

The `varioref` package*

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2020/08/11

This file is maintained by the L^AT_EX Project team.
Bug reports can be opened (category `tools`) at
<https://latex-project.org/bugs.html>.

Abstract

This package defines the commands `\vref`, `\vpageref`, `\vrefrange`, and `\vpagerefrange` for L^AT_EX 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. The `\v...range` commands take two labels as arguments and produce strings which depend on whether or not these labels fall onto a single page or on different pages. Generated strings are customizable so that these commands are usable with various languages.

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1 Introduction

In many cases it is helpful when referring 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}}
```

*This file has version number v1.6e, last revised 2020/08/11.

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 Loading the package

The suggested way of loading the package these days is by *always* using the package option `nospace`, i.e.,

```
\usepackage[nospace]{varioref}
```

See below for an explanation of why this is needed. There are some other options that you may want to use additionally; they are explained on page 7.

3 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 referring 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`. A further difference is that it will produce the string that is saved in `\reftextcurrent` if label and reference fall onto the same page (and no optional argument is used). 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.

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. It 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

`\ref{...}` 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.

\vrefrange This command is similar to `\vref` but it takes two mandatory arguments denoting a range to refer to (e.g., a sequences of figures or a sequence of equations, etc.). So if `fig:a` is your first figure in the sequence and `fig:c` your last you can write

```
... see figures \vrefrange{fig:a}{fig:c} ...
```

which would then be formatted as

```
... see figures 3.4 to 3.6 on pages 23–24 ...
```

or, if they happen to all fall onto the next page, as

```
... see figures 3.4 to 3.6 on the following page ...
```

i.e., the command is deciding what to say depending on where the two labels are placed in relation to each other; it is essentially implemented using `\vpagerefrange` described below. The optional argument the command may take is the text to use in case both labels are placed on the current page.

\vpagerefrange This command is similar to `\vpageref` but takes two mandatory arguments which are two labels denoting a range. If both labels fall onto the same page, the command acts exactly like `\vpageref` (with a single label), otherwise it produces something like “on pages 15–18” (see customization possibilities below). The optional argument it may take is the text to use in case both labels are placed on the current page.

\vrefpagemum This macro is provided to allow the user to write their own small commands which implement functions similar to those provided by the two previous commands. It takes two arguments: the second is a label (i.e., as used in `\label` or `\ref`) and the first is an arbitrary command name (make sure you use our own) that receives the page number related to this label. So if you have two (or more) labels you could retrieve their page numbers, compare them and then decide what to print. For example, the following not very serious definition (also using the `ifthen` package)

```
\newcommand\amusingversion[2]{the definition%
\vrefpagemum\firstnum{#1}%
\vrefpagemum\secondnum{#2}%
\ifthenelse{\equal\firstnum\secondnum}{%

```

```

    {s of \ref{#1} and \ref{#2} \vpageref{#1}}%
    { of \ref{#1} \vpageref{#1} and of \ref{#2} \vpageref{#2}}%
}

... \amusingversion{foo}{bar}

```

will print something like

... the definitions of 3 and 4 on the previous page

in the case both labels are on the same page but something like

... the definition of 3 on the next page and of 4 on page 13

in case they are on different pages.

For this kind of application the package also provides `\vpagerefcompare` as a command that takes four argument: two labels for comparison and a `<true>` and `<false>` argument. One of them is executed depending on whether the two labels are on the same page or on different pages. With its help the above definition could be shortened to

```

\newcommand\amusingversion[2]{the definition%
  \vpagerefcompare{#1}{#2}%
  {s of \ref{#1} and \ref{#2} \vpageref{#1}}%
  { of \ref{#1} \vpageref{#1} and of \ref{#2} \vpageref{#2}}%
}

```

and you don't have to load the `ifthen` package any longer to make it work.

Another command for conditional processing is `\vpagerefnearby`. It takes three arguments: a label and a `<true>` and `<false>` argument. It compares the page reference to the label with the current page number and if both are arabic number and only differ by ± 1 the `<true>` argument is executed otherwise the `<false>` argument. In other words it tells you if a `\vpageref` to the label would result in a textual reference to the previous, current or next page.¹

If you don't use the `nospace` option the user commands `\vref`, `\vpageref`, and `\vpagerefrange` all work by first removing any space on their left and then inserting some space of their own (`\vref`, for example, a nonbreakable space). That seemed like a good idea back then, but it has the disadvantage that you can't use these macros in situations where you definitely do not want any space before the generated text. E.g., in situations like `(\vref{foo} ...)` you end up with a space after the open parenthesis.

Since it was too late to change the default in 2001 I added star versions of the macros which do not add any space before the generated text (they do nevertheless remove space at the left).

However, that too has problems (one is that `hyperref` introduced the star forms as a means to generating references without hyperlinks (which is clearly the more important application). So these days I recommend to always call the package with the option `nospace` which prevents `varioref` from messing with the space in front. Of course you are then responsible to always add it when necessary, but that does make the source more readable so it is a good thing. This also has

¹There is also a `\vpagerefcomparenearby` but this is only meant for package writers, so it is only documented in the implementation section.

`\vpagerefcompare`

New in
2019

`\vpagerefnearby`

New in
2019

`\vref*`

`\vpageref*`

`\vpagerefrange*`

Changed in
2019

the advantage that the star forms are now unnecessary again and can be used in the way implemented by `hyperref` if both packages are used together.

In fact it would be much nicer to make that the default but the package has been used by many people for so many years that changing the default would break way to many older documents.

`\labelformat` A reference via `\ref` produces by default the data associated with the corresponding `\label` command (typically a number); any additional formatting has to be provided by the user. With `\labelformat` it is possible to declare such formatting for each “reference” counter, e.g.,

```
\labelformat{section}{section~#1}
\labelformat{equation}{equation~( #1 )}
```

`\Vref` A side effect of using `\labelformat` is that, depending on the defined formatting, it becomes impossible to use `\ref` at the beginning of a sentence (if its replacement text starts with a lowercase letter). For that reason `varioref` provided the commands `\Ref` and `\Vref`. They behave like `\ref` and `\vref` except that they uppercase the first token of the generated string. These days `\labelformat` and `\Ref` are already provided by the L^AT_EX kernel; only `\Vref` is still defined within the `varioref` package.

To make `\Ref` or `\Vref` work properly the very first token in the second argument of `\labelformat` has to be a simple ASCII or UTF-8 letter, otherwise the capitalization will fail or worse, you will end up with some error messages. If you actually need something more complicated in this place (e.g., an accented letter not written as a UTF-8 character) you have to explicitly surround it with braces, to identify the part that needs to be capitalized. For example, for figure references in the Hungarian language you might want to write `\labelformat{figure}{\a'bra~\thefigure}` or use `\labelformat{figure}{ábra~\thefigure}` which avoids the brace problem.

`\thevpagerefnum` If you like to have `\vref` suppress the page number on pages where label and reference fall onto the same page, but prefer reference to page numbers otherwise then `\thevpagerefnum` can be used. This macro hold the current page “number” when `\vpageref` and friends are executed. Thus, by defining, for example

```
\renewcommand\reftextfaceafter {on page~\thevpagerefnum}
\renewcommand\reftextfacebefore{on page~\thevpagerefnum}
\renewcommand\reftextafter      {on page~\thevpagerefnum}
\renewcommand\reftextbefore     {on page~\thevpagerefnum}
```

textual references can be suppressed.

4 Multi-lingual usage

The package works well together with the `babel` system if it is loaded *after* the `babel` package, e.g., a document in English (default), French and German text could load the packages as follows:

```
\usepackage[ngerman,french,english]{babel,varioref}
```

(or in two separate lines if you prefer one `\usepackage` line per package). Depending on the current `babel` language `\vref` and friends would then generate strings

Changed in
2019

in different languages. If the language options are given as global options to the document class then it is enough to use

```
\usepackage{babel,varioref}
```

to achieve the same effect.

If more than one language is specified with `varioref` then it will start using the last language selected. Switching of languages is managed through Babel; nevertheless all languages of interest need to be specified when `varioref` is loaded so that it can integrate their strings into the Babel system.

5 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—help is appreciated.) It also supports languages currently not in `babel` (those can only be used standalone, obviously); check the section on options later on.

You can also modify some or all of the strings by redefining the following commands after the package has been loaded. Backward references use `\reftextbefore` if the label is on the preceding page but invisible and `\reftextfacebefore` if it is on the facing page (i.e., if the current page number is odd). Similarly `\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.

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

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 can make use of `\pageref` in its replacement text.

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 seen `\vref` or `\vpageref` commands. As an example see the definitions of `\reftextbefore` etc. on page 9.

The commands `\vrefrange` and `\vpagerefrange` produce their text using two macros described below. By redefining them one can modify the results to accommodate special requirements.

They both take two mandatory arguments denoting the first and the last label of the range.

This macro produces text that describes the page range of the two labels, e.g., the default for English is “on pages~\pageref{#1}--\pageref{#2}”.

This macro produces text that describes the range of figures, tables, or whatever the labels refer to, the default for English is “\ref{#1} to~\ref{#2}”.

In some languages (currently only for Japanese) the generated text has to typeset in different word order to most other (Western) languages. To accommodate for this `\vrefformat`, etc. has been added to allow to alter this on a per language basis. There should be normally no need to alter the setup. For details see the code section.

```
\reftextbefore
\reftextfacebefore
\reftextafter
\reftextfaceafter
```

```
\reftextfaraway
```

```
\reftextvario
```

New in
1998

```
\reftextpagerange
```

```
\reftextlabelrange
```

New in
2020

```
\vrefformat
\Vrefformat
\vrefrangeformat
\fullrefformat
```

5.1 ... if Babel is used

If babel is being used then the above commands need to be changed using the Babel mechanism, e.g.,

```
\addto\extrasngerman{%  
  \renewcommand\reftextfaceafter {auf der n\ "achsten Seite}%  
  ... }
```

Otherwise babel will reintroduce its own defaults whenever the language is changed (which happens in particular during `\begin{document}` where the main language is selected).

6 Options

As mentioned above the package supports all standard options offered by the Babel system to customize the strings produced, it may also have a few not supported by babel, for a full list look in section 9.1 on page 9. In addition it offers the option `draft` to turn error messages into warnings during development. The default `final` produces error message when a generated string falls onto a page boundary (see next section).

Newly introduced in 2019 are the options `space` (default) and `nospace`. While the former is the default to allow documents written in the last twenty years to continue to work correctly, I nowadays, suggest that you always use the package with the option `nospace`. This will stop `varioref` from meddling with the spaces preceding commands and thus make the star forms `\vref*` and `\vpageref*` unnecessary.

This means that the star forms can then be used as defined by `hyperref` for suppressing a hyperlink when both packages are used together (which is a rather typical scenario these days).

7 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 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. This is equivalent to specifying “draft” as an option to the package. `\vrefshowerrors`

New in
2019

ensures that `varioref` stops when detecting a possible loop. This is the default and equivalent to specifying “final” as an option.

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 memory² if you make heavy use of this macro on a small T_EX 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.

8 The documentation driver file

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

```

1 (*driver)
2 \documentclass{ltxdoc}
3 \usepackage{multicol,varioref}
4 \GetFileInfo{varioref.sty}
5 \setlength\hfuzz{1pt}    % ignore slight overfulls
6 \EnableCrossrefs
7 %\DisableCrossrefs    % Say \DisableCrossrefs if index is ready
8
9 \RecordChanges          % Gather update information
10 %\OnlyDescription      % comment out for implementation details
11 \begin{document}
12   \DocInput{varioref.dtx}
13 \end{document}
14 \end{driver}
```

9 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 L^AT_EX. This type of data structure is planned for L^AT_EX3 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

```

15 (*package)
16 %\NeedsTeXFormat{LaTeX2e}[1994/06/01]
17 %\ProvidesPackage{varioref}[\filedate\space\fileversion\space
18 %                                LaTeX2e package for extended references (FMI)]
```

²Not really that likely these days, but one never knows In any case T_EX will process your document a tiny bit faster.

`\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.

```

19 \def\vref@addto#1#2{%
20   #2%
21   \@temptokena{#2}%
22   \ifx#1\undefined
23     \edef#1{\the\@temptokena}%
24   \else
25     \toks@\expandafter{#1}%
26     \edef#1{\the\toks@\the\@temptokena}%
27   \fi
28   \@temptokena{}\toks@\@temptokena
29 }
30 \@onlypreamble\vref@addto

```

9.1 Options

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

```

31 \def\vref@excuse#1{%
32   \PackageWarningNoLine{varioref}{Sorry, language ‘#1’
33     not supported%
34     \MessageBreak
35     in this version.
36     English strings used by default.
37     \MessageBreak
38     Please modify \protect\reftext... commands manually.%
39     \MessageBreak\MessageBreak
40     If you can suggest translations for
41     this language,%
42     \MessageBreak
43     please mail them
44     to the author of this package}}
45 \@onlypreamble\vref@excuse

```

`\vref@stringwarning` And we sometimes just don't know some strings ...

```

46 \def\vref@stringwarning#1{%
47   \PackageWarningNoLine{varioref}{Sorry, there is no proper
48     translation for the string\MessageBreak
49     produced by \protect#1\on@line.\MessageBreak
50     English string used instead.\MessageBreak
51     \MessageBreak
52     If you can suggest translations for
53     the current\MessageBreak
54     language, please mail them
55     to the author of this\MessageBreak package}}

```

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

`\reftextafter` Afrikaans option contributed by Danie Els (dnjels@sun.ac.za).

```

\reftextbefore 56 \DeclareOption{afrikaans}
\reftextcurrent 57 {\vref@addto\extrasafrikaans{%

```

```

58 \def\reftextfaceafter {op die \reftextvario{regterbladsy}%
59                               {bladsy langsaan}}%
60 \def\reftextfacebefore{op die \reftextvario{linkerbladsy}%
61                               {bladsy langsaan}}%
62 \def\reftextafter      {op die \reftextvario{volgende bladsy}%
63                               {bladsy hierna}}%
64 \def\reftextbefore     {op die \reftextvario{vorige bladsy}%
65                               {bladsy hiervoor}}%
66 \def\reftextcurrent    {op \reftextvario{hierdie}%
67                               {die huidige} bladsy}%
68 \def\reftextfaraway#1{op bladsy~\pageref{#1}}%
69 \def\reftextpagerange#1#2{op bladsy~\pageref{#1}--\pageref{#2}}%
70 \def\reftextlabelrange#1#2{\ref{#1} tot~\ref{#2}}%
71 \let\vrefformat\vreffdefaultformat
72 \let\Vrefformat\Vreffdefaultformat
73 \let\fullrefformat\fullrefdefaultformat
74 \let\vreffrangeformat\vreffrangedefaultformat
75 }}

76 \DeclareOption{american}
77 {\vref@addto\extrasamerican{%
78 \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
79 \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
80                               page}%
81 \def\reftextafter      {on the \reftextvario{following}{next} page}%
82 \def\reftextbefore     {on the \reftextvario{preceding}{previous} page}%
83 \def\reftextcurrent    {on \reftextvario{this}{the current} page}%
84 \def\reftextfaraway#1{on page~\pageref{#1}}%
85 \def\reftextpagerange#1#2{on pages~\pageref{#1}--\pageref{#2}}%
86 \def\reftextlabelrange#1#2{\ref{#1} to~\ref{#2}}%
87 \let\vrefformat\vreffdefaultformat
88 \let\Vrefformat\Vreffdefaultformat
89 \let\fullrefformat\fullrefdefaultformat
90 \let\vreffrangeformat\vreffrangedefaultformat
91 }}

```

Arabic option text was contributed by Ihab Samir Mattar (dr_kremlin@hotmail.com). As our standard documentation workflow uses pdf_TE_X the Arabic letters can't be displayed easily, so you will see missing glyphs below. To see the real letters you have to look at the source or package file.

```

92 \DeclareOption{arabic}
93 {\vref@addto\extrasarabic{%
94 \def\reftextfaceafter {\ref{#1} \reftextvario{\ref{#2}}{\ref{#3}}}%
95 \def\reftextfacebefore{\ref{#1} \reftextvario{\ref{#2}}{\ref{#3}}}%
96 \def\reftextafter      {\ref{#1} \reftextvario{\ref{#2}}{\ref{#3}}}%
97 \def\reftextbefore     {\ref{#1} \reftextvario{\ref{#2}}{\ref{#3}}}%
98 \def\reftextcurrent    {\ref{#1} \reftextvario{\ref{#2}}{\ref{#3}}}%
99 \def\reftextfaraway#1{\ref{#1} \ref{#2}~\pageref{#3}}%
100 \def\reftextpagerange#1#2{\ref{#1}~\pageref{#2}--\pageref{#3}}%
101 \def\reftextlabelrange#1#2{\ref{#1} \ref{#2}~\ref{#3}}%
102 \let\vrefformat\vreffdefaultformat
103 \let\Vrefformat\Vreffdefaultformat
104 \let\fullrefformat\fullrefdefaultformat
105 \let\vreffrangeformat\vreffrangedefaultformat
106 }}

```

The austrian defaults are the same as the german ones.

```

107 \DeclareOption{austrian}
108   {\vref@addto\extrasaustrian{%
109     \def\reftextfaceafter {auf der n\"achsten Seite}%
110     \def\reftextfacebefore{auf der vorherigen Seite}%
111     \let\reftextafter      \reftextfaceafter
112     \let\reftextbefore     \reftextfacebefore
113     \def\reftextcurrent    {auf dieser Seite}%
114     \def\reftextfaraway#1{auf Seite~\pageref{#1}}%
115     \def\reftextpagerange#1#2{auf Seiten~\pageref{#1}--\pageref{#2}}%
116     \def\reftextlabelrange#1#2{\ref{#1} bis~\ref{#2}}%
117     \let\vrefformat\refdefaultformat
118   }}
```

The naustrian defaults are the same but needed for “Neue Rechtschreibung”.

```

119 \DeclareOption{naustrian}
120   {\vref@addto\extrasnaustrian{%
121     \def\reftextfaceafter {auf der n\"achsten Seite}%
122     \def\reftextfacebefore{auf der vorherigen Seite}%
123     \let\reftextafter      \reftextfaceafter
124     \let\reftextbefore     \reftextfacebefore
125     \def\reftextcurrent    {auf dieser Seite}%
126     \def\reftextfaraway#1{auf Seite~\pageref{#1}}%
127     \def\reftextpagerange#1#2{auf Seiten~\pageref{#1}--\pageref{#2}}%
128     \def\reftextlabelrange#1#2{\ref{#1} bis~\ref{#2}}%
129     \let\vrefformat\refdefaultformat
130     \let\Vrefformat\Vrefdefaultformat
131     \let\fullrefformat\fullrefdefaultformat
132     \let\vreffrangeformat\vreffrangedefaultformat
133   }}
```

Text for basque defaults was contributed by Iñaki Larrañaga Murgoitio (aka dooteo) (<dooteo@euskalgnu.org>).

```

134 \DeclareOption{basque}
135   {\vref@addto\extrasbasque{%
136     \def\reftextfaceafter {hurrengo orrialdean}%
137     \def\reftextfacebefore{aurreko orrialdean}%
138     \let\reftextafter      \reftextfaceafter
139     \let\reftextbefore     \reftextfacebefore
140     \def\reftextcurrent    {uneko orrialdean}%
141     \def\reftextfaraway#1{~\pageref{#1}. orrialdean}%
142     \def\reftextpagerange#1#2{~\pageref{#1}--\pageref{#2} orrialdeetan}%
143     \def\reftextlabelrange#1#2{\ref{#1}.etik \ref{#2}.eraino}%
144     \let\vrefformat\refdefaultformat
145     \let\Vrefformat\Vrefdefaultformat
146     \let\fullrefformat\fullrefdefaultformat
147     \let\vreffrangeformat\vreffrangedefaultformat
148   }}
```

Text for the Bahasa Malaysia defaults was contributed by Bob Margolis 2005-12-02.

Notes: pada muka surat translates as “on the page” though BM has no definite (or indefinite) article; adjectives and other modifiers follow the noun (clause); bertentangan is “opposite” in the sense of “facing”; berikutnya is “next” (in this

context - actually next-to-this, literally); berikutnya also translates as “following this” sebelumnya is “preceding”; also “previous” “ini” translates, literally, as “this” but is also used in the sense of current page.

```

149 \DeclareOption{bahasam}
150   {\vref@addto\extrasbahasam{%
151     \def\reftextfaceafter {pada muka surat \reftextvario{bertentangan}{berikutnya}}%
152     \def\reftextfacebefore{pada muka surat \reftextvario{bertentangan}{sebelumnya}}%
153     \def\reftextafter      {pada muka surat berikutnya}%
154     \def\reftextbefore     {pada muka surat sebelumnya}%
155     \def\reftextcurrent    {pada muka surat ini}%
156     \def\reftextfaraway#1{pada muka surat~\pageref{#1}}%
157     \def\reftextpagerange#1#2{pada muka surat~\pageref{#1}--\pageref{#2}}%
158     \def\reftextlabelrange#1#2{\ref{#1}--\ref{#2}}%
159     \let\vrefformat\refdefaultformat
160     \let\Vrefformat\Vrefdefaultformat
161     \let\fullrefformat\fullrefdefaultformat
162     \let\vreffrangeformat\vreffrangedefaultformat
163   }}

```

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

```

164 \DeclareOption{brazil}
165   {\vref@addto\extrasbrazil{%
166     \def\reftextfaceafter {na \reftextvario{p\'agina oposta}{pr\'oxima
167       p\'agina}}%
168     \def\reftextfacebefore{na p\'agina \reftextvario{oposta}{anterior}}%
169     \def\reftextafter      {na \reftextvario{p\'agina seguinte}{pr\'oxima
170       p\'agina}}%
171     \def\reftextbefore{na p\'agina \reftextvario{anterior}{precedente}}%
172     \def\reftextcurrent   {\reftextvario{nesta p\'agina}{na p\'agina
173       corrente}}%
174     \def\reftextfaraway#1{na p\'agina~\pageref{#1}}%
175     \def\reftextpagerange#1#2{nas p\'aginas~\pageref{#1}--\pageref{#2}}%
176     \def\reftextlabelrange#1#2{\ref{#1} a~\ref{#2}}%
177     \let\vrefformat\refdefaultformat
178     \let\Vrefformat\Vrefdefaultformat
179     \let\fullrefformat\fullrefdefaultformat
180     \let\vreffrangeformat\vreffrangedefaultformat
181   }}

```

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

```

182 \DeclareOption{breton}
183   {\vref@excuse{breton}%
184     \vref@addto\extrasbreton{%
185       \def\reftextfaceafter {war ar bajenn \reftextvario{a-dal}{da heul}}%
186       \def\reftextfacebefore{war ar bajenn \reftextvario{a-dal}{a-raok}}%
187       \def\reftextafter      {war ar bajenn da heul}%
188       \def\reftextbefore     {war ar bajenn a-raok}%
189       \def\reftextcurrent    {war ar \reftextvario{bajenn-ma~n}%
190         {bajenn war-wel}}%
191       \def\reftextfaraway#1{war ar bajenn~\pageref{#1}}%
192       \def\reftextpagerange#1#2{\vref@stringwarning\reftextpagerange
193         on pages~\pageref{#1}--\pageref{#2}}%

```

```

194 \def\reftextlabelrange#1#2{\vref@stringwarning\reflabelpagerange
195 \ref{#1} to~\ref{#2}}%
196 \let\vrefformat\vrefdefaultformat
197 \let\Vrefformat\Vrefdefaultformat
198 \let\fullrefformat\fullrefdefaultformat
199 \let\vreffrangeformat\vreffrangedefaultformat
200 }}

```

Text for Bulgarian defaults was contributed by Georgi Boshnakov
(georgi.boshnakov@gmail.com).

```

201 \DeclareOption{bulgarian}%
202 {\vref@addto\extrabulgarian{%
203 \def\reftextfaceafter{\cyrn\cyra\
204 \reftextvario{\cys\cyrry\cys\cyre\cyrd\cyrn\cyra\cyrt\cyra}%
205 {\cys\cyrl\cyre\cyrd\cyrv\cyra\cyrrshch\cyra\cyrt\cyra}%
206 \cys\cyrt\cyrr\cyra\cyrn\cyri\cyrc\cyra}%
207 \def\reftextfacebefore{\cyrn\cyra\
208 \reftextvario{\cys\cyrry\cys\cyre\cyrd\cyrn\cyra\cyrt\cyra}%
209 {\cyrp\cyrr\cyre\cyrd\cyrn\cyra\cyrt\cyra}%
210 \cys\cyrt\cyrr\cyra\cyrn\cyri\cyrc\cyra}%
211 \def\reftextafter{\cyrn\cyra\
212 \reftextvario{\cys\cyrl\cyre\cyrd\cyrv\cyra\cyrrshch\cyra\cyrt\cyra}%
213 {\cys\cyrl\cyre\cyrd\cyrv\cyra\cyrrshch\cyra\cyrt\cyra}%
214 \cys\cyrt\cyrr\cyra\cyrn\cyri\cyrc\cyra}%
215 \def\reftextbefore{\cyrn\cyra\
216 \reftextvario{\cyrp\cyrr\cyre\cyrd\cyrn\cyra\cyrt\cyra}%
217 {\cyrp\cyrr\cyre\cyrd\cyri\cyrrsh\cyrn\cyra\cyrt\cyra}%
218 \cys\cyrt\cyrr\cyra\cyrn\cyri\cyrc\cyra}%
219 \def\reftextcurrent{\cyrn\cyra\
220 \reftextvario{\cyrt\cyra\cyrz\cyri}%
221 {\cyrt\cyre\cyrk\cyru\cyrrshch\cyra\cyrt\cyra}%
222 \cys\cyrt\cyrr\cyra\cyrn\cyri\cyrc\cyra}%
223 \def\reftextfaraway#1{\cyrn\cyra\ \cys\cyrt\cyrr\cyra\cyrn\cyri\cyrc\cyra
224 ~\pageref{#1}}%
225 \def\reftextpagerange#1#2{\cyrn\cyra\
226 \cys\cyrt\cyrr\cyra\cyrn\cyri\cyrc\cyri
227 ~\pageref{#1}--\pageref{#2}}%
228 \def\reftextlabelrange#1#2{\ref{#1} \cyrd\cyro~\ref{#2}}%
229 \let\vrefformat\vrefdefaultformat
230 \let\Vrefformat\Vrefdefaultformat
231 \let\fullrefformat\fullrefdefaultformat
232 \let\vreffrangeformat\vreffrangedefaultformat
233 }}

```

Text for catalan defaults was contributed by Robert Fuster
(rfuster@mat.upv.es).

```

234 \DeclareOption{catalan}%
235 {\vref@addto\extrascatalan{%
236 \def\reftextfaceafter {a la p\`agina seg\`uent}%
237 \def\reftextfacebefore{a la p\`agina anterior}%
238 \let\reftextafter \reftextfaceafter
239 \let\reftextbefore \reftextfacebefore
240 \def\reftextcurrent {en aquesta p\`agina}%
241 \def\reftextfaraway#1{a la p\`agina~\pageref{#1}}%
242 \def\reftextpagerange#1#2{a les

```

```

243         p\`agines~\pageref{#1}--\pageref{#2}}%
244     \def\reftextlabelrange#1#2{\ref{#1} a~\ref{#2}}%
245     \let\vrefformat\refdefaultformat
246     \let\Vrefformat\Vrefdefaultformat
247     \let\fullrefformat\fullrefdefaultformat
248     \let\vreffrangeformat\vreffrangedefaultformat
249 }

```

Text for croatian defaults was contributed by Šime Ungar (ungar@math.hr).

```

250 \DeclareOption{croatian}
251 {
252     \def\reftextfaceafter {na sljede\'coj stranici}%
253     \def\reftextfacebefore {na prethodnoj stranici}%
254     \let\reftextafter      \reftextfaceafter
255     \let\reftextbefore     \reftextfacebefore
256     \def\reftextcurrent   {na ovoj stranici}%
257     \def\reftextfaraway#1 {na stranici~\pageref{#1}}%
258     \def\reftextpagerange#1#2 {na stranicama~\pageref{#1}--\pageref{#2}}%
259     \def\reftextlabelrange#1#2 {\ref{#1} do~\ref{#2}}%
260     \let\vrefformat\refdefaultformat
261     \let\Vrefformat\Vrefdefaultformat
262     \let\fullrefformat\fullrefdefaultformat
263     \let\vreffrangeformat\vreffrangedefaultformat
264 }

```

Defaults for the Czech option provided by Milan Vancura <milan@suse.cz>.

```

265 \DeclareOption{czech}
266 {
267     \def\ref@addto\extrasczech{
268         \def\reftextfaceafter {na n\'a-sle-du-j\'i c\'i stran\v{e}}%
269         \def\reftextfacebefore {na p\v{r}ed-choz\'i stran\v{e}}%
270         \def\reftextafter      {na n\'a-sle-du-j\'i c\'i stran\v{e}}%
271         \def\reftextbefore     {na p\v{r}ed-choz\'i stran\v{e}}%
272         \def\reftextcurrent   {na t\'eto stran\v{e}}%
273         \def\reftextfaraway#1 {na stran\v{e}~\pageref{#1}}%
274         \def\reftextpagerange#1#2 {na stran\'ach~\pageref{#1}--\pageref{#2}}%
275         \def\reftextlabelrange#1#2 {\ref{#1} a\v{z}~\ref{#2}}%
276         \let\vrefformat\refdefaultformat
277         \let\Vrefformat\Vrefdefaultformat
278         \let\fullrefformat\fullrefdefaultformat
279         \let\vreffrangeformat\vreffrangedefaultformat
280     }

```

Defaults for Danish provided by Torsten Martinsen (tmar91@kom.au.dk). Further defaults by Ole Laursen (olau@hardworking.dk).

```

281 \DeclareOption{danish}
282 {
283     \def\ref@addto\extrasdanish{
284         \def\reftextfaceafter {p\aa{} \reftextvario{modst\aa ende}%
285                                     {n\ae ste} side}%
286         \def\reftextfacebefore {p\aa{} \reftextvario{modst\aa ende}%
287                                     {forrige} side}%
288         \def\reftextafter      {p\aa{} \reftextvario{den f\o lgende}%
289                                     {n\ae ste} side}%
290         \def\reftextbefore     {p\aa{} \reftextvario{forrige side}
291                                     {foreg\aa ende side}}%

```

```

291 \def\reftextcurrent {p\aa{ } denne side}%
292 \def\reftextfaraway#1{p\aa{ } side~\pageref{#1}}%
293 \def\reftextpagerange#1#2{p\aa{ } side~\pageref{#1}--\pageref{#2}}%
294 \def\reftextlabelrange#1#2{\ref{#1} til~\ref{#2}}%
295 \let\vrefformat\hrefdefaultformat
296 \let\Vrefformat\Vrefdefaultformat
297 \let\fullrefformat\fullrefdefaultformat
298 \let\vreffrangeformat\refrangedefaultformat
299 }}

```

Default string for dutch have been contributed by Frank Poppe (POPPE@SWOV.NL). 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).

```

300 \DeclareOption{dutch}
301 {\vref@addto\extrasdutch{%
302   \def\refpagename{pagina}%
303   \def\reftextfaceafter {op de \reftextvario{rechter \refpagename}%
304                               {\refpagename\ hiernaast}}%
305   \def\reftextfacebefore{op de \reftextvario{linker \refpagename}%
306                               {\refpagename\ hiernaast}}%
307   \def\reftextafter      {op de \reftextvario{volgende \refpagename}%
308                               {\refpagename\ hierna}}%
309   \def\reftextbefore     {op de \reftextvario{vorige \refpagename}%
310                               {\refpagename\ hiervoor}}%
311   \def\reftextcurrent    {op deze \refpagename}%
312   \def\reftextfaraway#1{op \refpagename~\pageref{#1}}%

```

Concerning the next defaults I received the following comment by Frederik Fouvry <fouvry@coli.uni-sb.de>: “In the Dutch options (where I can exert a proper language judgement ;-), ‘t/m’ is not used in formal (scientific) texts. I would either use ‘—’ or ‘tot en met’ (the abbreviation written out). ”

```

313 \def\reftextpagerange#1#2{op pagina's~\pageref{#1}--\pageref{#2}}%
314 \def\reftextlabelrange#1#2{\ref{#1}--\ref{#2}}%
315 \let\vrefformat\hrefdefaultformat
316 \let\Vrefformat\Vrefdefaultformat
317 \let\fullrefformat\fullrefdefaultformat
318 \let\vreffrangeformat\refrangedefaultformat
319 }}

```

```

320 \DeclareOption{english}
321 {\vref@addto\extrasenglish{%
322   \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
323   \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
324                               page}%
325   \def\reftextafter      {on the \reftextvario{following}{next} page}%
326   \def\reftextbefore     {on the \reftextvario{preceding}{previous} page}%
327   \def\reftextcurrent    {on \reftextvario{this}{the current} page}%
328   \def\reftextfaraway#1{on page~\pageref{#1}}%
329   \def\reftextpagerange#1#2{on pages~\pageref{#1}--\pageref{#2}}%
330   \def\reftextlabelrange#1#2{\ref{#1} to~\ref{#2}}%
331   \let\vrefformat\hrefdefaultformat
332   \let\Vrefformat\Vrefdefaultformat

```

```

333 \let\fullreformat\fullrefdefaultformat
334 \let\vreformat\vreformatdefaultformat
335 }}

```

The esperanto strings were suggested by Albert Reiner (areiner@tph.tuwien.ac.at).

```

336 \DeclareOption{esperanto}
337 {\vref@addto\extrasesperanto{%
338 \def\reftextfaceafter{en la
339 \reftextvario{flanka}{sekva} pa\`go}%
340 \def\reftextfacebefore{en la
341 \reftextvario{flanka}{anta\ u ua} pa\`go}%
342 \def\reftextafter{en la sekva pa\`go}%
343 \def\reftextbefore{en la anta\ u ua pa\`go}%
344 \def\reftextcurrent{\reftextvario{\`ci-pa\`ge}%
345 {en \`ci tiu pa\`go}}}%
346 \def\reftextfaraway#1{en pa\`go~\pageref{#1}}%
347 \def\reftextpagerange#1#2{en pa\`goj~\pageref{#1} \`gis \pageref{#2}}%
348 \def\reftextlabelrange#1#2{\ref{#1} \`gis~\ref{#2}}%
349 \let\vreformat\vreformatdefaultformat
350 \let\Vreformat\Vreformatdefaultformat
351 \let\fullreformat\fullrefdefaultformat
352 \let\vreformat\vreformatdefaultformat
353 }}

```

The finnish strings were suggested by Matti Rintala (bitti@cs.tut.fi) and Hillevi Gavel Hillevi.Gavel@mdh.se.

```

354 \DeclareOption{finnish}
355 {\vref@addto\extrasfinnish{%
356 \def\reftextfaceafter {\reftextvario{viereisell\`a}%
357 {seuraavalla} sivulla}%
358 \def\reftextfacebefore{\reftextvario{viereisell\`a}%
359 {edellisell\`a} sivulla}%
360 \def\reftextafter {seuraavalla sivulla}%
361 \def\reftextbefore {edellisell\`a sivulla}%
362 \def\reftextcurrent {t\`all\`a sivulla}%
363 \def\reftextfaraway#1{sivulla~\pageref{#1}}%
364 \def\reftextpagerange#1#2{sivuilla~\pageref{#1}--\pageref{#2}}%

```

Can't combine numbers with the necessary suffix well.

```

365 \def\reftextlabelrange#1#2{\ref{#1}--\ref{#2}}%
366 \let\vreformat\vreformatdefaultformat
367 \let\Vreformat\Vreformatdefaultformat
368 \let\fullreformat\fullrefdefaultformat
369 \let\vreformat\vreformatdefaultformat
370 }}

```

French defaults are provided by Daniel Flippo (Daniel.Flippo@univ-lille1.fr).

```

371 \DeclareOption{french}
372 {\vref@addto\extrasfrench{%
373 \def\reftextfaceafter {page \reftextvario{ci-contre}{suivante}}%
374 \def\reftextfacebefore{page \reftextvario{ci-contre}%
375 {pr\`ec\`edente}}%
376 \def\reftextafter {page suivante}%

```



```

377 \def\reftextbefore {page pr\'ec\'edente}%
378 \def\reftextcurrent {de la pr\'esente page}%
379 \def\reftextfaraway#1{page~\pageref{#1}}%
380 \def\reftextpagerange#1#2{pages~\pageref{#1}--\pageref{#2}}%
381 \def\reftextlabelrange#1#2{\ref{#1} \\'a~\ref{#2}}%
382 \let\vrefformat\hrefdefaultformat
383 \let\Vrefformat\Vrefdefaultformat
384 \let\fullrefformat\fullrefdefaultformat
385 \let\vreffrangeformat\refrangedefaultformat
386 }}

```

Galician defaults are provided by Matthias Moebius
(Matthias.Moebius@uni-konstanz.de).

```

387 \DeclareOption{galician}
388 {\vref@addto\extragalician{%
389 \def\reftextfaceafter {na p\'axina oposta}%
390 \def\reftextfacebefore\reftextfaceafter
391 \def\reftextafter {na p\'axina seguinte}%
392 \def\reftextbefore {na p\'axina anterior}%
393 \def\reftextcurrent {nesta p\'axina}%
394 \def\reftextfaraway#1{na p\'axina~\pageref{#1}}%
395 \def\reftextpagerange#1#2{%
396 nas p\'axinas~\pageref{#1}-\pageref{#2}}%
397 \def\reftextlabelrange#1#2{\ref{#1} a~\ref{#2}}%
398 \let\vrefformat\hrefdefaultformat
399 \let\Vrefformat\Vrefdefaultformat
400 \let\fullrefformat\fullrefdefaultformat
401 \let\vreffrangeformat\refrangedefaultformat
402 }}

```

There are no good variants for German (I think and still think but this is a matter of taste :-). The following definitions were recently suggested to me but since the original are in for a long time i don't want to change them now since that could make a lot of documents change their formatting. If you fancy them, add a redefinition of the corresponding macro(s) to the preamble of your document.

```

\def\reftextfaceafter {auf der \reftextvario
{gegen\"uberliegenden}{anderen} Seite}%
\def\reftextfacebefore {auf der \reftextvario
{gegen\"uberliegenden}{anderen} Seite}%
\def\reftextafter {auf der \reftextvario
{n\"achsten}{folgenden} Seite}%
\def\reftextbefore {auf der \reftextvario
{vorigen}{vorhergehenden} Seite}%
\def\reftextcurrent {\reftextvario
{auf dieser}{diese} Seite}%

403 \DeclareOption{german}
404 {\vref@addto\extragerman{%
405 \def\reftextfaceafter {auf der n\"achsten Seite}%
406 \def\reftextfacebefore{auf der vorherigen Seite}%
407 \let\reftextafter \reftextfaceafter
408 \let\reftextbefore \reftextfacebefore
409 \def\reftextcurrent {auf dieser Seite}%
410 \def\reftextfaraway#1{auf Seite~\pageref{#1}}%

```

```

411 \def\reftextpagerange#1#2{auf den Seiten~\pageref{#1}--\pageref{#2}}%
412 \def\reftextlabelrange#1#2{\ref{#1} bis~\ref{#2}}%
413 \let\vrefformat\hrefdefaultformat
414 \let\Vrefformat\Vrefdefaultformat
415 \let\fullrefformat\fullrefdefaultformat
416 \let\vreffrangeformat\vreffrangedefaultformat
417 }}

```

The ngerman defaults are the same but needed for “Neue Rechtschreibung” (i.e., a different set of hyphenation patterns).

```

418 \DeclareOption{ngerman}
419 {\vref@addto\extrasngerman{%
420 \def\reftextfaceafter {auf der n"achsten Seite}%
421 \def\reftextfacebefore{auf der vorherigen Seite}%
422 \let\reftextafter \reftextfaceafter
423 \let\reftextbefore \reftextfacebefore
424 \def\reftextcurrent {auf dieser Seite}%
425 \def\reftextfaraway#1{auf Seite~\pageref{#1}}%
426 \def\reftextpagerange#1#2{auf den Seiten~\pageref{#1}--\pageref{#2}}%
427 \def\reftextlabelrange#1#2{\ref{#1} bis~\ref{#2}}%
428 \let\vrefformat\hrefdefaultformat
429 \let\Vrefformat\Vrefdefaultformat
430 \let\fullrefformat\fullrefdefaultformat
431 \let\vreffrangeformat\vreffrangedefaultformat
432 }}

```

Defaults for greek suggested by Apostolos Syropoulos (apostolo@obelix.ee.duth.gr).

```

433 \DeclareOption{greek}
434 {\vref@addto\extrasingreek{%
435 \def\reftextfaceafter {sthn \reftextvario{paro'usa}%
436 \ep'omenh} sel'ida}%
437 \def\reftextfacebefore{sthn \reftextvario{paro'usa}{prohgo'umenh}
438 sel'ida}%
439 \def\reftextafter {sthn ep'omenh sel'ida}%
440 \def\reftextbefore {sthn prohgo'umenh sel'ida}%
441 \def\reftextcurrent {s' aut'h th sel'ida}%
442 \def\reftextfaraway#1{sth sel'ida\nobreakspace\pageref{#1}}%
443 \def\reftextpagerange#1#2{stis sel'ides\nobreakspace
444 \pageref{#1}---\pageref{#2}}%
445 \def\reftextlabelrange#1#2{\ref{#1} ws\nobreakspace\ref{#2}}%
446 \let\vrefformat\hrefdefaultformat
447 \let\Vrefformat\Vrefdefaultformat
448 \let\fullrefformat\fullrefdefaultformat
449 \let\vreffrangeformat\vreffrangedefaultformat
450 }}

```

Icelandic defaults suggested by Thorhallur Sverrisson (thorhs@basis.is).

```

451 \DeclareOption{icelandic}
452 {\vref@addto\extrasicelandic{%
453 \def\reftextfaceafter {\{a} \reftextvario{n{ae}stu}%
454 \n{ae}stu} s\{i}{dh}u}%
455 \def\reftextfacebefore{\{a} \reftextvario{fyrri}%
456 {fyrri} s\{i}{dh}u}%
457 \def\reftextafter {\{a} \reftextvario{n{ae}stu}%

```

```

458          {n{\ae}stu} s'\{i}{\dh}u}%
459 \def\reftextbefore  {\'{a} \reftextvario{fyrri}{fyrri} s'\{i}{\dh}u}%
460 \def\reftextcurrent  {\'{a} \reftextvario{{\th}essari}%
461                      {\{\th}essari} s'\{i}{\dh}u}%
462 \def\reftextfaraway#1{\'{a} s'\{i}{\dh}u~\pageref{#1}}%
463 \def\reftextpagerange#1#2{\'{a} s'\{i}{\dh}u~\pageref{#1}--\pageref{#2}}%
464 \def\reftextlabelrange#1#2{\ref{#1} til~\ref{#2}}%
465 \let\vrefformat\hrefdefaultformat
466 \let\Vrefformat\Vrefdefaultformat
467 \let\fullrefformat\fullrefdefaultformat
468 \let\vreffrangeformat\vreffrangedefaultformat
469 }}

```

Defaults for Italian suggested by Giovanni Pensa (pensa@dsi.unimi.it) with iTeXnici.

```

470 \DeclareOption{italian}
471   {\vref@addto\extrasitalian{%
472     \def\reftextfaceafter {\reftextvario{a fronte}%
473                           {nella pagina successiva}}%
474     \def\reftextfacebefore{\reftextvario{a fronte}%
475                             {nella pagina precedente}}%
476     \def\reftextafter      {nella pagina \reftextvario{segunte}%
477                             {successiva}}%
478     \def\reftextbefore     {nella pagina precedente}%
479     \def\reftextcurrent    {in questa pagina}%
480     \def\reftextfaraway#1{a pagina~\pageref{#1}}%
481     \def\reftextpagerange#1#2{nelle pagine~\pageref{#1}--\pageref{#2}}%
482     \def\reftextlabelrange#1#2{da~\ref{#1} a~\ref{#2}}%
483     \let\vrefformat\hrefdefaultformat
484     \let\Vrefformat\Vrefdefaultformat
485     \let\fullrefformat\fullrefdefaultformat
486     \let\vreffrangeformat\vreffrangedefaultformat
487   }}

```

Defaults for Japanese. It needs a special `\vrefformat`, `\Vrefformat`, `\fullrefformat` and `\vreffrangeformat` for gramatical reasons. As our standard documentation workflow uses pdfTeX the Japanese letters can't be displayed easily, so you will see missing glyphs below. To see the real letters you have to look at the source or package file.

```

488 \DeclareOption{japanese}
489   {\vref@addto\extrasjapanese{%
490     \def\reftextfaceafter {\reftextvario{□□□}{□}□□□}%
491     \def\reftextfacebefore{\reftextvario{□□□}{□}□□□}%
492     \def\reftextafter      {\reftextvario{□□□}{□}□□□}%
493     \def\reftextbefore     {\reftextvario{□□□}{□}□□□}%
494     \def\reftextcurrent    {\reftextvario{□□}{□}□□□}%
495     \def\reftextfaraway#1{\pageref{#1}□□□}%
496     \def\reftextpagerange#1#2{\pageref{#1}□□\pageref{#2}□□□}%
497     \def\reftextlabelrange#1#2{\ref{#1}□□\ref{#2}}%

```

Note that the parentheses beow are not normal ones but full width ones U+FF08 and U+FF09!

```

498     \def\vrefformat#1#2{\ref{#2}□\vpageref{#1}{#2}□}%
499     \def\Vrefformat#1#2{\Ref{#2}□\vpageref{#1}{#2}□}%
500     \def\fullrefformat#1{\ref{#1}□\reftextfaraway{#1}□}%

```

```

501 \def\vreffrangeformat#1#2#3{\reftextlabelrange{#2}{#3}%
502 \vpagerefrange[{#1}]{#2}{#3}\relax}%
503 }

```

Defaults for Hungarian by Jeff Goldberg (jeffrey@goldmark.org). There is a problem with the use of the definite article *a* or *az* in Hungarian before expansions of `\vref` or `\ref`. The problem is that the word should be *az* if the number following would begin with a vowel if spelled out, and *a* if the number would begin with a consonant.

The option assumes that there is a command `\aza` defined which helps resolving this problem.³

```

504 \DeclareOption{magyar}
505 {\vref@addto\extrasmagyar{%
506 \def\reftextafter {a k\o\vet\kez\H{o} ol\da\lon}%
507 \def\reftextbefore{az el\H{o}\z\H{o} ol\da\lon}%
508 \def\reftextfaceafter {\reftextvario{a t\ul\ol\da\lon}%
509 {a k\o\vet\kez\H{o} ol\da\lon}}%
510 \def\reftextfacebefore{\reftextvario{a t\ul\ol\da\lon}%
511 {az el\H{o}\z\H{o} ol\da\lon}}%
512 \def\reftextcurrent {ezen az ol\da\lon}%

```

The following suggested patch has not been added yet (pending changes in babel system).

```

\def\reftextfaraway#1{a~\csname @@magyar@az@lowxu\endcsname
\pageref{#1}}~ol\da\lon}%
\def\reftextpagerange#1#2{a~\csname @@magyar@az@lowxu\endcsname
\pageref{#1}}%
--\pageref{#2}~ol\da\la\kon}%
\def\reftextlabelrange#1#2{\csname @@magyar@told\endcsname\ref{#1}+tol
\ref{#2}-ig}% Dat: '{ }' is here for anti-\capitalize
513 \def\reftextfaraway#1{\aza{\pageref{#1}} \pageref{#1}~ol\da\lon}%
514 \def\reftextpagerange#1#2{\vref@stringwarning\reftextpagerange
515 on pages~\pageref{#1}--\pageref{#2}}%
516 \def\reftextlabelrange#1#2{\vref@stringwarning\reflabelpagerange
517 \ref{#1} to~\ref{#2}}%
518 \let\vreffformat\vrefdefaultformat
519 \let\Vreffformat\Vrefdefaultformat
520 \let\fullreffformat\fullrefdefaultformat
521 \let\vreffrangeformat\vreffrangedefaultformat
522 }%

```

The `\AtBeginDocument` needs to be executed when the option is processed and not inside the babel interface.

```

523 \AtBeginDocument{\providecommand\aza[1]{a/az%
524 \PackageError{varioref}{%
525 Proper definition for command \noexpand\aza missing}%
526 {You need to (re)define the command \noexpand\aza that
527 takes one argument (a number or a \noexpand\pageref command)
528 and produces the string 'a' or 'az' depending on the argument
529 value. It should also accept an optional argument (default '1')
530 to denote whether or not the string should be lowercase or

```

³This information is actually quite old but unfortunately never made it into varioref. In case any work has been undertaken to resolve this please inform the author about it.

```

531         uppercase.}}}%
532     }

```

The Norwegian and ‘nynorsk’ translations have been provided by Dag F Langmyhr <dag@ifi.uio.no> and Karl Ove Hufthammer <huftis@bigfoot.com>.

```

533 \DeclareOption{norsk}
534   {\vref@addto\extrasnorsk{%
535     \def\reftextfaceafter {p\aa{}} neste side}%
536     \def\reftextfacebefore{p\aa{}} forrige side}%
537     \def\reftextafter      {p\aa{}} neste side}%
538     \def\reftextbefore     {p\aa{}} forrige side}%
539     \def\reftextcurrent    {p\aa{}} denne siden}%
540     \def\reftextfaraway#1{p\aa{}} side~\pageref{#1}}%
541     \def\reftextpagerange#1#2{p\aa{}} side~\pageref{#1}--\pageref{#2}}%
542     \def\reftextlabelrange#1#2{\ref{#1}} til~\ref{#2}}%
543     \let\vrefformat\vreffdefaultformat
544     \let\Vrefformat\Vreffdefaultformat
545     \let\fullrefformat\fullrefdefaultformat
546     \let\vreffrangeformat\vreffrangedefaultformat
547   }}
548 \DeclareOption{nynorsk}
549   {\vref@addto\extrasnynorsk{%
550     \def\reftextfaceafter {p\aa{}} neste side}%
551     \def\reftextfacebefore{p\aa{}} f\o{}rre side}%
552     \def\reftextafter      {p\aa{}} neste side}%
553     \def\reftextbefore     {p\aa{}} f\o{}rre side}%
554     \def\reftextcurrent    {p\aa{}} denne sida}%
555     \def\reftextfaraway#1{p\aa{}} side~\pageref{#1}}%
556     \def\reftextpagerange#1#2{p\aa{}} side~\pageref{#1}--\pageref{#2}}%
557     \def\reftextlabelrange#1#2{\ref{#1}} til~\ref{#2}}%
558     \let\vrefformat\vreffdefaultformat
559     \let\Vrefformat\Vreffdefaultformat
560     \let\fullrefformat\fullrefdefaultformat
561     \let\vreffrangeformat\vreffrangedefaultformat
562   }}

```

The polish translations have been provided by Tomasz Michniewski <tomekm@ias.wat.waw.pl>. The use of the command \eob and aob etc. requires appropriate definitions as provided, for example, by the babel system. This should probably be handled differently but it would require modifications in babel’s language support.

```

563 \DeclareOption{polish}
564   {\vref@addto\extrapolish{%
565     \def\reftextfaceafter {na \reftextvario{s\ao{}}siedniej}%
566                               {nast\eob{}}pnej} stronie}%
567     \def\reftextfacebefore{na \reftextvario{s\ao{}}siedniej}%
568                               {poprzedniej} stronie}%
569     \def\reftextafter      {na nast\eob{}}pnej stronie}%
570     \def\reftextbefore     {na poprzedniej stronie}%
571     \def\reftextcurrent    {na \reftextvario{tej
572                               samej}{bie\zkb{}}\ao{}}cej} stronie}%
573     \def\reftextfaraway#1{na stronie~\pageref{#1}}%
574     \def\reftextpagerange#1#2{na stronach~\pageref{#1}--\pageref{#2}}%
575     \def\reftextlabelrange#1#2{od~\ref{#1}} do~\ref{#2}}%
576     \let\vrefformat\vreffdefaultformat

```

```

577 \let\Vrefformat\Vrefdefaultformat
578 \let\fullreformat\fullrefdefaultformat
579 \let\vreformat\vreformatdefaultformat
580 }}

```

The portuguese default text has been provided by José Carlos Oliveira Santos jcsantos@fc.up.pt.

```

581 \DeclareOption{portuges}
582 {\vref@addto\extraportuges{%
583 \def\reftextfaceafter {na \reftextvario{p\'agina ao lado}{pr\'oxima
584 p\'agina}}%
585 \def\reftextfacebefore{na p\'agina \reftextvario{ao lado}{anterior}}%
586 \def\reftextafter {na \reftextvario{p\'agina seguinte}{pr\'oxima
587 p\'agina}}%
588 \def\reftextbefore{na p\'agina \reftextvario{anterior}{precedente}}%
589 \def\reftextcurrent {nesta p\'agina}%
590 \def\reftextfaraway#1{na p\'agina~\pageref{#1}}%
591 \def\reftextpagerange#1#2{nas p\'aginas~\pageref{#1}--\pageref{#2}}%
592 \def\reftextlabelrange#1#2{\ref{#1} a~\ref{#2}}%
593 \let\Vrefformat\Vrefdefaultformat
594 \let\fullreformat\fullrefdefaultformat
595 \let\vreformat\vreformatdefaultformat
596 \let\vreformat\vreformatdefaultformat
597 }}

```

Updates to the default text for Romanian have been suggested by Florin Oprina (florin.oprina@gmail.com).

```

598 \DeclareOption{romanian}
599 {\vref@addto\extraromanian{%
600 \def\reftextfaceafter {pe pagina \reftextvario{opus\ur{a}}{ur{a}toarei}}%
601 \def\reftextfacebefore{pe pagina \reftextvario{opus\ur{a}}{precedentei}}%
602 \def\reftextafter {\reftextvario{pe pagina urm\ur{a}toare}%
603 {pe urm\ur{a}toarea pagin\ur{a}}}%
604 \def\reftextbefore {pe pagina \reftextvario{precedent\ur{a}}%
605 {precedentei}}%
606 \def\reftextcurrent {pe aceast\ur{a} pagin\ur{a}}%
607 \def\reftextfaraway#1{pe pagina~\pageref{#1}}%
608 \def\reftextpagerange#1#2{pe paginile~\pageref{#1}--\pageref{#2}}%
609 \def\reftextlabelrange#1#2{\ref{#1} la~\ref{#2}}%
610 \let\Vrefformat\Vrefdefaultformat
611 \let\fullreformat\fullrefdefaultformat
612 \let\vreformat\vreformatdefaultformat
613 \let\vreformat\vreformatdefaultformat
614 }}

```

The text for russian was taken from the book in Russian by I. A. Kotelnikov and P. Z. Chebotaev, and adapted to the encoding-independent form by Vladimir Volovich (vvv@vsu.ru).

```

615 \DeclareOption{russian}
616 {\vref@addto\extrarussian{%
617 \def\reftextfaceafter{\cyrn\cyra\ \reftextvario{\cyrp\cyrr\cyro
618 \cyrt\cyri\cyrv\cyro\cyrp\cyro\cyrl\cyro\cyrzh\cyrn\cyro\cyrishrt}}%
619 {\cyrs\cyrl\cyre\cyrd\cyru\cyryu\cyrshch\cyre\cyrishrt}\ \cyrs\cyrt
620 \cyrr\cyra\cyrn\cyri\cyrc\cyre}%
621 \def\reftextfacebefore{\cyrn\cyra\ \reftextvario{\cyrp\cyrr\cyro

```

```

622 \cyr\cyri\cyrv\cyro\cyrp\cyro\cyr\cyro\cyrzh\cyrn\cyro\cyrishrt}%
623 {\cyrp\cyrr\cyre\cyrd\cyrery\cyrd\cyru\cyrshch\cyre\cyrishrt}%
624 \cyr\cyr\cyrr\cyra\cyrn\cyri\cyr\cyre}%
625 \def\reftextafter{\cyrn\cyra\ \cyr\cyr\cyre\cyrd\cyru\cyryu\cyrshch
626 \cyre\cyrishrt\ \cyr\cyr\cyrr\cyra\cyrn\cyri\cyr\cyre}%
627 \def\reftextbefore{\cyrn\cyra\ \reftextvario{\cyrp\cyrr\cyre\cyrd
628 \cyrsh\cyre\cyr\cyr\cyrv\cyru\cyryu\cyrshch\cyre\cyrishrt}%
629 {\cyrp\cyrr\cyre\cyrd\cyrery\cyrd\cyru\cyrshch\cyre\cyrishrt}%
630 \ \cyr\cyr\cyrr\cyra\cyrn\cyri\cyr\cyre}%
631 \def\reftextcurrent{\cyrn\cyra\ \reftextvario{\cyrrev\cyr\cyr
632 \cyrishrt}{\cyrd\cyra\cyrn\cyrn\cyro\cyrishrt}\ \cyr\cyr\cyrr
633 \cyra\cyrn\cyri\cyr\cyre}%
634 \def\reftextfaraway#1{\cyrn\cyra\ \cyr.~\pageref{#1}}%
635 \def\reftextpagerange#1#2{\cyrn\cyra\ \cyr\cyr\cyrr\cyra\cyrn
636 \cyri\cyr\cyra\cyrh~\pageref{#1}--\pageref{#2}}%
637 \def\reftextlabelrange#1#2{\cyr~\ref{#1}\ \cyrp\cyro~\ref{#2}}%
638 \let\vreformat\vreformat
639 \let\Vreformat\Vreformat
640 \let\fullreformat\fullreformat
641 \let\vreformat\vreformat
642 }}

```

The text for slovak defaults was contributed by Miroslav Sedivy
(<miro@slovensko.com>).

```

643 \DeclareOption{slovak}
644 {\vref@addto\extrasslovak{%
645 \def\reftextfaceafter {na \reftextvario{proti\ v lahlej}%
646 \nasleduj\'ucej} strane}%
647 \def\reftextfacebefore{na \reftextvario{proti\ v lahlej}%
648 \predch\'adaj\'ucej} strane}%
649 \def\reftextafter {na \reftextvario{\nasleduj\'ucej}%
650 {\v dal\ v sej} strane}%
651 \def\reftextbefore {na \reftextvario{\predch\'adaj\'ucej}%
652 \predov slej} strane}%
653 \def\reftextcurrent {na tejto strane}%
654 \def\reftextfaraway#1{na strane~\pageref{#1}}%
655 \def\reftextpagerange#1#2{na stran\'ach~\pageref{#1}--\pageref{#2}}%
656 \def\reftextlabelrange#1#2{\ref{#1} a\ v z~\ref{#2}}%
657 \let\vreformat\vreformat
658 \let\Vreformat\Vreformat
659 \let\fullreformat\fullreformat
660 \let\vreformat\vreformat
661 }}

```

The text for slovene defaults was contributed by Roman Maurer
(<roman.maurer@amis.net>).

```

662 \DeclareOption{slovene}
663 {\vref@addto\extrasslovene{%
664 \def\reftextfaceafter {na naslednji strani}%
665 \def\reftextfacebefore{na prej\ v{s}nji strani}%
666 \let\reftextafter \reftextfaceafter
667 \let\reftextbefore \reftextfacebefore
668 \def\reftextcurrent {na \reftextvario{tej}{trenutni} strani}%
669 \def\reftextfaraway#1{na strani~\pageref{#1}}%
670 \def\reftextpagerange#1#2{na straneh~\pageref{#1}--\pageref{#2}}%

```

```

671 \def\reftextlabelrange#1#2{od~\ref{#1} do~\ref{#2}}%
672 \let\vrefformat\refdefaultformat
673 \let\Vrefformat\Vrefdefaultformat
674 \let\fullrefformat\fullrefdefaultformat
675 \let\vreffrangeformat\vreffrangedefaultformat
676 }}

```

Text for spanish defaults was contributed by Julio Sanchez (jsanchez@gmv.es) and Fernando Dobladez (<ferd@fuego.com>).

```

677 \DeclareOption{spanish}
678 {\vref@addto\extrasspanish{%
679 \def\reftextfaceafter {en la p\'agina siguiente}%
680 \def\reftextfacebefore{en la p\'agina anterior}%
681 \let\reftextafter \reftextfaceafter
682 \let\reftextbefore \reftextfacebefore
683 \def\reftextcurrent {en esta p\'agina}%
684 \def\reftextfaraway#1{en la p\'agina~\pageref{#1}}%
685 \def\reftextpagerange#1#2{en las p\'aginas~\pageref{#1}%
686 ~\pageref{#2}}%
687 \def\reftextlabelrange#1#2{\ref{#1} a~\ref{#2}}%
688 \let\vrefformat\refdefaultformat
689 \let\Vrefformat\Vrefdefaultformat
690 \let\fullrefformat\fullrefdefaultformat
691 \let\vreffrangeformat\vreffrangedefaultformat
692 }}

```

The text for swedish was contributed by Mats Dahlgren (matsd@sssk.se).

```

693 \DeclareOption{swedish}
694 {\vref@addto\extrasswedish{%
695 \def\reftextfaceafter {p\aa\ \reftextvario{motst\aa ende}%
696 ~\n~\{a\sta} sida}%
697 \def\reftextfacebefore{p\aa\ \reftextvario{motst\aa ende}%
698 ~f~\{o\reg\aa ende} sida}%
699 \def\reftextafter {p\aa\ \reftextvario{f~\{o\l\jande}%
700 ~\n~\{a\sta} sida}%
701 \def\reftextbefore {p\aa\ f~\{o\reg\aa ende sida}%
702 \def\reftextcurrent {p\aa\ denna sida}%
703 \def\reftextfaraway#1{p\aa\ sidan~\pageref{#1}}%
704 \def\reftextpagerange#1#2{p\aa\
705 sidorna~\pageref{#1}--\pageref{#2}}%
706 \def\reftextlabelrange#1#2{\ref{#1} till~\ref{#2}}%
707 \let\vrefformat\refdefaultformat
708 \let\Vrefformat\Vrefdefaultformat
709 \let\fullrefformat\fullrefdefaultformat
710 \let\vreffrangeformat\vreffrangedefaultformat
711 }}
712 \DeclareOption{turkish}
713 {\vref@excuse{turkish}%
714 \vref@addto\extrasturkish{%
715 \def\reftextfaceafter {on the \reftextvario{facing}{next} page}%
716 \def\reftextfacebefore{on the \reftextvario{facing}{preceding}
717 page}%
718 \def\reftextafter {on the \reftextvario{following}{next} page}%
719 \def\reftextbefore {on the \reftextvario{preceding}{previous} page}%
720 \def\reftextcurrent {on \reftextvario{this}{the current} page}%

```



```

760 \newif\if@vrefhandlespace
761 \DeclareOption{space} {\@vrefhandlespacetrue}
762 \DeclareOption{nospace}{\@vrefhandlespacefalse}

```

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).

```

763 \ExecuteOptions{english,final,space}

```

9.2 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.

```

764 \newcounter{vrcnt}

```

`\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.

We now start by scanning for a star and then call either `\vp@gerefstar` or `\vp@geref`. The space handling logic is a bit twisted these days: if the option `space` is in force then preceding spaces in the document are removed and the star means that the command should not add its own space. However, with option `nospace` any space already in the source will be left alone and the command doesn't add its own space either. Thus in this case the star form doesn't have any effect and below `\vp@gerefstar` is let to `\vp@geref`. This allows a package like `hyperef` to redefine it and use it for its own tasks (like denoting that no link should be produced).

```

765 \DeclareRobustCommand\vpageref{\@ifstar
766   {\let\vref@maybe@space\empty\vp@gerefstar}%
767   {\let\vref@maybe@space\space \vp@geref}}

```

```

768 \def\vp@geref{\@ifnextchar[%

```

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

```

769   \vpageref{\vpageref[\reftextcurrent]]}%
770 }

```

`\vref@space` A default for `\vref@space`. This isn't really needed except in the case that somebody has hooked into the `varioref` interfaces at a lower level (which isn't really supported, but...). So giving a default will prevent an error message in that case (and should hopefully produce the same behavior as before).

```

771 \let\vref@space\space
772 \let\vref@maybe@space\space

```

`\@vpageref` More parsing...

```

773 \def\@vpageref[#1]{\@ifnextchar[%
By default the second optional argument is empty.
774   {\@@vpageref{#1}}{\@vpageref{#1}[]}}

```

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

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

First it switches to horizontal mode if necessary. If there was a preceding space we remember its size in `\@tempskipa` and then remove it for reinsertion later.

```
776 \leavevmode
```

```
777 \@tempskipa\lastskip \unskip
```

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

```
778 \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 pageref value for this label in the macro `\@tempa`.

```
779 \vref@pagenum\@tempa{\the\c@vrcnt @vr}%
```

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

```
780 \vref@pagenum\@tempb{\the\c@vrcnt @xvr}%
```

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.

These days we actually use `\vref@label` instead of `\label` as this avoids problems with Babel or `amsmath` redefining the latter command.

```
781 \vref@label{\the\c@vrcnt @xvr}%
```

Since we have removed any leading space above we now insert a space here after the label. It is done here so that it is still visible from following code—the space before the label would be hidden. What kind of space depends on the options to the package. If `space` was specified, we insert our own space, namely `\vref@maybe@space`. This will typeset a space unless the star form of the current command was used.

```
782 \ifvrefhandlespace
```

```
783 \vref@maybe@space
```

```
784 \else
```

But if `nospace` is in force we simply use the same space value that was used in the source document (unless that was zero or non-existent).

```
785 \ifdim\@tempskipa=\z@ \else
```

```
786 \hskip\@tempskipa
```

```
787 \fi
```

```
788 \fi
```

Inside displays of the `amsmath` package the `\label` command is redefined which makes the test for loops incorrect if a `\vref` is used in, say, `\intertext`. So we test this condition first and only do the test if `\label` doesn't have a special meaning. [This is no longer necessary as `\label` isn't used any more]

```
789 % \ifx\label\label@in@display\else
```

```
790 \ifx\@tempa\@tempb
```

```

791 \let\vref@may@loop\relax
792 \else

```

If both points do not fall onto the same page with either issue an error or a warning message. However, we do no longer issue that warning now but wait until we are sure that both labels aren't "far away" because in that case it doesn't matter. So we just save that info in a macro now.

```

793 \edef\vref@may@loop{%
794 \noexpand\vref@err{\noexpand\vref or \noexpand\vpageref
795 at page boundary
796 \@tempb-\@tempa\space (may loop)%
797 }%
798 }%
799 \fi
800 % \fi

```

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

```

801 \vrefpagemum\thevpagerefnum{#3}%

```

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.

```

802 \ifx\@tempa\thevpagerefnum

```

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 However, if the user explicitly requested an empty text string using the optional argument we cancel any preceding space since in this case we are otherwise likely to end up with spaces one before and one after `\vpageref`.

```

803 \def\@tempc{#1}%
804 \ifx\@tempc\@empty
805 \unskip
806 \else
807 #1%
808 \fi
809 \else

```

If #2 is empty we do nothing otherwise we insert it followed by a space.

```

810 \def\@tempc{#2}%
811 \ifx\@tempc\@empty \else
812 #2\vref@space
813 \fi

```

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

```

814 \is@pos@number\thevpagerefnum
815 {%

```

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.

```
816      \is@pos@number\@tempa
817      {\@tempcnta\@tempa
818      \advance\@tempcnta\@ne
819      }%
```

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.

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

Now we are ready to check if reference and object are on nearby pages. `\thevpagerefnum` 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 represent the same value then the object lies one page after its reference.

```
821      \ifnum \thevpagerefnum =\@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 insert `\reftextafter`). Don't be surprised if we are not using `\thevpagerefnum` in the check. Since `\@tempcnta` has the same value it is faster to use the register instead of parsing the macro contents anew.

```
822      \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.

```
823      \if@twoside
824      \reftextfaceafter
825      \else
826      \reftextafter
827      \fi
828      \else
829      \reftextafter
830      \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 subtract two from the current value of `\@tempcnta` (which was set to one higher as the reference page number). Note, that subtraction is also possible if the value was `\maxdimen` — we still get something that is much larger than any sensible page number.

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

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

```
833      \ifnum \thevpagerefnum =\@tempcnta
```

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

```
834         \ifodd\@tempcnta
835         \reftextbefore
836     \else
```

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

```
837         \if@twoside
838         \reftextfacebefore
839     \else
840     \reftextbefore
841 \fi
842 \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 and drop any possible "looping warning" in `\vref@may@loop`. Recall that this is a macro which has the user label as an argument.

```
843     \else
844     \let\vref@may@loop\relax % added
845     \reftextfaraway{#3}%
846 \fi
847 \fi
848 }%
```

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

```
849     {%
850     \let\vref@may@loop\relax %added
851     \reftextfaraway{#3}}%
852 \fi
```

Finally we generate the internal label so that it can be checked 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.

These days we actually use `\vref@label` instead of `\label` as this avoids problems with Babel or `amsmath` redefining the latter command.

```
853 \vref@label{\the\c@vrcnt @vr}%
```

Finally we run `\vref@may@loop` which is either `\relax` or generates a "may loop" warning or error as appropriate.

```
854 \vref@may@loop
855 }
```

`\vp@gerefstar` The default code for the star form is identical to the previous macro `\vp@geref`. It only produces a different result because before calling it we set `\vref@maybe@space` to do nothing.

The `hyperref` package can then change the meaning of this command to suppress a hyperlink.

It is also a good way to check if we are running with a new `varioref` by testing

```
\ifdefined\vp@gerefstar
```

```

... code fore noew varioref
\else
... code for old varioref
\fi

856 \let\vp@gerefstar\vp@geref

\vpagerefnum This macro is like \label in the kernel but without passing on \@currentlabel,
ie useful if all we are interested in is the page number. It also has the effect that
it is unaffected by amsmath or Babel redefining the \label command.
857 \def\vpagerefnum#1{\@bsphack
858   \protected@write\@auxout{}\%
859     {\string\newlabel{#1}{\thepage}}\%
860   \@esphack}

\vpagerefnum This macro allows to define \ref after and friends to refer to the page number
rather than producing a textual reference.
861 \let\thevpagerefnum\@empty

\vprefwarning When the \vpref command detects a possible crossing over a page boundary it
\vprefshowerrors will call \vpref@err to generate an error message. During document preparation
\vpref@err one can turn such errors into warnings by issuing a \vprefwarning declaration.
862 \def\vprefwarning{\def\vpref@err{\PackageWarning{varioref}}}
863 \def\vprefshowerrors{\def\vpref@err##1{\PackageError{varioref}{##1}%
864   {Please check the pages in question. You might need to replace
865     the \string\vpref\MessageBreak
866     or \noexpand\vpageref by a normal \noexpand\ref to
867     stop LaTeX running forever.}}}

\vpref We start by scanning for a star form and then continue in a different macro
depending on the result.
868 \DeclareRobustCommand\vpref{\@ifstar
869   {\vpref@star}{\vpref@f}}

\vpref@star The star form is easy (and just a convenient shortcut), just call \ref followed by
\vpageref and pass the optional argument to the latter. We don't support the
second optional argument of \vpageref, it that is needed one has to call both
commands explicitly
870 \newcommand\vpref@star[1][]{\vprefformat{#1}}

\vprefformat,\vprefdefaultformat Japanese needs a different word order in \vpref@star so this is separated out o
that it can be changed on language level.
871 \def\vprefdefaultformat#1#2{%
872   \ref{#2}
873   \vpageref[#1]{#2}}
Most languages need the above definition.
874 \let\vprefformat\vprefdefaultformat

\vpref The normal case is a little bit more elaborated ...
875 \def\vpref{%
876   \leavevmode

```

If option `space` is used then we remove a preceding space and add our own unbreakable space instead. Otherwise we don't do any space-handling.

```
877 \if@vrefhandlespace
878 \unskip \nobreakspace
879 \fi
```

The use of `\nobreakspace` or `~` after the `\unskip` means that this command will always produce a normal space while something like `\nobreak\space` will react to settings of `\nonfrenchspacing`. Unfortunately the latter will also act in cases where one really wants a normal space, e.g., in `Fig.\vref{..}`, resulting in a large extra space after the dot. For this reason the first solution is used.

After having handled (or not handled) the spacing we call `\vref@star` to scan the optional arguments and do the rest. If that command has been altered by `hyperref` then the current one needs altering too and does the argument scanning explicitly.

```
880 \vref@star % in hyperref this needs to be explicit
881 }
```

`\is@pos@number` The utility macro `\is@pos@number` takes three arguments: a string that is tested for being a valid non-negative 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.

```
882 \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.

```
883 \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` above gets parsed away by the counter assignment. If it would be missing, and the full string would consist of a number, `TeX` would 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.

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

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

```
885 \ifx\@nil#1\@nil
```

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.

```
886 \expandafter\@firstoftwo \else
887 \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.

```
888 \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`.

```
889 \newcommand\fullref{\fullrefformat}
```

`\fullrefformat, \fullrefdefaultformat` Japanese needs a different word order in `\fullref` so this is separated out so that it can be changed on language level.

```
890 \def\fullrefdefaultformat#1{%
891   \ref{#1} \reftextfaraway{#1}}
```

Most languages need the above definition.

```
892 \let\fullrefformat\fullrefdefaultformat
```

9.2.1 Supporting ranges

`\vref@pagenum` This command takes a label as `#1` extracts the page number associated with it and saves the result in a csname which is passed as `#1`. If the label isn't associated with a page number it essentially associates it with ?? for both the label number and the page, thus defining the label this way. This means that no label warning is generated for this label in case it is undefined.

```
893 \def\vref@pagenum#1#2{%
894   \@ifundefined{r@#2}{\@namedef{r@#2}{??}{??}}{}}%
```

Extracting and saving the page number turned out to be a source of subtle bugs. Initially it was done through an `\edef` with a bunch of `\expandafter` commands inside. This posed a problem if the page number itself contained code which needed protection (e.g., `pr/4080`) so this got changed to use `\protected@edef`. However, that in turn failed with Babel (`pr/4093`) if the label contained active characters, e.g., a “.” in French. So now we use even more `\expandafter` commands to avoid any expansion other than what is absolutely required—I'm sure there is now a simpler way to code this, but ... in fact we didn't use enough initially resulting in another bug (`pr/4159`):

```
895   \expandafter\expandafter\expandafter\vref@@pagenum
896   \csname r@#2\endcsname{}\@nil#1%
897 }
898 \def\vref@pagenum#1#2#3\@nil#4{%
899   \def#4{#2}%
900 }
```

`\vrefpagenum` Same as the above but this time we generate a warning for undefined labels.

```
901 \def\vrefpagenum#1#2{%
902   \@ifundefined{r@#2}%
903     {\G@refundefinedtrue
904       \@latex@warning{Reference ‘#2’ on page \thepage \space
905         undefined}}{}}%
906   \vref@pagenum{#1}{#2}}
```

`\vpagerefrange` If both labels refer to the same page then we produce a `\vpageref`. Otherwise we
`\@vpagerefrange` produce the result of `\reftextpagerange`.
`\@svpagerefrange`

One could think of making this command even more clever by producing a special string if the difference between the two page number is one (but this is not done).

We need two versions to implement a star form:

```

907 \newcommand\@svpagerefrange[3][\reftextcurrent]{%
908   \vrefpagenum\@tempa{#2}%
909   \vrefpagenum\@tempb{#3}%
910   \ifx\@tempa\@tempb
911     \vpageref*[{#1}]{#2}%
912   \else
913     \reftextpagerange{#2}{#3}%
914   \fi
915 }

```

And the same but using \vpageref:

```

916 \newcommand\@vpagerefrange[3][\reftextcurrent]{%
917   \vrefpagenum\@tempa{#2}%
918   \vrefpagenum\@tempb{#3}%
919   \ifx\@tempa\@tempb
920     \vpageref[{#1}]{#2}%
921   \else
922     \reftextpagerange{#2}{#3}%
923   \fi
924 }

```

And here we put things together.

```

925 \newcommand\vpagerefrange{\@ifstar\@svpagerefrange\@vpagerefrange}

```

\vrefrange Argument two and three are implicitly picked up.

```

926 \newcommand\vrefrange[1][\reftextcurrent]{\vrefrangeformat{#1}}

```

\vrefrangeformat, \vrefrangedefaultformat Japanese needs a different word order in \vrefrange so this is separated out so that it can be changed on language level.

```

927 \def\vrefrangedefaultformat#1#2#3{%
928   \reftextlabelrange{#2}{#3} \vpagerefrange[{#1}]{#2}{#3}}

```

Most languages need the above definition.

```

929 \let\vrefrangeformat\vrefrangedefaultformat

```

\Vref \Vref is the counterpart to \vref with \ref replaced by \Ref in its definition.

```

930 \DeclareRobustCommand\Vref{\@ifstar
931   {\Vref@star}%
932   {\Vr@f}}

```

\Vref@star

```

933 \newcommand\Vref@star[1][\Vrefformat]{#1}

```

\Vrefformat, \Vrefdefaultformat Japanese needs a different word order in \Vref so this is separated out so that it can be changed on language level.

```

934 \def\Vrefdefaultformat#1#2{%
935   \Ref{#2}
936   \vpageref[{#1}]{#2}}

```

Most languages need the above definition.

```

937 \let\Vrefformat\Vrefdefaultformat

```

```

\Wr@f
938 \def\Wr@f{%
939   \if@vrefhandlespace
940   \unskip \vref@space
941   \fi
942   \Vref@star           % in hyperref this needs to be explicit
943 }

```

`\vpagerefcompare`

```

944 \DeclareRobustCommand\vpagerefcompare[2]{% label1, label2, TRUE, FALSE
945   \vrefpagemum\@tempa{#1}%
946   \vrefpagemum\@tempb{#2}%
947   \ifx\@tempa\@tempb
948     \expandafter\@firstoftwo
949   \else
950     \expandafter\@secondoftwo
951   \fi
952 }

```

`\vpagerefnearby` Test if `\vpageref` is going to be at most ± 1 off from current page.

```

953 \DeclareRobustCommand\vpagerefnearby[1]{% label, TRUE, FALSE
954   \leavevmode
955   \@tempskipa\lastskip \unskip
956   \global\advance\c@vrcnt\tw@ % keep oddness to not disturb \vrefvario
957   \vref@label{\the\c@vrcnt @vn}%
958   \ifdim\@tempskipa=\z@ \else
959     \hskip\@tempskipa
960   \fi
961   \vref@pagemum\@tempa{\the\c@vrcnt @vn}%
962   \is@pos@number\@tempa
963   {%
964     \vrefpagemum\@tempb{#1}%
965     \is@pos@number\@tempb
966     {%
967       \ifcase\numexpr \@tempa -\@tempb+1\relax
968       \or \or \else \expandafter \@thirdofthree \fi
969       \@firstoftwo
970     }%
971     {\@secondoftwo}%
972   }%
973   {\@secondoftwo}%
974 }

```

`\vpagerefcomparenearby` True if the two pages have arabic page numbers are at most off by one so that `\vpageref` would produce a special string.

This is in some sense a general version of `\vpagerefnearby` for use in more complex situations. I.e., if you try to determine if a larger set of references would be close to the current page and you use each time `\vpagerefnearby` then you generate a lot of internal labels for the current point. Thus by setting the label yourself you can save processing time and space. On the other hand you have to be careful to place the label into the right place which can be a bit complicated if you look at the definition of `\vpagerefnearby` that does all this automatically for

you. This is why the current macro is not discussed in the user interface section as it is really just for package developers.

```

975 \DeclareRobustCommand\vpagerefcomparenearby[2]{% label1, label2, TRUE, FALSE
976   \vrefpagenum\@tempa{#1}%
977   \is@pos@number\@tempa
978   {%
979     \vrefpagenum\@tempb{#2}%
980     \is@pos@number\@tempb
981     {%
982       \ifcase\numexpr \@tempa -\@tempb+1\relax
983       \or \or \else \expandafter \@thirdofthree \fi
984       \@firstoftwo
985     }%
986     {\@secondoftwo}%
987   }%
988   {\@secondoftwo}%
989 }

```

9.2.2 Compatibility with older L^AT_EX formats

`\labelformat` We don't need to define `\labelformat` and `\Ref` or change the definition of `\refstepcounter` any longer because this is now done in the L^AT_EX kernel. However, if this package is used together with an older kernel, this is not true, so for this special case we keep the definitions.

```

990 \ifx\labelformat\undefined % assume we are in an older kernel
991   \def\labelformat#1{\expandafter\def\csname p@#1\endcsname##1}
992   \DeclareRobustCommand\Ref[1]{\protected@edef\@tempa{\ref{#1}}%
993     \expandafter\MakeUppercase\@tempa}
994   \def\refstepcounter#1{\stepcounter{#1}%
995     \protected@edef\@currentlabel
996       {\csname p@#1\expandafter\endcsname\csname the#1\endcsname}}
997 \fi

998 \ProcessOptions*
999 </package>

```

Change History

v0.1e		v1.0a	
<code>\vr@cnt</code> : use LaTeX counter . . .	26	General: Upgrade to LaTeX2e . . .	1
v0.1f		v1.0b	
<code>\@vpageref</code> : Add another label		<code>\reftextcurrent</code> : Replace in	
to catch cross-overs	27	incorrect 'def by 'let	17
v0.1g		<code>\vref@addto</code> : Avoid using babel	
<code>\vref@err</code> : Macro added	31	'addto	8
<code>\vrefwarning</code> : Macro added . . .	31	The babel commands are	
v0.1h		starting with extras	8
General: Small documentation		v1.0f	
changes	8	<code>\reftextcurrent</code> : Inserted	
		missing hash mark	23

v1.0g		v1.1d	
\@@vpageref: Looping pages		\reftextcurrent: Added defaults	
shown in wrong order	27	for polish	21
\reftextcurrent: Brazil defaults		v1.1e	
added.	12	\vr@f: Don't use \nobreakspace	
\href@err: Macro added	31	(pr/1866)	31
General: Use		v1.1f	
\DeclareRobustCommand	1	\reftextcurrent: Added galician	
v1.0h		defaults	16
\@@vpageref: Change internal		v1.1g	
interface	26	\@@vpageref: Test if inside AMS	
\vpageref: Pass first argument		display (pr2175)	27
in both cases	26	v1.1h	
v1.0i		\hrefshowerrors: Macro added	31
\@@vpageref: Do it correctly	26	General: Added draft and final	
v1.0j		options	25
\reftextcurrent: Added french		v1.2a	
defaults	16	\@svpagerefrange: Macro added	33
v1.0k		\reftextcurrent: Added	
\reftextcurrent: Corrected		american defaults for	
misspelled cmd 'extrasspanish	23	\reftextpagerange and	
v1.0l		\reftextlabelrange	9
\@@vpageref: Explicitly expand		Added austrian defaults	
\label argument for babel	30	(identical to german)	10
Explicitly expand 'label		Added defaults for	
argument for babel	27	\reftextpagerange and	
\reftextcurrent: Added dutch		\reftextlabelrange	22
defaults	15	Added defaults for greek	18
v1.0m		Added defaults for magyar	19
\reftextcurrent: Added finnish		Added dutch defaults for	
strings	16	\reftextpagerange and	
v1.0n		\reftextlabelrange	15
\reftextcurrent: Added Danish		Added english defaults for	
defaults	14	\reftextpagerange and	
v1.0o		\reftextlabelrange	15
\reftextcurrent: Added defaults		Added french defaults for	
for breton	12	\reftextpagerange and	
v1.0p		\reftextlabelrange	16
\reftextcurrent: Added swedish		Added norsk defaults for	
strings	24	\reftextpagerange and	
v1.0q		\reftextlabelrange	20
\reftextcurrent: Added defaults		Added nynorsk defaults for	
for norsk	20	\reftextpagerange and	
Added defaults for nynorsk	20	\reftextlabelrange	20
\vr@excuse: Use		Added polish defaults for	
'PackageWarning	9	\reftextpagerange and	
v1.1b		\reftextlabelrange	21
\reftextcurrent: Added defaults		Added russian strings	22
for Italian	19	Added swedish defaults for	
v1.1c		\reftextpagerange and	
\reftextcurrent: Added defaults		\reftextlabelrange	24
for catalan	13	Removed incorrect warning	19
		Updated defaults for norsk	20
		Updated defaults for nynorsk	20

\vr@f: Add \leavevmode	31	v1.4c	
Use \nobreakspace (pr/2909)	31	\@@vpageref: Use	
\vr@p@pagenum: Macro added	33	\thevpagerefnum instead of	
\vr@stringwarning: Macro		\@tempb	28
added	9	\vpagerefnum: Macro added	31
\vr@p@pagenum: Macro added	33	v1.4d	
\vr@frange: Macro added	34	\reftextcurrent: Changed	
v1.2b		default for \reftextbefore	9, 15
\reftextcurrent: Added		Changed default for	
portuguese defaults	21	\reftextlabelrange	15
v1.2c		v1.4e	
\reftextcurrent: Added more		\@@vpageref: Use \vr@label	
portuguese defaults	21	instead of \label	
v1.2d		(pr/3489)	27, 30
\reftextcurrent: Added		\vr@label: Macro added	
naustrian defaults (identical		(pr/3489)	30
to german)	11	v1.4g	
Added ngerman defaults		\reftextcurrent: Added	
(identical to german)	17	afrikaans option	9
v1.2e		v1.4i	
\reftextcurrent: Added czech		\reftextcurrent: Moved	
defaults	14	\AtBeginDocument	20
v1.2f		v1.4j	
\@@vpageref: Don't output space		\is@pos@number: Use \@nil for	
if optional argument empty		testing	32
(pr/3230)	28	\reftextcurrent: Defined	
v1.2g		\reftextfaceafter and	
\reftextcurrent: Updated		\reftextfacebefore instead	
defaults for catalan	13	of \reftextafter and	
v1.2h		\reftextbefore	19
\reftextcurrent: Updates to		v1.4k	
Danish defaults	14	\reftextcurrent: Added missing	
v1.2i		defaults supplied by Lapo	
\reftextcurrent: Updated		Mori	19
nynorsk defaults	20	Basque defaults added.	11
v1.3a		v1.4l	
\vpageref: Scan for star form	26	\reftextcurrent: Contributed	
\vr@f: Scan for star form	31	defaults added	24
v1.3b		v1.4m	
\@svpagerefrange: Scan for star		\reftextcurrent: Fixed	
form	33	\reftextlabelrange	
v1.3c		(pr/3791)	15
\vr@f: Correct typo in name	31	v1.4n	
v1.4a		\reftextcurrent: Changed	
\vr@f: Macro added	34	default for \reftextfaraway	21
\vr@f: Macro added	34	Small change	17, 19
\reftextcurrent: Contributed		v1.4o	
defaults added	23	\reftextcurrent: Added a few	
Missing defaults added	23	more brazil strings	12
\vr@maybe@space: Default		Added a few more finnish	
added	26	strings	16
v1.4b		Added further galician defaults	16
\reftextcurrent: Contributed		Bahasa Malaysia defaults	
defaults added	23	added.	11

Single hyphen in range	23	v1.5c	\@@vpageref:	30
Some further corrections	16		Delay generating the looping	
v1.4p			warning until we know more	27
\reftextcurrent: Added defaults			General: Revamped some of the	
for croatian	13		documentation to better	
v1.4q			explain how varioref could be	
\reftextcurrent: Added defaults			used in a multi-lingual context	1
for bulgarian	12			
v1.4r		v1.6a	\@@vpageref: Don't drop a	
\reftextcurrent: Misspelling of			preceding space completely	
\extrabrazil	12		but reinsert it later after	
Misspelling of			setting a label	26
\extraportuges	21		\@vpageref: Default for optional	
v1.4s			argumet changed	26
\@svpagerefrange: Prevent loss			\Vr@f: Adjusted for new spacing	
of brackets	33		regime	34
\vrefrange: Prevent loss of			\Vref: Adjusted for new spacing	
brackets	34		regime	34
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