

The **footnotehyper** package

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Abstract

The footnote package by Mark WOODING (which dates back to 1997) allows to gather footnotes (`\savenotes`) and later insert them (`\spewnotes`) at the bottom of the page, even if the intervening material consists of tabulars, minipages or framed contents for example. There is a command to patch any given environment to do the `\savenotes/\spewnotes` commands automatically. Also there is a footnote environment which allows to insert verbatim material.

The **footnotehyper** package loads `footnote.sty` and rewrites a number of its commands to add `hyperref` awareness and to fix some issues, particularly the one of incompatibility with `color/xcolor`. The incompatibility with `babel-frenchb` is addressed, too. In case of absence of `hyperref`, **footnotehyper** limits itself to partially fix some of these issues.

This package provides no facility dedicated to footnotes from floating environments.

1 License

```
% Package: footnotehyper
% Version: 0.9f (2016/10/03)
% License: LPPL 1.3c
% Copyright (C) 2016 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

DON'T load footnote, leave that job to **footnotehyper**. You *must* load `hyperref`.¹

¹Since v0.9e **footnotehyper** deactivates itself gracefully if `hyperref` is not loaded, or under `hyperref` option `hyperfootnotes=false`.

2 Usage

Then you can use `\savenotes/\spewnotes` or the equivalent `savenotes` environment; there is also a `footnote` environment, but its set-up during `footnotehyper` loading is more delicate and it could well fail depending on how `\@makefnctext` has been customized by the class or other packages; a warning is issued in that case. A functional `footnote` environment allows footnotes with verbatim material.

Please refer to the documentation of the `footnote` package.²
Particularly you may check its `\makesavenoteenv` command.³

We can try some normal footnote.⁴

The above⁵ was coded⁶ as:

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

  Particularly you may check its |\makesavenoteenv| command.%
  \footnote{This won't handle floating environments, though.}
\end{framed}
\spewnotes
```

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

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

was too easy,⁸ let's try:

$$F = nd^3. \tag{2}$$

²<http://ctan.org/pkg/footnote>

³This won't handle floating environments, though.

⁴Here it is.

⁵Notice that if the present frame extended to next page, the end of the `savenotes` environment would then (try to) deliver its footnotes to that page.

⁶Alternatively a `savenotes` environment could have been used.

⁷Here 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 `%` after the `minipage` (or after the surrounding environment; or a `\par` immediately), else the output will have an extra blank line if the source has itself a blank line there. I hesitated adding that to `\spewnotes/\endsavenotes`. Finally I left as is.

⁸There is also $E = h\nu$.

3 Notes

Use of the `footnote` environment with some verbatim material⁹ which was coded as:

```
Use of the \texttt{footnote} \emph{environment} with some verbatim material%
\begin{footnote}
  \verb|&$^%\[]$|
\end{footnote}
which was coded as:
<let's avoid infinite recursion ;-)>
```

And here a use of `\footnotemark`¹⁰ followed by a `footnotetext` environment. Now a use of `\footnotemark[N]`⁹⁹ followed with a `footnotetext` environment using the same optional argument `[N]`. No hyperfootnote link is then inserted by `hyperref`. And a final footnote, with a footnote environment using an optional argument `[N]`.¹⁰⁰ No problem with the hyperlink, then.

3 Notes

The `footnote` environment of `footnote.sty` had various issues but as **footnotehyper** initially focused only on `\savenotes/\spewnotes` I became aware only at the time of v0.9f of the error when this environment is used with the optional `[N]` parameter; this is a different bug than the one of incompatibility with `color/xcolor`. The v0.9f release fixes this new problem (no extensive tests were done.)

During this I realized (this is unrelated to `footnote` package or **footnotehyper**) that there is a typesetting interference of `hyperref` with `babel+frenchb` in the case of the `\footnotemark[N]` syntax. **footnotehyper** does not fix that. I reported the problem and perhaps an upstream fix will come at a later date (tested with `hyperref` 6.83q and `frenchb` 3.2c).

The `hyperref` package inserts no hyperlink in case of `\footnotemark[N]/\footnotetext[N]`. This is not modified by **footnotehyper**.

The `footnote.sty` package patches the L^AT_EX kernel `\parbox`. I had not realized that earlier, and starting with **footnotehyper** v0.9f the patch is undone. But the re-defined macro is made available as `\fnparbox`.

At this stage, **footnotehyper** rewrites large parts of the original `footnote.sty` code. Perhaps a later release will not load at all the original package (but it will keep the `\savenotes/\spewnotes` interface.)

⁹`&$^%\[]$`

¹⁰This one uses the normal footnote counter and the hyperlink works.

⁹⁹`hyperref` puts no hyperlink in this case, which is similar to the `\footnotemark[N]/\footnotetext[N]{<foo>}` context (there is no such problem with using the `[N]` with a `\footnote` or with a `footnote` environment.)

¹⁰⁰

footnotehyper deactivates itself if `hyperfootnotes=false` option to `hyperref` is detected, or if `hyperref` is not loaded at all. Essentially, it only then fixes some of the incompatibilities between `footnote.sty` and `color/xcolor/babel-frenchb` packages. But the bug making the `footnote` environment optional argument unusable remains unfixed by **footnotehyper** if `hyperref` has not been detected.

4 Implementation

```

1 \NeedsTeXFormat{LaTeX2e}
2 \ProvidesPackage{footnotehyper}%
3 [2016/10/03 v0.9f hyperref aware footnote.sty (JFB)]

```

It is surely difficult to understand the code here as its expansion depends on some macros whose definitions are still in `footnote.sty` and used with no modification here: the most important are `\savenotes`, `\fn@startnote`, and `\fn@startfntext` (which is used only for the environment form.) Obviously the macros here depend on what these three do.

Surely, next release of **footnotehyper** will drop entirely the idea of patching `footnote.sty` and will contain all definitions.

no options

```

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

```

```

\@makefntext We load footnote but leave to the user to take care of hyperref.
\footnote    As we need to intercept some re-definitions done by footnote.sty we will first check if it is already
\footnotetext loaded.
\parbox      If \@makefntext has been customized and its argument is not visible at top level in its meaning, then
\fn@endnote  loading footnote.sty will fail with a low level TeX error. We save its meaning and replace it by an innocuous
              one for the time being. We will come back to this at begin document.

```

`footnote.sty` modifies `\parbox`. We (v0.9f) undo the patch, because modifying `\parbox` in any way for no good reason is BAD.

The `\fn@endnote` was `\let` to `\color@endgroup` which is bad as it fails if `color/xcolor` is not yet loaded. Besides its presence was missing from some needed place (see later).

We postpone to at begin document the redefinitions of `\footnote` and `\footnotetext`.

```

6 \ifpackageloaded{footnote}
7   {\PackageWarningNoLine{footnotehyper}%
8     {Please next time do not load package footnote,^^}
9     but leave that to me. For the time being, I will start by undoing the^^}
10  modifications it did to \string\parbox. Use \string\fnparbox\space if needed.}%
11 }
12 {\let\FNH@makefntext\@makefntext\let\@makefntext\FNH@firstofone
13   \RequirePackage{footnote}
14   \let\@makefntext\FNH@makefntext
15 }%
16 \let\fnparbox\parbox\let\parbox\fn@parbox
17 \let\FNH@fn@footnote \footnote % footnote.sty's \footnote will get
18 \let\FNH@fn@footnotetext\footnotetext % redefined later. We preserve also
19 \let\footnote \fn@latex@@footnote % the meaning of \footnote from prior
20 \let\footnotetext\fn@latex@@footnotetext % to the loading of footnote.sty
21 \def\fn@endnote {\color@endgroup}%

```

There are some `\let`'s done by `footnote.sty` in what appears to be premature ways.

```

22 \AtBeginDocument {%
23   \let\fn@latex@@footnote \footnote % meaning of \footnote at end of preamble
24   \let\fn@latex@@footnotetext\footnotetext
25 }%

```

4 Implementation

`\FNH@inactive` Apart from fixing some of the bugs with `footnote.sty`'s footnote environment, we intervene only if `hyperfootnotes` option of `hyperref` applies.

```

26 \AtBeginDocument{\@ifpackageloaded{hyperref}
27   {\ifHy@hyperfootnotes
28     \let\fn@fntext \FNH@hyper@fntext
29     \let\spewnotes \FNH@hyper@spewnotes
30     \let\endsavenotes\spewnotes
31     \let\fn@endfntext\FNH@fixed@endfntext
32     \let\footnote    \FNH@fixed@footnote
33     \let\footnotetext\FNH@fixed@footnotetext
34   }
35   \FNH@inactive
36 \fi }{\FNH@inactive}%
37 \let\endfootnote\fn@endfntext
38 \let\endfootnotetext\endfootnote
39 }%
```

v0.9e did a partial fix of the footnote environment from `footnote.sty`, v0.9f fix is more complete but is applied only if `hyperref` is present with option `hyperfootnotes=true`.

```

40 \def\FNH@fix@endfntext\@finalstrut\strutbox\fn@postfntext
41   {\@finalstrut\strutbox\fn@postfntext\fn@endnote}%
42 \def\FNH@inactive {%
43   \let\footnote    \FNH@fn@footnote
44   \let\footnotetext\FNH@fn@footnotetext
45   \expandafter\expandafter\expandafter\def
46   \expandafter\expandafter\expandafter\fn@endfntext
47   \expandafter\expandafter\expandafter
48   {\expandafter\FNH@fix@endfntext\fn@endfntext}%
49   \PackageInfo{footnotehyper}%
50   {hyperref package not loaded or hyperfootnotes^^]
51   =false option; I did not activate myself and only patched footnote.sty^^]
52   for color/xcolor compatibility, leaving some other issues unfixed.}}%
```

`\FNH@hyper@fntext` Some `amsmath` complications. I change the coding, but same effect as in original `\fn@fntext`.

```

53 \def\FNH@hyper@fntext {\ifx\ifmeasuring@\undefined\expandafter\@secondoftwo
54   \else\expandafter\@firstofone\fi
55   {\ifmeasuring@\expandafter\@gobbletwo\fi}%
56   \FNH@hyper@fntext@i }%
```

`\FNH@hyper@fntext@i` Note: original `\fn@fntext` had no `\long`, which looks wrong.

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

```

57 \long\def\FNH@hyper@fntext@i #1{\global\setbox\fn@notes\vbox
58   {\unvbox\fn@notes
59   \fn@startnote
60   \@makefntext
61   {\rule\z@\footnotesep\ignorespaces
62   \ifHy@nesting\expandafter\ltx@firstoftwo
63   \else\expandafter\ltx@secondoftwo
64   \fi
65   {\expandafter\hyper@@anchor\expandafter{\Hy@footnote@currentHref}{#1}}%
66   {\Hy@raisedlink
67   {\expandafter\hyper@@anchor\expandafter{\Hy@footnote@currentHref}}%
```

4 Implementation

```

68      {\relax}}%
69      \let\@currentHref\Hy@footnote@currentHref
70      \let\@currentlabelname\@empty
71      #1}%
72      \@finalstrut\strutbox }%
73      \fn@endnote }%
74 }%

```

`\FNH@hyper@spewnotes` The final touch in our hack is to patch the original `\spewnotes` for it to use the original, non-`hyperref` modified, version of `\@footnotetext`. And let's not forget `\endsavenotes` (done at begin document).

```

75 \def\FNH@hyper@spewnotes {\endgroup
76   \if@savingnotes\else\ifvoid\fn@notes\else
77   \begingroup\let\@makefntext\@empty
78       \let\@finalstrut\@gobble
79       \let\rule\@gobbletwo
80       \H@@footnotetext{\unvbox\fn@notes}%
81   \endgroup\fi\fi
82 }%

```

`\FNH@fixed@endfntext` 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 them for `\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`, its `\fn@getmark` isn't used at all.

```

83 \def\FNH@fixed@endfntext {%
84   \@finalstrut\strutbox
85   \fn@postfntext
86   \fn@endnote
87   \egroup\FNH@endfntext@next % will decide if link or no link
88 }%
89 \def\FNH@endfntext@link {\begingroup
90   \let\@makefntext\@empty\let\@finalstrut\@gobble\let\rule\@gobbletwo
91   \@footnotetext {\unvbox\z@}%
92   \endgroup
93 }%
94 \def\FNH@endfntext@nolink {\begingroup
95   \let\@makefntext\@empty\let\@finalstrut\@gobble
96   \let\rule\@gobbletwo
97   \if@savingnotes\expandafter\fn@fntext\else\expandafter\H@@footnotetext\fi
98   {\unvbox\z@}\endgroup
99 }%

```

`\FNH@fixed@footnote`

```

100 \def\FNH@fixed@footnote {\ifx\@currenvir\fn@footnote
101   \expandafter\FNH@footnoteenv\else\expandafter\fn@latex@@footnote\fi }%
102 \def\FNH@footnoteenv {\@ifnextchar[\FNH@xfootnoteenv%

```

4 Implementation

```

103   {\stepcounter\@mpfn
104     \protected@xdef\@thefnmark{\thempfn}\@footnotemark
105     \def\FNH@endfntext@next{\FNH@endfntext@link}\fn@startfntext}}%
106 \def\FNH@xfootnoteenv [#1]{%
107   \begingroup
108     \csname c@\@mpfn\endcsname #1\relax
109     \unrestored@protected@xdef\@thefnmark{\thempfn}%
110     \endgroup\@footnotemark\def\FNH@endfntext@next{\FNH@endfntext@link}%
111     \fn@startfntext}%
112 \def\FNH@fixed@footnotetext {\ifx\@currenvir\fn@footnotetext
113   \expandafter\FNH@footnotetextenv\else\expandafter\fn@latex@@footnotetext\fi}%
114 \def\FNH@footnotetextenv {\@ifnextchar[\FNH@xfootnotetextenv%
115   {\protected@xdef\@thefnmark{\thempfn}%
116     \def\FNH@endfntext@next{\FNH@endfntext@link}\fn@startfntext}}%
117 \def\FNH@xfootnotetextenv [#1]{%
118   \begingroup
119     \csname c@\@mpfn\endcsname #1\relax
120     \unrestored@protected@xdef\@thefnmark{\thempfn}%
121     \endgroup\def\FNH@endfntext@next{\FNH@endfntext@nolink}%
122     \fn@startfntext}%

```

`\@makefntext` The definitions of `\fn@prefntext` and `\fn@postfntext` (which are needed for the footnote environment, within `\fn@startfntext` and `\fn@endfntext`) are from a daring analysis done inside `footnote.sty` of `\fn@prefntext`. It may very easily fail to give a sensible result. **footnotehyper** does a check of its own to determine if that was the case but can't salvage the situation, except for hard-coded rescues like done here with `frenchb`. In particular the mechanism is doomed to failure if the parameter in `\@makefntext` is not visible at top level in its meaning. It is also wrong if the parameter is used multiple times. These checks will fail (rather, they are skipped) if `footnote`'s loading was done by the user and not by `footnotehyper`.

Note: there is an interference which I could fix here between `hyperref` and `frenchb` regarding `\footnotemark[NUM]`, but it is better to wait it is fixed on `frenchb` side (or `hyperref`'s side !), else my own fix might badly interfere with the "official" one ; -).

```

123 \ifx\FNH@makefntext\undefined\expandafter\@gobble
124   \else\expandafter\AtBeginDocument\fi
125 {%
126   \ifx\@makefntextFB\undefined
127     \expandafter\@gobble\else\expandafter\@firstofone\fi
128   {\ifFBFrenchFootnotes \let\FNH@makefntext\@makefntextFB \else
129     \let\FNH@makefntext\@makefntextORI\fi}%
130   \expandafter\FNH@check@a\FNH@makefntext{1.2!3?4,}\FNH@@@1.2!3?4,\FNH@@@\relax
131 }%
132 \long\def\FNH@check@a #1.2!3?4,#2\FNH@@@#3%
133 {%
134   \ifx\relax#3\expandafter\@firstoftwo\else\expandafter\@secondoftwo\fi
135   \FNH@bad@footnote@env
136   {\def\fn@prefntext{#1}\def\fn@postfntext{#2}\FNH@check@b}%
137 }%
138 \def\FNH@check@b #1\relax
139 {%
140   \expandafter\expandafter\expandafter\FNH@check@c
141   \expandafter\meaning\expandafter\fn@prefntext
142   \meaning\fn@postfntext1.2!3?4,\FNH@check@c\relax
143 }%
144 \def\FNH@check@c #1.2!3?4,#2#3\relax

```

4 Implementation

```
145 {\ifx\FNH@check@c#2\expandafter\@gobble\fi\FNH@bad@footnote@env}%
146 \def\FNH@bad@footnote@env
147 {\PackageWarningNoLine{footnotehyper}%
148 {The footnote environment from package footnote^^J
149 will be dysfunctional, sorry (not my fault...). You may try to mail me the^^J
150 preamble and/or only the next lines:}%
151 \typeout{\meaning\@makefntext}%
152 \let\fn@prefntext\@empty\let\fn@postfntext\@empty
153 }%
154 \endinput
```