

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: 1.1d (2021/02/04)
% 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).

v1.1d (2021/02/04) Fix regression at v1.1b which caused a build crash whenever `footnotehyper` decided to raise a warning relative to `\@makefntext`.³

Refactor analysis of `\@makefntext` for simpler and better support of `babel-french`.⁴ Better support contexts such as presence of package `cleveref`.

Add `\iffootnotehyperparse` and `\iffootnotehyperwarn` booleans.

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.

Setting-up the environments proceeds from an analysis of the pre-existing internal \LaTeX macro `\@makefntext`. The next section discusses problems which may arise.

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.

³Thanks to Leon K. for reporting the bug.

⁴Only basic context has been tested with `babel-french`: standard classes, `KOMA-script`, `memoir`. Extra packages may make the `footnotehyper` environments cause breakage.

3.1 Potential difficulties with the footnote and footnotetext environments

What is discussed here only affects the *environments* footnote and footnotetext not the macros \footnote and \footnotetext.

footnotehyper inherits from footnote original package the aim to convert \@makefnmark into two parts, the first one to be inserted at the start of a footnote in environment form, the second one (usually empty) at its end.⁵ It thus hopes that the replacement text of \@makefnmark contains only once its parameter token #1, and that it is used there unbraced. This is the case with the article class.

Known bug (may be promoted to feature at some point): the analysis is done only once at begin document, whereas the article.cls's redefines \@makefnmark during execution of \maketitle. However, it does not look really urgent to support at all costs usage of the environment footnote in the \author etc... data which contributes to the \maketitle expansion.⁶

Some 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 }
\usebeamerfont ***{footnote}
```

are not (easily) compatible with environment forms for footnotes allowing verbatim material, as they require fetching the footnote contents.⁷

In case of such a problematic \@makefnmark **footnotehyper** raises a warning, to explain that footnotes typeset using the environment forms will be dysfunctional (the footnote marker at bottom of page will be missing, probably). Footnotes using \footnote are not impacted by this.

Also **footnotehyper** emits some info message if \@makefnmark was not as simple as expected but nevertheless there is some hope that the footnote and footnotetext environments will be fully functional. This is currently the case in presence of package cleveref (see the T_EXperts footnote 6).

You can turn off these messages by adding \footnotehyperwarnfalse to the document preamble.

⁵ L^AT_EX inserts some stuff before and after the footnote text, even before handing it over as argument to \@makefnmark. These tokens are currently hardcoded into the **footnotehyper** environments for footnotes.

⁶ T_EXperts note: \def\FNH@prefntext{\@makefnmark{}} would make the footnote environment dynamically adjust to circumstances, when \@makefnmark only adds some prefix and no postfix. In fact, this is (in a more complicated form for compatibility with KOMA-script and to obey the FBFrenchFootnotes setting and the additional extra stuff inserted by babel-french before and after) basically what is done by **footnotehyper** to handle babel-french.

As it may cause instability if extra packages fiddle with \@makefnmark, or \@makefnmark is radically re-defined in some environments provided by the class, **footnotehyper** does not use this when its begin document analysis concluded the argument was used unbraced and at last position in replacement text of \@makefnmark, but it freezes the found prefix. However, when it is concluded that probably \@makefnmark has been redefined in an <extra tokens>\old@makefnmark way (for example, this is the case with cleveref package), then the \def\FNH@prefntext{\@makefnmark{}} approach is taken, despite the risks inherent to it.

You can provide your own definitions of \FNH@prefntext and \FNH@postfntext. Then add \footnotehyperparsefalse to the preamble.

⁷ Since v1.1a, **footnotehyper** simply aborts under beamer class.

3.2 Other potential or actual limitations

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`.)

3.3 A legacy macro from the original package, usage not recommended

Finally there is a `\makesavenoteenv` command which takes as argument an environment name and patches it to do the `\savenotes/\spewnotes` automatically.⁸ 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}...`!

3.4 Example of use

Inside⁹ a
tabular¹⁰

Here is an illustrative example of usage of the `savenotes` environment:

```

\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.%
\footnote{\phantomsection\label{fn:floats}}It doesn't bring any
feature to especially handle the issues related to footnotes in floating
environments, though.}
\end{framed}
\end{savenotes}
Here is a link to an interesting footnote: \ref{fn:floats}.

and the present frame has \footnote's from inside a tabular and is inside a savenotes
environment.11 Let's test an amsmath environment with \intertext. As

```

$$E = mc^2, \quad (1)$$

⁸For 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

was too easy¹², let's try:

$$a^n + b^n = c^n. \quad (2)$$

And a footnote with some verbatim material¹³.

The last one was coded as:

```
And a footnote with some verbatim material%
\begin{footnote}
  \verb|&$^%\[]$|
\end{footnote}.
```

Now some use of `\footnotemark`¹⁴ 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. Oh, and don't forget

⁹If the frame extends to the next page, the end of the `savenotes` environment delivers its intercepted footnotes only there.

¹⁰Alternatively a `\savenotes/\spewnotes` pair could have been used.

¹¹Here 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 $\text{\TeX}/\text{\LaTeX}$ problem. For good measure there is now an `\ignorespaces` in `\begin{savenotes}`.

¹²There is also $E = h\nu$.

¹³`&$^%\[]$`

¹⁴This 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.)

⁵⁷`footnotehyper` works since v1.0 also in absence of `hyperref` or when the latter was passed `hyperfootnotes=false` option.

to read this interesting footnote: [11](#) (just in case you skipped on first reading).

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\ifFB@AutoSpaceFootnotes
    \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**.

- some environments typeset multiple times their contents, which causes issues; **footnotehyper** takes provisions only to handle the `amsmath` measuring step.
- L^AT_EX2e 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 [2021/02/04 v1.1d hyperref aware footnote.sty (JFB)]

```

no options The package has no options. I am too lazy.

```

4 \newif\iffootnotehyperparse\footnotehyperparsetrue
5 \newif\iffootnotehyperwarn \footnotehyperwarntrue
6 \DeclareOption*%
7   {\PackageWarning{footnotehyper}{Option '\CurrentOption' is unknown}}%
8 \ProcessOptions\relax

```

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

```

9 \@ifclassloaded{beamer}
10   {\PackageWarningNoLine{footnotehyper}{This package is
11     incompatible with the beamer class. Aborting input..}%
12   \endinput}
13   {}%

```

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`.

```

14 \newbox\FNH@notes
15 \newdimen\FNH@width
16 \newtoks\FNH@toks % 1.1c
17 \let\FNH@colwidth\columnwidth
18 \newif\iffNH@savingnotes
19 \AtBeginDocument {%
20   \let\FNH@latex@footnote \footnote
21   \let\FNH@latex@footnotetext\footnotetext
22   \let\FNH@H@@footnotetext \@footnotetext
23   \let\FNH@H@@mpfootnotetext \@mpfootnotetext
24   \newenvironment{savenotes}
25     {\FNH@savenotes\ignorespaces}\FNH@spewnotes\ignorespacesafterend}%
26   \let\spewnotes \FNH@spewnotes
27   \let\footnote \FNH@footnote
28   \let\footnotetext \FNH@footnotetext
29   \let\endfootnote \FNH@endfn
30   \let\endfootnotetext\FNH@endfn
31   \ifpackageloaded{hyperref}
32     {\ifHy@hyperfootnotes
33       \let\FNH@H@@footnotetext\H@@footnotetext
34       \let\FNH@H@@mpfootnotetext\H@@mpfootnotetext

```

5 Implementation

```

35     \else
36         \let\FNH@hyper@fntext\FNH@nohyp@fntext
37     \fi}%
38     {\let\FNH@hyper@fntext\FNH@nohyp@fntext}%
39 }%

```

\FNH@hyper@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.

```

40 \def\FNH@hyper@fntext{\FNH@fntext\FNH@hyper@fntext@i}%
41 \def\FNH@nohyp@fntext{\FNH@fntext\FNH@nohyp@fntext@i}%
42 \def\FNH@fntext #1{\ifx\ifmeasuring@\@undefined
43     \expandafter\@secondoftwo\else\expandafter\@firstofone\fi
44     {\ifmeasuring@\expandafter\@gobbletwo\fi}#1%
45 }%

```

\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."

```

46 \long\def\FNH@hyper@fntext@i#1{%
47     \global\setbox\FNH@notes\vbox
48     {\unvbox\FNH@notes
49     \FNH@startnote
50     \@makefntext
51     {\rule\z@\footnotesep\ignorespaces
52     \ifHy@nesting\expandafter\ltx@firstoftwo
53     \else\expandafter\ltx@secondoftwo
54     \fi
55     {\expandafter\hyper@@anchor\expandafter{\Hy@footnote@currentHref}{#1}}%
56     {\Hy@raisedlink
57     {\expandafter\hyper@@anchor\expandafter{\Hy@footnote@currentHref}}%
58     {\relax}}}%
59     \let\@currentHref\Hy@footnote@currentHref
60     \let\@currentlabelname\@empty
61     #1}%
62     \@finalstrut\strutbox
63 }%
64 \FNH@endnote
65 }%
66 }%

```

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

```

67 \long\def\FNH@nohyp@fntext@i#1{%
68     \global\setbox\FNH@notes\vbox
69     {\unvbox\FNH@notes
70     \FNH@startnote
71     \@makefntext{\rule\z@\footnotesep\ignorespaces#1\@finalstrut\strutbox}%
72     \FNH@endnote
73 }%
74 }%

```


5 Implementation

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

```

75 \def\FNH@startnote{%
76   \hsize\FNH@colwidth
77   \interlinepenalty\interfootnotelinepenalty
78   \reset@font\footnotesize
79   \floatingpenalty\@MM% Is this right???
80   \@parboxrestore
81   \protected@edef\@currentlabel{\csname p@\@mpfn\endcsname\@thefnmark}%
82   \color@begingroup
83 }%
```

`\FNH@endnote` Fixed from original.

```

84 \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.

```

85 \def\FNH@savenotes{%
86   \begingroup
87   \ifFNH@savingnotes\else
88     \FNH@savingnotestruetrue
89     \let\@footnotetext\FNH@hyper@fntext
90     \let\@mpfootnotetext\FNH@hyper@fntext
91     \let\H@@mpfootnotetext\FNH@nohyp@fntext % fool hyperref's \@xfootnotetext
92     \FNH@width\columnwidth
93     \let\FNH@colwidth\FNH@width
94     \global\setbox\FNH@notes\box\voidb@x
95     \let\FNH@thempfn\thempfn
96     \let\FNH@mpfn\@mpfn
97     \ifx\@minipagerestore\relax\let\@minipagerestore\@empty\fi
98     \expandafter\def\expandafter\@minipagerestore\expandafter{%
99       \@minipagerestore
100      \let\thempfn\FNH@thempfn
101      \let\@mpfn\FNH@mpfn
102    }%
103   \fi
104 }%
```

`\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 L^AT_EX 2_ε environment.

5 Implementation

```

105 \def\FNH@spewnotes {%
106   \if@endpe\ifx\par\@par\FNH@toks{}\else
107     \FNH@toks\expandafter{\expandafter
108       \def\expandafter\par\expandafter{\par}\@endpetrue}%
109     \expandafter\expandafter\expandafter
110     \FNH@toks
111     \expandafter\expandafter\expandafter
112     {\expandafter\the\expandafter\FNH@toks
113       \expandafter\def\expandafter\@par\expandafter{\@par}}%
114     \expandafter\expandafter\expandafter
115     \FNH@toks
116     \expandafter\expandafter\expandafter
117     {\expandafter\the\expandafter\FNH@toks
118       \expandafter\everypar\expandafter{\the\everypar}}\fi
119 \else\FNH@toks{}\fi
120 \expandafter
121 \endgroup\the\FNH@toks
122 \ifFNH@savingnotes\else
123   \ifvoid\FNH@notes\else
124     \begingroup
125       \let\@makefntext\@empty
126       \let\@finalstrut\@gobble
127       \let\rule\@gobbletwo
128       \ifx\@footnotetext\@mpfootnotetext
129         \expandafter\FNH@H@\@mpfootnotetext
130       \else
131         \expandafter\FNH@H@\@footnotetext
132       \fi{\unvbox\FNH@notes}%
133     \endgroup
134   \fi
135 \fi
136 }%
```

`\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.

```

137 \def\FNH@footnote@envname {footnote}%
138 \def\FNH@footnotetext@envname{footnotetext}%
139 \def\FNH@footnote{%
140   \ifx\@currenvir\FNH@footnote@envname
141     \expandafter\FNH@footnoteenv
```

5 Implementation

```

142 \else
143 \expandafter\FNH@latex@footnote
144 \fi
145 }%
146 \def\FNH@footnoteenv{%
147 \ifnextchar[%
148 \FNH@footnoteenv@i %]
149 {\stepcounter\@mpfn
150 \protected@xdef\@thefnmark{\thempfn}%
151 \@footnotemark
152 \def\FNH@endfntext@fntext{\@footnotetext}%
153 \FNH@startfntext}%
154 }%
155 \def\FNH@footnoteenv@i[#1]{%
156 \begingroup
157 \csname c@\@mpfn\endcsname #1\relax
158 \unrestored@protected@xdef\@thefnmark{\thempfn}%
159 \endgroup
160 \@footnotemark
161 \def\FNH@endfntext@fntext{\@footnotetext}%
162 \FNH@startfntext
163 }%
164 \def\FNH@footnotetext{%
165 \ifx\@currenvir\FNH@footnotetext@envname
166 \expandafter\FNH@footnotetextenv
167 \else
168 \expandafter\FNH@latex@footnotetext
169 \fi
170 }%
171 \def\FNH@footnotetextenv{%
172 \ifnextchar[%
173 \FNH@footnotetextenv@i %]
174 {\protected@xdef\@thefnmark{\thempfn}%
175 \def\FNH@endfntext@fntext{\@footnotetext}%
176 \FNH@startfntext}%
177 }%
178 \def\FNH@footnotetextenv@i[#1]{%
179 \begingroup
180 \csname c@\@mpfn\endcsname #1\relax
181 \unrestored@protected@xdef\@thefnmark{\thempfn}%
182 \endgroup
183 \ifFNH@savingnotes
184 \def\FNH@endfntext@fntext{\FNH@nohyp@fntext}%
185 \else
186 \def\FNH@endfntext@fntext{\FNH@H@@footnotetext}%
187 \fi
188 \FNH@startfntext
189 }%

```

\FNH@startfntext
\FNH@endfntext
\FNH@endfntext@fntext

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

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

The `\FNH@endfntext@fntext` may be `\@footnotetext` (which will be `\FNH@hyper@fntext` in

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savenotes environment), or `\FNH@H@@footnotetext`, or `\FNH@nohyp@fntext` if in savenotes scope.

```

190 \def\FNH@startfntext{%
191   \setbox\z@\vbox\bgroup
192   \FNH@startnote
193   \FNH@prefntext
194   \rule\z@\footnotesep\ignorespaces
195 }%
196 \def\FNH@endfntext {%
197   \@finalstrut\strutbox
198   \FNH@postfntext
199   \FNH@endnote
200   \egroup
201   \beginingroup
202   \let\@makefntext\@empty\let\@finalstrut\@gobble\let\rule\@gobbletwo
203   \FNH@endfntext@fntext {\unvbox\z@}%
204   \endgroup
205 }%
```

`\@makefntext`
`\FNH@prefntext`
`\FNH@postfntext`
`\FNH@check`

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 \TeX 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`.

Refactoring at v1.1d. This will make `footnotehyper` compatible with `cleveref` for example, if nothing else interferes. Not all combinations of classes and packages can be handled and we can not hardcode a pre-analysis for all possible cases. Of course, one can not expect `footnotehyper` to be compatible with other footnote dedicated packages, but at best only with slight modifications of \LaTeX 's defaults. At v1.1d the `babel-french` context is handled especially (to support it better with KOMAscript classes and simplify handling the memoir situation); there was no real other way than hardcode it more or less, but it can possibly break in presence of additional footnote packages.

Also the `\iffootnotehyperparse` and `\iffootnotehyperwarn` booleans were added.

Provide at least some definitions for `\FNH@prefntext` and `\FNH@postfntext` in case of `\footnotehyperparsefalse` in preamble.

```

206 \let\FNH@prefntext\@empty
207 \let\FNH@postfntext\@empty
208 \AtBeginDocument{\iffootnotehyperparse\expandafter\FNH@check\fi}%
```

As `\iffBFrenchFootnotes` is not a \TeX boolean if `babel-frenchb` isn't loaded, we have to work around this for `\if... \fi` pairs.

v1.1d fixes a v1.1b bug: any situation in `\FNH@check@a` causing the `\FNH@bad@makefntext@alert` branch to be chosen crashed the build due precisely to this problem with `\iffBFrenchFootnotes` status. I had taken precautions for the `\else` branch but not for the "warning" branch.

So let's fix this, and do it in such a way (with `\FNH@safeif`) that the \TeX `\if... \fi` balancing count does not perturbate enclosing the package loading in a \TeX conditional. Why I am bothering, I don't know.

Finally, I refactored entirely the way `frenchb` context is handled, (using multiple times `\FNH@safeif` although now only for the artistic aim of balanced conditionals, as all `frenchb`-related stuff being in their dedicated macro, direct usage of `\iffB...` is possible).

As long as nothing else interferes `babel-french` should be ok with standard classes, KOMA and memoir.

```

209 \def\FNH@safeif#1{%
210   \iftrue\csname if#1\endcsname\csname fi\endcsname\expandafter\@firstoftwo
```

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```

211 \else\csname fi\endcsname\expandafter\@secondoftwo
212 \fi
213 }%
214 \def\FNH@check{%
215 \ifx\@makefntextFB\@undefined\expandafter\FNH@check@
216 \else\expandafter\FNH@frenchb@
217 \fi
218 }%
219 \def\FNH@frenchb@{%
220 \def\FNH@prefntext{%
221 \llocalleftbox{}}%
222 \let\FBeverypar@save\FBeverypar@quote
223 \let\FBeverypar@quote\relax
224 \FNH@safeif{FB@koma}%
225 {\FNH@safeif{FBFrenchFootnotes}%
226 {\ifx\footnote\thanks
227 \let\@makefnmark\@makefnmarkTH
228 \@makefntextTH{} % space as in french.ldf
229 \else
230 \let\@makefnmark\@makefnmarkFB
231 \@makefntextFB{} % space as in french.ldf
232 \fi
233 }{\let\@makefnmark\@makefnmarkORI
234 \@makefntextORI{}}% no space as in french.ldf
235 }%
236 }%
237 {\FNH@safeif{FBFrenchFootnotes}%
238 {\@makefntextFB{}}%
239 {\@makefntextORI{}}%
240 }%
241 }%
242 \def\FNH@postfntext{%
243 \let\FBeverypar@quote\FBeverypar@save
244 \llocalleftbox{\FBeveryline@quote}%
245 }%
246 \iffootnotehyperwarn
247 \PackageInfo{footnotehyper}%
248 {frenchb compatibility patch activated.^} It will not work in
249 all circumstances.^} In case of problems with the 'footnote' or
250 'footnotetext' environments,^} please send to the author a small
251 file demonstrating the problem.^} To turn off this message, add
252 \string\footnotehyperwarnfalse\space to the preamble.^}%
253 \fi
254 }%

```

“Daring analysis” is an understatement. At v1.1b we added 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 fixed this by adding a `\scantokens` wrapper.

At v1.1d I refactored the babel-french situation, moving it to an entirely dedicated `\FNH@frenchb@`, and dropped the v1.1b usage of `\scantokens`.

v1.1d adds `\FNH@checkagain@` which will identify circumstances likely to be safe for the approach via `\def\FNH@prefntext{\@makefntext{}}`. For example this is what will happen with `cleveref` (if not

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modified by other packages).

```

255 \def\FNH@check@{%
256   \expandafter\FNH@check@a\@makefntext{1.2!3?4,}%
257   \FNH@@@1.2!3?4,\FNH@@@relax
258 }%
259 \long\def\FNH@check@a #11.2!3?4,#2\FNH@@@#3{%
260   \ifx\relax#3\expandafter\FNH@checkagain@
261   \else
262     \def\FNH@prefntext{#1}\def\FNH@postfntext{#2}%
263     \expandafter\FNH@check@b
264   \fi
265 }%

```

The argument was not seen unbraced at top. Maybe it is not fetched, or it was but was left at the end, braced. If this is the case we use the fallback `\def\FNH@prefntext{\@makefntext{}}`, which may work.

```

266 \def\FNH@checkagain@{%
267   \expandafter\FNH@checkagain@a
268   \detokenize\expandafter{\@makefntext{1.2!3?4,}}\relax\FNH@@@
269 }%
270 \edef\FNH@temp{\noexpand\FNH@checkagain@a ##1\string{1.2!3?4,\string}}%
271 \expandafter\def\FNH@temp#2#3\FNH@@@{%
272   \ifx\relax#2%
273     \def\FNH@prefntext{\@makefntext{}}%
274     \iffootnotehyperwarn
275       \PackageInfo{footnotehyper}%
276       {using \string\@makefntext{} approach.^}
277       In case of problems with the footnote environments, please send^^J
278       to the author a small document source illustrating them. To turn^^J
279       off this message, add
280       \string\footnotehyperwarnfalse\space to preamble.^}
281   \fi
282   \else\FNH@bad@makefntext@alert
283   \fi
284 }%

```

Back to non babel-french context. Let's check that pre and post do not contain some weird stuff from original `\@makefntext{#1}` containing multiple times #1.

```

285 \def\FNH@check@b #1\relax{%
286   \expandafter\expandafter\expandafter\FNH@check@c
287   \expandafter\meaning\expandafter\FNH@prefntext
288   \meaning\FNH@postfntext1.2!3?4,\FNH@check@c\relax
289 }%
290 \def\FNH@check@c #11.2!3?4,#2#3\relax{%
291   \ifx\FNH@check@c#2\else\FNH@bad@makefntext@alert\fi
292 }%
293 \def\FNH@bad@makefntext@alert{%
294   \iffootnotehyperwarn
295     \PackageWarningNoLine{footnotehyper}%
296     {^^J The footnote environments will probably lack footnote numbers at^^J
297     bottom of pages, sorry.^}
298     You may try to email the author this meaning of \string\@makefntext:^}
299     \meaning\@makefntext^^J
300     together with the document preamble}%
301   \fi

```

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```
302 \let\FNH@prefntext\@empty\let\FNH@postfntext\@empty
303 }%
```

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

```
304 \def\makesavenoteenv{\@ifnextchar[\FNH@msne@ii\FNH@msne@i}%]
305 \def\FNH@msne@i #1{%
306   \expandafter\let\csname FNH$#1\expandafter\endcsname %$
307   \csname #1\endcsname
308   \expandafter\let\csname endFNH$#1\expandafter\endcsname %$
309   \csname end#1\endcsname
310   \FNH@msne@ii[#1]{FNH$#1}%$
311 }%
312 \def\FNH@msne@ii[#1]#2{%
313   \expandafter\edef\csname#1\endcsname{%
314     \noexpand\savenotes
315     \expandafter\noexpand\csname#2\endcsname
316   }%
317   \expandafter\edef\csname end#1\endcsname{%
318     \expandafter\noexpand\csname end#2\endcsname
319     \noexpand\expandafter
320     \noexpand\spewnotes
321     \noexpand\if@endpe\noexpand\@endpetrue\noexpand\fi
322   }%
323 }%
```

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

```
324 % \makesavenoteenv[minipage*]{minipage}
325 % \let\fn@parbox\parbox
326 % \def\parbox{\@ifnextchar[\fn@parbox@i\fn@parbox@ii]}
327 % \def\fn@parbox@i#1[#2]{%
328 %   \@ifnextchar[\fn@parbox@i#1[#2]]{\fn@parbox@ii#1[#2]}%
329 % }
330 % \long\def\fn@parbox@ii#1#2#3{\savenotes\fn@parbox#1[#2]{#3}\spewnotes}
331 \endinput
```