

`\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.

```

188 \def\FNH@startfntext{%
189   \setbox\z@\vbox\bgroup

```

5 Implementation

```

190 \FNH@startnote
191 \FNH@prefntext
192 \rule\z@\footnotesep\ignorespaces
193 }%
194 \def\FNH@endfntext {%
195 \@finalstrut\strutbox
196 \FNH@postfntext
197 \FNH@endnote
198 \egroup
199 \beginingroup
200 \let\@makefntext\@empty\let\@finalstrut\@gobble\let\rule\@gobbletwo
201 \FNH@endfntext@fntext {\unvbox\z@}%
202 \endgroup
203 }%

```

\@makefntext
\FNH@prefntext
\FNH@postfntext

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_EX 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.

As \ifFBFrenchFootnotes is not a T_EX boolean if babel-frenchb isn’t loaded, we have to work around this for \if.. \fi pairs.

```

204 \AtBeginDocument{\let\FNH@\@makefntext\@makefntext
205 \ifx\@makefntextFB\undefined
206 \expandafter\@gobble\else\expandafter\@firstofone\fi
207 {\ifFBFrenchFootnotes \let\FNH@\@makefntext\@makefntextFB \else
208 \let\FNH@\@makefntext\@makefntextORI\fi}%
209 \expandafter\FNH@check@a\FNH@\@makefntext{1.2!3?4,}%
210 \FNH@@@1.2!3?4,\FNH@@@\relax
211 }%

```

“Daring analysis” is an understatement. At v1.1b we add a dangerous twist to fix a memoir + frenchb triggered issue: if the \@makefntext, as in memoir + frenchb situation, uses \def syntax to define a macro with parameter we had a problem with the # token not being doubled in the replacement fetched by \FNH@check@a. As expedient work-around we fix this by adding a \scantokens wrapper. The induced end of line space will only be from loading of **footnotehyper** itself, so we can ignore. Problem is we assume here \@makefntext does not rely on weird catcodes. Very problematic if LaTeX3 syntax is used. So I add a layer a security to do this *only* under memoir + frenchb situation. Which is a pity as it could be more generally useful. But let’s wait for bug reports if really needed.

Maybe I should add some user interface to customize directly what \FNH@prefntext and \FNH@postfntext do, but I am aiming today for a quick bug fix, as we are 2021/01/26 and first heard of the bug on 2020/06/15.

```

212 \long\def\FNH@check@a #11.2!3?4,#2\FNH@@@#3{%
213 \ifx\relax#3\FNH@bad@makefntext@alert
214 \else
215 \edef\FNH@restore@{\catcode`\noexpand\@the\catcode`\@relax}%
216 \makeatletter
217 \ifx\@makefntextFB\undefined
218 \expandafter\@gobble\else\expandafter\@firstofone\fi
219 {\@ifclassloaded{memoir}%
220 {\ifFBFrenchFootnotes\expandafter\@gobble\fi}%
221 {}}%

```

5 Implementation

```

222     \@secondoftwo
223     \scantokens{\def\FNH@prefntext{#1}\def\FNH@postfntext{#2}}%
224     \FNH@restore@
225     \expandafter\FNH@check@b
226     \fi
227 }%
228 \def\FNH@check@b #1\relax{%
229     \expandafter\expandafter\expandafter\FNH@check@c
230     \expandafter\meaning\expandafter\FNH@prefntext
231     \meaning\FNH@postfntext1.2!3?4,\FNH@check@c\relax
232 }%
233 \def\FNH@check@c #11.2!3?4,#2#3\relax{%
234     \ifx\FNH@check@c#2\expandafter@gobble\fi\FNH@bad@makefntext@alert
235 }%
236 \def\FNH@bad@makefntext@alert{%
237     \PackageWarningNoLine{footnotehyper}%
238     {^^} The footnote environment will not be fully functional, sorry.^^}
239     You may try to email the author this meaning of \string\@makefntext:^^}
240     \meaning\@makefntext^^}
241     together with the used preamble}%
242     \let\FNH@prefntext\@empty\let\FNH@postfntext\@empty
243 }%

```

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

```

244 \def\makesavenoteenv{\@ifnextchar[\FNH@msne@ii\FNH@msne@i]}%
245 \def\FNH@msne@i #1{%
246     \expandafter\let\csname FNH$#1\expandafter\endcsname %$
247         \csname #1\endcsname
248     \expandafter\let\csname endFNH$#1\expandafter\endcsname %$
249         \csname end#1\endcsname
250     \FNH@msne@ii[#1]{FNH$#1}%$
251 }%
252 \def\FNH@msne@ii[#1]#2{%
253     \expandafter\edef\csname#1\endcsname{%
254         \noexpand\savenotes
255         \expandafter\noexpand\csname#2\endcsname
256     }%
257     \expandafter\edef\csname end#1\endcsname{%
258         \expandafter\noexpand\csname end#2\endcsname
259         \noexpand\expandafter
260         \noexpand\spewnotes
261         \noexpand\if@endpe\noexpand\@endpetrue\noexpand\fi
262     }%
263 }%

```

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

```

264 % \makesavenoteenv[minipage*]{minipage}
265 % \let\fn@parbox\parbox
266 % \def\parbox{\@ifnextchar[{\fn@parbox@i}}{\fn@parbox@ii}}
267 % \def\fn@parbox@i#1[#2]{%
268 %     \@ifnextchar[{\fn@parbox@i{#1[#2]}}{\fn@parbox@ii{#1[#2]}}%
269 % }

```

5 Implementation

```
270 % \long\def\fn@parbox@ii#1#2#3{\savenotes\fn@parbox#1{#2}{#3}\spewnotes}  
271 \endinput
```