The `varioref` package*

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Abstract

This package defines the commands `\vref` and `\vpageref` for LaTeX 2_ε. `\vref` is similar to `\ref` but adds an additional page reference, like 'on the facing page' or 'on page 27' whenever the corresponding `\label` is not on the same page. The command `\vpageref` is a variation to `\pageref` with a similar functionality. Generated strings are customizable so that these commands are usable with other languages.

1 Introduction

In many cases it is helpful when refering to a figure or table to put both a `\ref` and a `\pageref` command into the document especially when there are one or more pages between the reference and the object. Therefore some people use a command like

```
\newcommand{\fullref}[1]{\ref{#1} on page~\pageref{#1}}
```

which reduces the number of key strokes, necessary to make such a complete reference. But since one never knows where the referenced object finally falls, using such a device may result in a page reference to the current page which is disturbing and therefore should be avoided.

2 The user interface

`\vref` The implementation of `\vref` below produces only a `\ref` when reference and `\label` are on the same page. It will additionally produce one of the strings 'on the facing page', 'on the preceding page', or 'on the following page', if label and reference differ by one and it will produce both `\ref` and `\pageref` when the difference is larger. The word 'facing' is used when label and reference both fall onto a double spread. However, if a special page numbering scheme is used instead of the usual arabic numbering (e.g., `\pagenumbering{roman}`) then there will be no distinction between one or many pages off.

`\vpageref` Sometimes one wants to refer only to page number and again such a reference should normally be suppressed if we are refering to the current page. For this purpose the package defines the `\vpageref` command. It will produce the same strings as `\vref` except that it doesn't start with the `\ref` and except that it will

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produce the string that is saved in \reftextcurrent if label and reference fall onto the same page. By defining \reftextcurrent to produce "on this page" or something similar, we can avoid that

```
... see the example \vpageref{ex:foo} which shows ...
```

comes out as "… see the example which shows …", which could be misleading.

You can put a space in front of \vpageref it will be ignored if the command doesn't produce any text at all.

But in fact \vpageref allows even more control. If has two optional arguments. With the first one, one can specify the text that should be used if label and reference fall on the same page. This is very helpful if both are near to each other, so that they may or may not be separated by a page break. In such a case we usually know (!) whether the reference is before or after the label so that we can say something like

```
... see the example \vpageref[above]{ex:foo} which shows ...
```

which will then come out as "… see the example above which shows …" if we are still on the same page, but as "… see the example on the page before which shows …" (or something similar depending on the settings of the \reftext..before commands) when there was a page break in the meantime. One warning however, if you use \vpageref with the optional argument to refer to a figure or table, keep in mind that depending on the float placement parameters the float may show up on top of the current page and therefore before the reference even if it came after it in the source file.

But maybe you prefer to say "… see the above example" if example and reference fall onto the same page, i.e., reverse the word order. In fact, in some languages the word order automatically changes in that case. To allow for this variation the second optional argument can be used. It specifies the text preceding the generated reference if object and reference do not fall onto the same page. Thus one would write

```
... see the \vpageref[above example][example]{ex:foo}
    which shows ...
```

to achieve the desired effect.

3 Customization

The package supports all options defined by the babel package to translate the fixed strings into other languages than English. (Some languages need updating, however.) It also supports languages currently not in babel; check the section on options later on. You can also modify some or all of the strings by redefining the following commands. Backward references use \reftextbefore if the label is on the preceding page but invisible and \reftextfacebefore if it is one the facing page (i.e., if the current page number is odd). Similarily \reftextafter is used when the label comes on the next page but one has to turn the page and \reftextfaceafter if it is on the following but facing page.

\reftextbefore
\reftextfacebefore
\reftextafter
\reftextfaceafter

In fact, \reftextface... is used only if the user or the document class specified two-sided printing.

\reftextfaraway

Finally we have \reftextfaraway which is used whenever label and reference differ by more than one or when they aren't numeric. This macro is a bit different because it takes one argument, the symbolic reference string so that one cane make use of `\pageref` in its replacement text.

`\vreftextvario` To allow a bit random variation in the generated strings one can use the command `\reftextvario` inside the string macros. It takes two arguments and selects one or the other for printing depending on the number of already seens `\vref` or `\vpageref` commands. As an example see the definitions of `\reftextbefore` etc. on page 5.

4 A few warnings

Defining commands like the ones described above poses some interesting problems. Suppose, for example, that a generated text like 'on the next page' gets broken across pages. If this happens it is very difficult to find an acceptable solution and in fact can even result in a document that will always change from one state to another (i.e., inserting one string, finding that this is wrong, inserting another string on the next run which makes the first string correct again, inserting ...). The current implementation of `varioref` therefore issues an error message whenever the generated text is broken across page boundaries, e.g.,

> table 5 on the current ⟨*page break*⟩ page

would would result in an error, which needs to be resolved by the user by replacing the `\vref` command with an ordinary `\ref` just before the final run. This is not completely satisfactory but in such case no solution really is. During document preparation, while one is still changing the text, such error messages can be turned into warnings by placing a `\vrefwarning` command in the preamble.

`\vrefwarning`

At the end final a warning: every use of `\vref` will internally generate two macro names to keep track of the string positions within the document. As a result you may run out of name space or main memory if you make havy use of this macro on a small TEX installation. For this reason the primitive command `\fullref` is also provided. This command can be used whenever you know for sure that label and reference can't fall onto nearby pages.

`\fullref`

5 The documentation driver file

The next bit of code contains the documentation driver file for TEX, i.e., the file that will produce the documentation you are currently reading. It will be extracted from this file by the `docstrip` program.

```
⟨*driver⟩
\documentclass{ltxdoc}
\usepackage{varioref}
\GetFileInfo{varioref.sty}
\setlength\hfuzz{1pt}     % ignore slight overfulls
\EnableCrossrefs
%\DisableCrossrefs   % Say \DisableCrossrefs if index is ready

\RecordChanges       % Gather update information
%\OnlyDescription    % comment out for implementation details
\begin{document}
```

```
    \DocInput{varioref.dtx}
\end{document}
⟨/driver⟩
```

6 The implementation

The main implementation idea is to generate an internal label command for every `\vpageref` and compare the page reference of this label with the page reference of the user-requested label. Since this means one additional macro name for each use of `\vpageref` or `vref` (which is implemented in terms of `\vpageref`) the memory requirements of this package may be high in terms of main and macro name memory. Since the information held in the internal labels is used only once one could envision a different scheme if suitable primitives for this kind of "one place information" would be provided by LaTeX. This type of data structure is planned for LaTeX3 but for the moment we have to live with the memory restrictions.

We start by checking if this file was already loaded. If not we identify the current version. This is actually done at the top of the file, so we comment it out here

```
⟨*package⟩
%\NeedsTeXFormat{LaTeX2e}[1994/06/01]
%\ProvidesPackage{varioref}[\filedate\space\fileversion\space
%                     LaTeX2e package for extended references (FMi)]
```

`\vref@addto` To support the use of babel we want to add the additional strings to the `\extras`⟨*language*⟩ commands. Since `\addto` in the current implementation of babel has a bug that does not allow to use arguments containing hashmarks we do this by hand.

```
\def\vref@addto#1#2{%
  #2%
  \@temptokena{#2}%
  \ifx#1\undefined
     \edef#1{\the\@temptokena}%
  \else
     \toks@\expandafter{#1}%
     \edef#1{\the\toks@\the\@temptokena}%
  \fi
  \@temptokena{}\toks@\@temptokena
}
\@onlypreamble\vref@addto
```

6.1 Options

`\vref@excuse` Excuse that we don't know the strings for a certain language.

```
\def\vref@excuse#1{%
  \PackageWarningNoLine{varioref}{Sorry, language `#1'
             not supported%
             \MessageBreak
             by in this version.
             English strings used by default.
             \MessageBreak
             Please Modify \protect\reftext... commands manually.%
```

```
            \MessageBreak\MessageBreak
            If you can suggest translations for
            this language,%
            \MessageBreak
            please mail your them
            to the author of this package}}
\@onlypreamble\vref@excuse
```

\reftextfaceafter
\reftextfacebefore
\reftextafter
\reftextbefore
\reftextcurrent

The options do set the the macros that generate the textual strings. Note, that they do not start with a space, the space is already added in the main macro below.

```
\DeclareOption{american}
  {\vref@addto\extrasamerican{%%
    \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
    \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
                            page}%
    \def\reftextafter     {on the \reftextvario{following}{next} page}%
    \def\reftextbefore    {on the \reftextvario{preceding page}{page
                            before}}%
    \def\reftextcurrent   {on \reftextvario{this}{the current} page}%
    \def\reftextfaraway#1{on page~\pageref{#1}}%
  }}
\DeclareOption{austrian}
  {\vref@excuse{austrian}%
   \vref@addto\extrasaustrian{%
    \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
    \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
                            page}%
    \def\reftextafter     {on the \reftextvario{following}{next} page}%
    \def\reftextbefore    {on the \reftextvario{preceding page}{page
                            before}}%
    \def\reftextcurrent   {on \reftextvario{this}{the current} page}%
    \def\reftextfaraway#1{on page~\pageref{#1}}%
  }}
```

Text for brazil defaults was contributed by Alcino Dall Igna Junior (adij@di.ufpe.br).

```
\DeclareOption{brazil}
  {\vref@addto\extrabrazil{%
    \def\reftextfaceafter {na \reftextvario{p\'agina oposta}{pr\'oxima
                            p\'agina}}%
    \def\reftextfacebefore{na p\'agina \reftextvario{oposta}{anterior}}%
    \def\reftextafter     {na \reftextvario{p\'agina seguinte}{pr\'oxima
                            p\'agina}}%
    \def\reftextbefore{na p\'agina \reftextvario{anterior}{precedente}}%
    \def\reftextcurrent   {\reftextvario{nesta p\'agina}{na p\'agina
                            corrente}}%
    \def\reftextfaraway#1{na p\'agina~\pageref{#1}}%
  }}
```

Text for Breton defaults was contributed by Christian ROLLAND (Christian.Rolland@univ-brest.fr).

```
\DeclareOption{breton}
  {\vref@excuse{breton}%
```

```
   \vref@addto\extrasbreton{%
    \def\reftextfaceafter {war ar bajenn \reftextvario{a-dal}{da heul}}%
    \def\reftextfacebefore{war ar bajenn \reftextvario{a-dal}{a-raok}}%
    \def\reftextafter        {war ar bajenn da heul}%
    \def\reftextbefore       {war ar bajenn a-raok}%
    \def\reftextcurrent      {war ar \reftextvario{bajenn-ma\~n}%
                                             {bajenn war-wel}}%
    \def\reftextfaraway#1{war ar bajenn~\pageref{#1}}%
  }}
\DeclareOption{catalan}
  {\vref@excuse{catalan}%
   \vref@addto\extrascatalan{%
    \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
    \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
                          page}%
    \def\reftextafter        {on the \reftextvario{following}{next} page}%
    \def\reftextbefore       {on the \reftextvario{preceding page}{page
                          before}}%
    \def\reftextcurrent      {on \reftextvario{this}{the current} page}%
    \def\reftextfaraway#1{on page~\pageref{#1}}%
  }}
\DeclareOption{croatian}
  {\vref@excuse{croatian}%
   \vref@addto\extrascroatian{%
    \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
    \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
                          page}%
    \def\reftextafter        {on the \reftextvario{following}{next} page}%
    \def\reftextbefore       {on the \reftextvario{preceding page}{page
                          before}}%
    \def\reftextcurrent      {on \reftextvario{this}{the current} page}%
    \def\reftextfaraway#1{on page~\pageref{#1}}%
  }}
\DeclareOption{czech}
  {\vref@excuse{czech}%
   \vref@addto\extrasczech{%
    \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
    \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
                          page}%
    \def\reftextafter        {on the \reftextvario{following}{next} page}%
    \def\reftextbefore       {on the \reftextvario{preceding page}{page
                          before}}%
    \def\reftextcurrent      {on \reftextvario{this}{the current} page}%
    \def\reftextfaraway#1{on page~\pageref{#1}}%
  }}
```

Defaults for Danish provided by Torsten Martinsen (`tmar91@kom.auc.dk`).

```
\DeclareOption{danish}
  {\vref@addto\extrasdanish{%
    \def\reftextfaceafter {p\aa{} \reftextvario{modst\aa ende}%
                                             {n\ae ste} side}%
    \def\reftextfacebefore{p\aa{} \reftextvario{modst\aa ende}%
                                             {forrige} side}%
    \def\reftextafter        {p\aa{} \reftextvario{den f\o lgende}%
                                             {n\ae ste} side}%
```

```
    \def\reftextbefore    {p\aa{} \reftextvario{forrige side}
                                               {foreg\aa ende side}}%
    \def\reftextcurrent   {p\aa{} denne side}%
    \def\reftextfaraway#1{p\aa{} side~\pageref{#1}}%
  }}
```

Default string for dutch have been contributed by Frank Poppe. this option currently supports one additional string macro `\refpagename` so that you can easily change to `bladzijde` instead of `pagina` if you prefer this word for “page”. However, I will not guarantee that this will survive future versions of this package, so use it on your own risk (you can always update the full strings to be on the safe side).

```
\DeclareOption{dutch}
  {\vref@addto\extrasdutch{%
    \def\refpagename{pagina}%
    \def\reftextfaceafter {op de \reftextvario{rechter \refpagename}%
                                         {\refpagename\ hiernaast}}%
    \def\reftextfacebefore{op de \reftextvario{linker \refpagename}%
                                        {\refpagename\ hiernaast}}%
    \def\reftextafter     {op de \reftextvario{volgende \refpagename}%
                                              {\refpagename\ hierna}}%
    \def\reftextbefore    {op de \reftextvario{vorige \refpagename}%
                                         {\refpagename\ hiervoor}}%
    \def\reftextcurrent   {op deze \refpagename}%
    \def\reftextfaraway#1{op \refpagename~\pageref{#1}}%
  }}
\DeclareOption{english}
  {\vref@addto\extrasenglish{%
    \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
    \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
                           page}%
    \def\reftextafter     {on the \reftextvario{following}{next} page}%
    \def\reftextbefore    {on the \reftextvario{preceding page}{page
                           before}}%
    \def\reftextcurrent   {on \reftextvario{this}{the current} page}%
    \def\reftextfaraway#1{on page~\pageref{#1}}%
  }}
\DeclareOption{esperanto}
  {\vref@excuse{esperanto}%
   \vref@addto\extrasesperanto{%
    \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
    \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
                           page}%
    \def\reftextafter     {on the \reftextvario{following}{next} page}%
    \def\reftextbefore    {on the \reftextvario{preceding page}{page
                           before}}%
    \def\reftextcurrent   {on \reftextvario{this}{the current} page}%
    \def\reftextfaraway#1{on page~\pageref{#1}}%
  }}
```

The finnish strings were suggested by Matti Rintala (`bitti@cs.tut.fi`).

```
\DeclareOption{finnish}
  {\vref@addto\extrasfinnish{%
    \def\reftextfaceafter {\reftextvario{viereisell\"a}%
                                      {seuraavalla} sivulla}%
```

```
    \def\reftextfacebefore{\reftextvario{viereisell\"a}%
                                         {edellisell\"a} sivulla}%
    \def\reftextafter     {seuraavalla sivulla}%
    \def\reftextbefore    {edellisell\"a sivulla}%
    \def\reftextcurrent   {t\"all\"a sivulla}%
    \def\reftextfaraway#1{sivulla~\pageref{#1}}%
  }}
```

French defaults are provided by Daniel Flippo.

```
\DeclareOption{french}
  {\vref@addto\extrasfrench{%
    \def\reftextfaceafter {page \reftextvario{ci-contre}{suivante}}%
    \def\reftextfacebefore{page \reftextvario{ci-contre}%
                          {pr\'ec\'edente}}%
    \def\reftextafter     {page suivante}%
    \def\reftextbefore    {page pr\'ec\'edente}%
    \def\reftextcurrent   {de la pr\'esente page}%
    \def\reftextfaraway#1{page~\pageref{#1}}%
  }}
\DeclareOption{galician}
  {\vref@excuse{galician}%
   \vref@addto\extrasgalician{%
    \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
    \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
                           page}%
    \def\reftextafter     {on the \reftextvario{following}{next} page}%
    \def\reftextbefore    {on the \reftextvario{preceding page}{page
                           before}}%
    \def\reftextcurrent   {on \reftextvario{this}{the current} page}%
    \def\reftextfaraway#1{on page~\pageref{#1}}%
  }}
```

There are no good variants for German (I think).

```
\DeclareOption{german}
  {\vref@addto\extrasgerman{%
    \def\reftextfaceafter {auf der n\"achsten Seite}%
    \def\reftextfacebefore{auf der vorherigen Seite}%
    \let\reftextafter     \reftextfaceafter
    \let\reftextbefore    \reftextfacebefore
    \def\reftextcurrent   {auf dieser Seite}%
    \def\reftextfaraway#1{auf Seite~\pageref{#1}}%
  }}
\DeclareOption{italian}
  {\vref@excuse{italian}%
   \vref@addto\extrasitalian{%
    \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
    \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
                           page}%
    \def\reftextafter     {on the \reftextvario{following}{next} page}%
    \def\reftextbefore    {on the \reftextvario{preceding page}{page
                           before}}%
    \def\reftextcurrent   {on \reftextvario{this}{the current} page}%
    \def\reftextfaraway#1{on page~\pageref{#1}}%
  }}
\DeclareOption{magyar}
```

```
  {\vref@excuse{magyar}%
   \vref@addto\extrasmagyar{%
    \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
    \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
                           page}%
    \def\reftextafter     {on the \reftextvario{following}{next} page}%
    \def\reftextbefore    {on the \reftextvario{preceding page}{page
                           before}}%
    \def\reftextcurrent   {on \reftextvario{this}{the current} page}%
    \def\reftextfaraway#1{on page~\pageref{#1}}%
  }}
```

The Norwegian and ‘nynorsk translations have been provided by Dag F Langmyhr <dag@ifi.uio.no>.

```
\DeclareOption{norsk}
  {\vref@addto\extrasnorsk{%
    \def\reftextfaceafter {p\aa{} \reftextvario{motst\aa{}ende}{neste}
                           side}%
    \def\reftextfacebefore{p\aa{} \reftextvario{motst\aa{}ende}{forrige}
                           side}%
    \def\reftextafter     {p\aa{} \reftextvario{siden etter}%
                                                {neste side}}%
    \def\reftextbefore    {p\aa{} \reftextvario{siden foran}%
                                                {forrige side}}%
    \def\reftextcurrent   {p\aa{} denne siden}%
    \def\reftextfaraway#1{p\aa{} side~\pageref{#1}}%
  }}
\DeclareOption{nynorsk}
  {\vref@addto\extrasnynorsk{%
    \def\reftextfaceafter {p\aa{} den \reftextvario{motst\aa{}ande}%
                                  {neste} sida}%
    \def\reftextfacebefore{p\aa{} den \reftextvario{motst\aa{}ande}%
                                  {f\o{}rre} sida}%
    \def\reftextafter     {p\aa{} \reftextvario{sida etter}%
                                                {den neste sida}}%
    \def\reftextbefore    {p\aa{} \reftextvario{sida f\o{}r}%
                                             {den f\o{}rre sida}}%
    \def\reftextcurrent   {p\aa{} denne sida}%
    \def\reftextfaraway#1{p\aa{} side~\pageref{#1}}%
  }}
\DeclareOption{polish}
  {\vref@excuse{polish}%
   \vref@addto\extraspolish{%
    \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
    \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
                           page}%
    \def\reftextafter     {on the \reftextvario{following}{next} page}%
    \def\reftextbefore    {on the \reftextvario{preceding page}{page
                           before}}%
    \def\reftextcurrent   {on \reftextvario{this}{the current} page}%
    \def\reftextfaraway#1{on page~\pageref{#1}}%
  }}
\DeclareOption{portuges}
  {\vref@excuse{portuges}%
```

```
   \vref@addto\extrasportuges{%
    \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
    \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
                           page}%
    \def\reftextafter     {on the \reftextvario{following}{next} page}%
    \def\reftextbefore    {on the \reftextvario{preceding page}{page
                           before}}%
    \def\reftextcurrent   {on \reftextvario{this}{the current} page}%
    \def\reftextfaraway#1{on page~\pageref{#1}}%
  }}
\DeclareOption{romanian}
  {\vref@excuse{romanian}%
   \vref@addto\extrasromanian{%
    \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
    \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
                           page}%
    \def\reftextafter     {on the \reftextvario{following}{next} page}%
    \def\reftextbefore    {on the \reftextvario{preceding page}{page
                           before}}%
    \def\reftextcurrent   {on \reftextvario{this}{the current} page}%
    \def\reftextfaraway#1{on page~\pageref{#1}}%
  }}
\DeclareOption{russian}
  {\vref@excuse{russian}%
   \vref@addto\extrasrussian{%
    \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
    \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
                           page}%
    \def\reftextafter     {on the \reftextvario{following}{next} page}%
    \def\reftextbefore    {on the \reftextvario{preceding page}{page
                           before}}%
    \def\reftextcurrent   {on \reftextvario{this}{the current} page}%
    \def\reftextfaraway#1{on page~\pageref{#1}}%
  }}
\DeclareOption{slovak}
  {\vref@excuse{slovak}%
   \vref@addto\extrasslovak{%
    \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
    \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
                           page}%
    \def\reftextafter     {on the \reftextvario{following}{next} page}%
    \def\reftextbefore    {on the \reftextvario{preceding page}{page
                           before}}%
    \def\reftextcurrent   {on \reftextvario{this}{the current} page}%
    \def\reftextfaraway#1{on page~\pageref{#1}}%
  }}
\DeclareOption{slovene}
  {\vref@excuse{slovene}%
   \vref@addto\extrasslovene{%
    \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
    \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
                           page}%
    \def\reftextafter     {on the \reftextvario{following}{next} page}%
    \def\reftextbefore    {on the \reftextvario{preceding page}{page
```

```
                           before}}%
    \def\reftextcurrent   {on \reftextvario{this}{the current} page}%
    \def\reftextfaraway#1{on page~\pageref{#1}}%
  }}
```

Text for spanish defaults was contributed by Julio Sanchez (`jsanchez@gmv.es`).

```
\DeclareOption{spanish}
  {\vref@addto\extrasspanish{%
    \def\reftextfaceafter {en la p\'agina siguiente}%
    \def\reftextfacebefore{en la p\'agina anterior}%
    \let\reftextafter     \reftextfaceafter
    \let\reftextbefore    \reftextfacebefore
    \def\reftextcurrent   {en esta p\'agina}%
    \def\reftextfaraway#1{en la p\'agina~\pageref{#1}}%
  }}
```

The text for swedish was contributed by Mats Dahlgren (`matsd@physchem.kth.se`).

```
\DeclareOption{swedish}
  {\vref@addto\extrasswedish{%
     \def\reftextfaceafter {p\aa\ \reftextvario{motst\aa ende}%
                                              {n\"{a}sta} sida}%
     \def\reftextfacebefore{p\aa\ \reftextvario{motst\aa ende}%
                                      {f\"{o}reg\aa ende} sida}%
     \def\reftextafter     {p\aa\ \reftextvario{f\"{o}ljande}%
                                             {n\"{a}sta} sida}%
     \def\reftextbefore    {p\aa\ f\"{o}reg\aa ende sida}%
     \def\reftextcurrent   {p\aa\ denna sida}%
     \def\reftextfaraway#1{p\aa\ sidan~\pageref{#1}}%
  }}
\DeclareOption{turkish}
  {\vref@excuse{turkish}%
   \vref@addto\extrasturkish{%
    \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
    \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
                           page}%
    \def\reftextafter     {on the \reftextvario{following}{next} page}%
    \def\reftextbefore    {on the \reftextvario{preceding page}{page
                           before}}%
    \def\reftextcurrent   {on \reftextvario{this}{the current} page}%
    \def\reftextfaraway#1{on page~\pageref{#1}}%
  }}
```

We support francais as an alternative to french since people might be used to it, but we discurrage it.

```
\DeclareOption{francais}{%
   \typeout{Please use `french' instead of `francais'}%
   \ExecuteOptions{french}}
\DeclareOption{germanb}{%
   \typeout{Please use `german' instead of `germanb'}%
   \ExecuteOptions{german}}
```

After all options are declared we execute the default option `english` to set up the defaults and then call `\ProcessOptions*` to handle any option passed to the package. The star form is used since we want to execute the options in the order they are given (in case this isn't used together with the babel package).

```
\ExecuteOptions{english}
\ProcessOptions*
```

6.2 Defining the main macros

\vr@cnt To generate new labels we use a counter and construct the internal label names by prefixing the current counter value with the string vr@. We need a LaTeX counter to get \includes handled correctly.

```
\newcounter{vrcnt}
```

\vpageref
\@vpageref The command \vpageref generates the appropriate string by first parsing the optional arguments (if any) and then compares the internal and the user label. This command should be robust since the user might put it anywhere.

```
\DeclareRobustCommand\vpageref{\@ifnextchar[%
```

The default for the first optional argument is the string hidden in the macro \reftextcurrent.

```
  \@vpageref{\@vpageref[\reftextcurrent]}%
}
\def\@vpageref[#1]{\@ifnextchar[%
```

The default for the second optional argument is a space which is prefixed by \unskip to get rid of any leading space inserted already.

```
  {\@@vpageref{#1}}{\@@vpageref{#1}[\unskip\space]}}
```

\@@vpageref The \@@vpageref macro finally generates the references by comparing the value of an internal label with the value of the user label.

```
\def\@@vpageref#1[#2]#3{%
```

First it switches to horizontal mode if necessary and also removes any leading space.

```
  \leavevmode\unskip
```

Then it advances the counter \c@vrcnt by one which is used to generate internal label names.

```
  \global\advance\c@vrcnt\@ne
```

Then it checks if for the current value of \c@vrcnt a label command was issued in the last run. If not it pretends that there was one with the value {??}{??}. Thereafter it stores the the pageref value for this label in the macro \@tempa.

```
  \@ifundefined{r@\the\c@vrcnt @vr}%
        {\@namedef{r@\the\c@vrcnt @vr}{{??}{??}}}{}%
  \edef\@tempa{\expandafter\expandafter\expandafter
               \@cdr\csname r@\the\c@vrcnt @vr\endcsname
               \@nil}%
```

Here we check that the generated text is not going across a page boundary.

```
  \@ifundefined{r@\the\c@vrcnt @xvr}%
        {\@namedef{r@\the\c@vrcnt @xvr}{{??}{??}}}{}%
  \edef\@tempb{\expandafter\expandafter\expandafter
               \@cdr\csname r@\the\c@vrcnt @xvr\endcsname
               \@nil}%
  {\let\@currentlabel\@empty
```

In version 1.0l the label string has been turned around so that the number comes first. This was done to allow easy explicit expansion of the number before it is passed to the `\label` command. In the babel system the argument of `label` was not expanded with the result that wrong label strings have been generated. This is a general problem that might need a completely different solution in babel but for now the change below (and in some other places in the code) should solve the problem for this special combination of packages.

```
  \expandafter\label\expandafter{\the\c@vrcnt @xvr}}%
 \ifx\@tempa\@tempb\else
```

If both points do not fall onto the same page with either issue an error or a warning message.

```
 \vref@err{\noexpand\vref at page boundary
           \@tempb-\@tempa\space (may loop)%
           }%
 \fi
```

Same game for the user requested label; this time the page reference is saved in `\@tempb`.

```
 \@ifundefined{r@#3}{\@namedef{r@#3}{{??}{??}}}{}%
 \edef\@tempb{\expandafter\expandafter\expandafter
               \@cdr\csname r@#3\endcsname
               \@nil}%
```

Now after the internal label has served its purpose if would be nice to free the memory it occupies by using something like

```
\global\expandafter\let
      \csname r@\the\c@vrcnt @vr\endcsname\@empty
```

But this is not possible because it would result in getting 'Labels may have changed...' warnings for every run. Now we are ready to produce the textual strings. Since we have removed any leading space we now insert a space and then compare the two page references.

```
 \space
 \ifx\@tempa\@tempb
```

If they are the same we insert the first argument into the input stream. Otherwise we insert the second argument. Recall that those are the two optional arguments of `...`.

```
   #1%
 \else
   #2%
```

Now we check if the page number of the referenced object (stored in `\@tempb` is a single positive number.

```
   \is@pos@number\@tempb
      {%
```

If so, we check if the current position (stored in `\@tempa`) is a positive number. If this is the case we assign this number to the counter register `\@tempcnta` and add one to it.

```
        \is@pos@number\@tempa
         {\@tempcnta\@tempa
          \advance\@tempcnta\@ne
         }%
```

If it is not a positive number we assign the largest possible number to `\@tempcnta` and thereby pretending that label and reference are miles away from each other.

```
           {\@tempcnta\maxdimen}%
```

Now we are ready to check if reference and object are on nearby pages. `\@tempb` will expand to the page number of the object (and we know that this is a number) and `\@tempcnta` is either one higher than the reference page or completely out of bounds. So if both represend the same value then the object lies one page after its reference.

```
         \ifnum \@tempb =\@tempcnta
```

Thus if the object falls onto an odd page then the reference is on the facing even page (and so we insert `\reftextfaceafter`), otherwise the object can not be seen from the reference (and we in insert `\reftextafter`). Don't be surprised if we are not using `\@tempb` in the check. Since `\@tempcnta` has the same value it is faster to use the register instead of parsing the macro contents anew.

```
           \ifodd\@tempcnta
```

In fact we are going to use `\reftextfaceafter` only if we are doing two-sided printing, otherwise `\reftextafter` is always used. Since the value of `\if@twoside` is evaluated before reading in packages we could do better (saving some tokens) by defining the current macro in dependence of this boolean.

```
             \if@twoside
               \reftextfaceafter
             \else
               \reftextafter
             \fi
           \else
             \reftextafter
           \fi
```

If the object is not on the page following the reference we check if it is on the page before the reference. In LaTeX this situation is not too common, for example with floats it normally does not occur, but of course it isn't impossible if you more than one reference to the same object, or if you have back references to sections, theorems, etc. To test this we now substract two from the current value of `\@tempcnta` (which was set to one higher as the reference page number). Note, that substraction is also possible if the value was `\maxdimen` — we still get something that is much larger than any sensible page number.

```
         \else
           \advance\@tempcnta-2
```

If now `\@tempb` and `\@tempcnta` have the same value then the object lies one page before the reference.

```
           \ifnum \@tempb =\@tempcnta
```

Again we have to check for odd or even pages to distinguish between the facing and the non-facing situation.

```
             \ifodd\@tempcnta
               \reftextbefore
             \else
```

Again the `\reftextfacebefore` only if `@twoside` evaluates to true.

```
               \if@twoside
                 \reftextfacebefore
```

```
              \else
                \reftextbefore
              \fi
            \fi
```

If the above test also returns false then we have object and references on pages which are far away or don't contain simple page numbers. Therefore we generate the `\reftextfaraway` string. Recall that this is a macro which has the user label as an argument.

```
          \else
            \reftextfaraway{#3}%
          \fi
        \fi
      }%
```

We do the same if our first test (that the page with the object has a positive page number) turns out to be false.

```
      {\reftextfaraway{#3}}%
  \fi
```

Finally we generate the internal label so that it can be check on the next run. This means that we compare the position after the string with the position of the referenced object. There is one thing to note: to conserve space we locally make `\@currentlabel` empty since we are only interested in the page number value of this internal label.

```
  {\let\@currentlabel\@empty
   \expandafter\label\expandafter{\the\c@vrcnt @vr}}%
}
```

`\vrefwarning`
`\vref@err`

When the `\vref` command detects a possible crossing over a page boundary it will call `\vref@err` to generate an error message. During document preparation one can turn such errors into warnings by issuing a `\vrefwarning` declaration.

```
\def\vrefwarning{\def\vref@err{\PackageWarning{varioref}}}
\def\vref@err#1{\PackageError{varioref}{#1}%
    {Please check the pages in question. You might need to replace
     the \string\vref\MessageBreak
     or \noexpand\vpageref by a normal \noexpand\(page)ref to
     stop LaTeX running forever.}}
```

`\vref`

Undoc

```
\DeclareRobustCommand\vref[1]{%
  \unskip~\ref{#1}%
  \@vpageref[\unskip]{#1}%
}
```

`\is@pos@number`

The utility macro `\is@pos@number` takes three arguments: a string that is tested for being a valid integer and the actions to be taken in case the test comes out true or false.

We start by passing the string to the macro `\is@pos@num` after prefixing it with a `0` and adding a space after it. To have a well defined ending point we also add `\@nil` at the end.

```
\def\is@pos@number#1{\is@pos@num0#1\space\@nil}
```

Now we parse the enlarged string into a counter register. To get control back after everything that is regarded by TEX as a number is put into that register we assign `\is@pos@num@` to the `\afterassignment` token. Since the string started with 0, we can be sure that the register assignment will be carried out without an error message. In case of counter assignments leading zeros are discarded.

```
\def\is@pos@num{\afterassignment\is@pos@num@ \count@}
```

Now we have to check whether or not the whole string was parsed into that register or some remainder was left over. Since we have added a `\@nil` token at the very end we can use that to delimit the argument of `\is@pos@num@`. Note, that the added space in `\is@pos@number` on the page before gets parsed away by the counter assignment. If it would be missing, and the full string would consist of a number, TEXwould try to replace `\@nil` by its definition to see if it would contain additional digits and thus we would be in trouble at this point.

```
\def\is@pos@num@#1\@nil{%
```

Now we have to check if the argument is empty. We can do this with an `\if` test (i.e., in an expandable way) since we know for sure that it can not start with a digit

```
  \if0#10%
```

Depending on the result we execute the second or third argument of the command `\is@pos@number` using a technique that removes the `\else` or `\fi` from the input stream first, so that in principle input stream parsing could be done from within the arguments.

```
      \expandafter\@firstoftwo \else
      \expandafter\@secondoftwo  \fi}
```

`\reftextvario` This macro gives a little bit of random variation in the text because the outcome depends on the number of `\vref` commands seen before.

```
\def\reftextvario#1#2{\ifodd\c@vrcnt #1\else#2\fi}
```

`\fullref` And here is the primitive command that always produces a `\ref` and a `\pageref`.

```
\def\fullref#1{\ref{#1} \reftextfaraway{#1}}
⟨/package⟩
```

Change History