

The changepage and chngpage packages

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Abstract

Provides command `\ifoddpage` to detect the current page ‘side’, environment `adjustwidth` to locally change the margins of the text, and commands `\changetext` and `\changepage` for more radical changes to the page design mid-way through a document.

`changepage` is the new version of `chngpage` to be compatible with `memoir`.
`chngpage` is now deprecated for this reason.

Contents

I	USER DOCUMENTATION	1	II	IMPLEMENTATION	6
1	Detecting odd or even pages	2	5	The changepage package	6
2	Adjusting the margins	2	6	The chngpage package	10
3	Changing the text block	3			
4	Changing the entire page design	4			

Part I

user documentation

Load the package like this:

```
\usepackage[strict]{changepage}
```

Or for deprecated uses:

```
\usepackage[strict]{chngpage}
```

1 Detecting odd or even pages

The `\checkoddpages` command can be used anywhere in the body of a document to determine if T_EX is typesetting on an odd or even numbered page. If on an odd page then `\ifoddpages` is set $\langle true \rangle$, otherwise on an even page `\ifoddpages` is set $\langle false \rangle$.

Use `\ifcpoddpages` instead if you're using `chnngpage`

Strict page checking works by the `\checkoddpages` command generating a label and then checking the `\pageref` for the label. Actually, a special version of `\pageref` is required and is used internally by `\checkoddpages`. This mechanism requires at least two T_EX passes to ensure that the labels have settled. On the initial pass there will be no labels in the `*aux` file to be checked.

The label identifier is composed of the command `\cplabel` and an automatically generated number `\cplabel`, initially defined as `'^_'`, can be changed in the preamble if it will cause a clash with any author-defined labels. The default labels will be of the form `'^_<P>'` where $\langle P \rangle$ is a positive integer.

For `chnngpage`, use `\cplabelprefix` instead of `\cplabel`

The package option `'strict'` turns on strict page checking. The default is not to use strict checking. Strict page checking can be turned on or off at any time by the commands `\strictpagecheck` or `\easypagecheck`. The easy page check just tests the page number to see if it is odd or even, which does not always give the correct result because of T_EX's asynchronous output mechanism.

2 Adjusting the margins

Within an `adjustwidth` environment the left and right margins can be adjusted. The environment takes two required length arguments.

```
\begin{adjustwidth}{<leftmargin>}{<rightmargin>}
```

A positive length value will increase the relevant margin (shortening the text lines) while a negative length value will decrease the margin (lengthening text lines). An empty length argument means no change to the margin. At the end of the environment the margins revert to their original values.

For example, to extend the text into the right margin

```
\begin{adjustwidth}{}{-8em}
```

The starred version, `adjustwidth*`, causes the values of the margins to switch between odd and even pages.

For example, if the document is being set twosided it might be advantageous to have any wider text extending into the outside margin.

```
\begin{adjustwidth*}{}{-8em}
```

To have the adjusted text horizontally centered with respect to any surrounding text, the margins should be adjusted equally.

For `chnngpage` use `\begin{adjustwidth}[]` instead of `\begin{adjustwidth*}`

```
\begin{adjustwidth}{-4em}{-4em}
```

For interest, `\begin{quotation}` is pretty much equivalent to

```
\begin{adjustwidth}{2.5em}{2.5em}
```

The environment may also be used inside a float if the contents are a bit too wide for the text block, but can still fit within the physical page.

```
\begin{figure}
\begin{adjustwidth}{-2em}{-2em}
\includegraphics{wide}
\caption{Wide figure}
\end{adjustwidth}
\end{figure}
```

Sometimes, because of the asynchronous nature of the TeX output routine, the margin switching may be incorrect — like `\marginpar` sometimes — near the top of a page. This can be corrected by using the package option ‘strict’ [10], `\usepackage[strict]{chngpage}`, which causes `adjustwidth` to use the `\checkoddpage` command [see below].

A disadvantage of the strict option is that the package generates a new label for each `adjustwidth` environment, and TeX may run out of space if there are an excessive number of labels in the document.

Whether or not the strict option is used, ‘strict adjustwidths’ can be turned on by putting the command `\strictpagecheck` before the environment, and turned off by using `\easypagecheck`.

NOTE In a two-column document, the `adjustwidth` environment treats both columns equally. For example, if the width is meant to be wider at the outer margin, then on odd pages the extra width will be at the right of any column, and on even pages the extra will be at the left of any column. You can get interesting effects by careful hand tuning on two column pages.

3 Changing the text block

The `\changetext` command is for changing the size and horizontal position of the text block on a page. The command takes 5 arguments, each of which is a length or is empty [10],

```
\changetext{<text height>}{<text width>}{<even-side margin>}
{<odd-side margin>}{<column sep>}}
```

The given lengths are added to the corresponding current lengths and the remainder of the current page is typeset using the changed text block layout. The new layout remains in effect until another `\change` command is issued.

In `chngpage`, use
`\cpstrictrue` and
`\cpstrictrue` instead of
`\strictpagecheck` and
`\easypagecheck`

4 *Changing the entire page design*

The `\change page` command is for changing the general layout of a page. The command takes 9 arguments, each of which is a length or is empty. The first 5 arguments are the same as for `\change text` and have the same effect. The last four arguments are

```
\change page<5 args>{\<topmargin>}{\<headheight>}{\<headsep>}{\<footskip>}
```

These lengths are added to the corresponding current lengths and thus modify the vertical positions of the elements of the page. The remainder of the current page is typeset using the changed text block and page layout. The new layout remains in effect until another `\change` command is issued.

NOTE 1 Pot supplying a value for a length argument is equivalent to giving it a zero length value.

NOTE 2 For any given page, everything is constant except for the `textwidth` and `columnsep` —for example, what is the meaning of two `topmargins` on a single column page? It is therefore best to change anything else at the start of a new page. Further, any changes only apply to whole paragraphs. If you want an odd shaped paragraph use either the `hanging` package or the `TR\parshape` command.

For example, to change from single column pages to double column pages where the text block is both shorter and wider, then to revert back to the initial layout

```
single column normal page
\newpage % or \clearpage
\changetext{-5\baselineskip}{10em}{-5em}{-5em}{}
\twocolumn
two column pages
\clearpage
\changetext{5\baselineskip}{-10em}{5em}{5em}{}
\onecolumn
normal pages
```

Pote the adjustments to the margins which will keep the vertical centerline of the textblock at the same position on the page.

As another example, to increase the width of a single paragraph

```
\changetext{0pt}{5em}{}{}{}%
Start of wider paragraph text
```

end of paragraph

```
\changetext{0pt}{-5em}{}{}{}
```

Start of a normal paragraph

Under some circumstances you can include a `\change` command as part of the argument to `\afterpage` [from the `afterpage` package] and it may work. Similarly it may work in a heading style used for `\thispagestyle` to change a single page.

Part II

Implementation

5 *The changepage package*

NaTeX2e file 'changepage.sty' generated by the 'lecontents' environment from source 'changepage' on 2009/10/20

```
1 \NeedsTeXFormat{LaTeX2e}
2 \ProvidesPackage{changepage}[2009/10/20 v1.0c check page and
   change page layout]
```

Don't use this with memoir

```
\cp@whoopsusingmemoir 3 \newcommand*{\cp@whoopsusingmemoir}{}
\cp@whoopsusingmemoir 4 \@ifclassloaded{memoir}{\def\cp@whoopsusingmemoir{\endinput}}
5 \cp@whoopsusingmemoir
```

Pew \if for the strict option

```
\ifstrictpagecheck 6 \newif\ifstrictpagecheck
7 \strictpagecheckfalse
```

ser commands for switching strict page checking on/off

```
\strictpagecheck 8 \newcommand*{\strictpagecheck}{\strictpagechecktrue}
\easyppagecheck 9 \newcommand*{\easyppagecheck}{\strictpagecheckfalse}
```

Declare and process options

```
strict 10 \DeclareOption{strict}{\strictpagechecktrue}
11 \ProcessOptions\relax
```

Pew commands for strict checking of odd/even page. Xorks by writing a label and then checking its pageref

```
\ifoddpge 12 \newif\ifoddpge
cp@cntr 13 \newcounter{cp@cntr}
\cp@tempcnt 14 \newcount\cp@tempcnt,% instead of \@memcnta
\cplabel 15 \newcommand{\cplabel}{^_}

16 \gdef\thepmemc@page{\the\c@page}

17 \long\def\pmemprotected@write#1#2#3{% modified \protected@write
```

```

\pmemprotected@write 18 \beginngroup
19 \let\thepmemc@@page\relax
20 #2%
21 \let\protect\@unexpandable@protect
22 \edef\reserved@a{\write#1{#3}}%
23 \reserved@a
24 \endgroup
25 \if@nbreak\ifvmode\nobreak\fi\fi}

\pmemlabel 26 \newcommand*{\pmemlabel}[1]{\@bsphack
27 \pmemprotected@write\@auxout{}%
28 {\string\newpmemlabel{#1}{\thepmemc@@page}}%
29 \@esphack}

\newpmemlabel 30 \newcommand*{\newpmemlabel}[2]{\global\@namedef{m@#1}{#2}}
\pmemlabelref 31 \newcommand*{\pmemlabelref}[1]{%
32 \expandafter\ifx\csname_m@#1\endcsname\relax
33 0% o if there is no label yet in the aux file
34 \else
35 \csname_m@#1\endcsname
36 \fi}

\checkoddpages 37 \DeclareRobustCommand{\checkoddpages}{%
38 \oddpagesfalse%
39 \ifstrictpagecheck%
40 \stepcounter{cp@cntr}\pmemlabel{\cplabel\thecp@cntr}%
41 \cp@tempcnt=\pmemlabelref{\cplabel\thecp@cntr}\relax
42 \ifodd\cp@tempcnt\oddpagetrue\fi
43 \else
44 \ifodd\c@page\oddpagetrue\fi
45 \fi}

```

End newcommands for strict checking of odd/even page

Copy of some of the code from the ifmtarg package to save requiring ifmtarg

```

46 \beginngroup
47 \catcode'\Q=3
48 \long\gdef\@ifmtarg#1{\@xifmtarg#1QQ\@secondoftwo\@firstoftwo%
49 \@nil}
50 \long\gdef\@xifmtarg#1#2Q#3#4#5\@nil{#4}
\endgroup

```

Set the page output parameters

```

\ch@ngetext 51 \DeclareRobustCommand{\ch@ngetext}{%
52   \setlength{\@colht}{\textheight}\setlength{\@colroom}{%
      \textheight}%
53   \setlength{\vsize}{\textheight}\setlength{\columnwidth}{%
      \textwidth}%
54   \if@twocolumn%
55     \advance\columnwidth-\columnsep\divide\columnwidth\tw@%
56     \@firstcolumntrue%
57   \fi%
58   \setlength{\hsize}{\columnwidth}%
59   \setlength{\linewidth}{\hsize}}

\changetext 60 \DeclareRobustCommand{\changetext}[5]{%
61   \@ifmtarg{#1}{-}{\addtolength{\textheight}{#1}}%
62   \@ifmtarg{#2}{-}{\addtolength{\textwidth}{#2}}%
63   \@ifmtarg{#3}{-}{\addtolength{\evensidemargin}{#3}}%
64   \@ifmtarg{#4}{-}{\addtolength{\oddsidemargin}{#4}}%
65   \@ifmtarg{#5}{-}{\addtolength{\columnsep}{#5}}%
66   \ch@ngetext}

\change page 67 \DeclareRobustCommand{\change page}[9]{%
68   \@ifmtarg{#1}{-}{\addtolength{\textheight}{#1}}%
69   \@ifmtarg{#2}{-}{\addtolength{\textwidth}{#2}}%
70   \@ifmtarg{#3}{-}{\addtolength{\evensidemargin}{#3}}%
71   \@ifmtarg{#4}{-}{\addtolength{\oddsidemargin}{#4}}%
72   \@ifmtarg{#5}{-}{\addtolength{\columnsep}{#5}}%
73   \ch@ngetext%
74   \@ifmtarg{#6}{-}{\addtolength{\topmargin}{#6}}%
75   \@ifmtarg{#7}{-}{\addtolength{\headheight}{#7}}%
76   \@ifmtarg{#8}{-}{\addtolength{\headsep}{#8}}%
77   \@ifmtarg{#9}{-}{\addtolength{\footskip}{#9}}}

adjustwidth 78 \newenvironment{adjustwidth}[2]{%
79   \begin{list}{}{%
80     \topsep\z@%
81     \listparindent\parindent%
82     \parsep\parskip%
83     \@ifmtarg{#1}{\setlength{\leftmargin}{\z@}}%
84       {\setlength{\leftmargin}{#1}}%
85     \@ifmtarg{#2}{\setlength{\rightmargin}{\z@}}%

```

```

86             {\setlength{\rightmargin}{#2}}%
87     }
88     \item[]{\end{list}}

adjustwidth* 89 \newenvironment{adjustwidth*}[2]{%
90     \begin{list}{}{%
91         \topsep\z@%
92         \listparindent\parindent%
93         \parsep\parskip%
94         \checkoddpages
95         \ifoddpage% odd numbered page
96             \@ifmtarg{#1}{\setlength{\leftmargin}{\z@}}%
97                 {\setlength{\leftmargin}{#1}}%
98             \@ifmtarg{#2}{\setlength{\rightmargin}{\z@}}%
99                 {\setlength{\rightmargin}{#2}}%
100         \else% even numbered page
101             \@ifmtarg{#2}{\setlength{\leftmargin}{\z@}}%
102                 {\setlength{\leftmargin}{#2}}%
103             \@ifmtarg{#1}{\setlength{\rightmargin}{\z@}}%
104                 {\setlength{\rightmargin}{#1}}%
105         \fi}
106     \item[]{\end{list}}

107 \endinput

\langle eof \rangle

```

6 The *chngepage* package

NaTeX2e file 'chngepage.sty' generated by the 'lecontents' environment from source 'changePage' on 2009/10/20

PNAS POT THIS PAC A IS DPCAT DIP FAWO R OF CHAP PA STY FOR RASOPS OF COOPATI INITY XITH TH O OIR CNASS The two are equivalent please do not use this one for new documents or packages

```

1 \NeedsTeXFormat{LaTeX2e}
2 \ProvidesPackage{chngepage}[2009/10/20_v1 2b_change_page_
   layout]

```

Pote internal package commands all include the string cp@ Pew \if for the strict option

```

\ifcpstrict 3 \newif\ifcpstrict
4 \cpstrictfalse

```

Declare and process options

```

strict 5 \DeclareOption{strict}{\cpstricttrue}
6 \ProcessOptions\relax

```

Pew commands for strict checking of odd/even page Xorks by writing a label and then checking its pageref

Rewritten in v1.2 to handle roman, Roman, etc page numbers as well as arabic also eliminates special code to handle hyperref based on the code in the memoir class

```

\ifcpoddpag 7 \newif\ifcpoddpag
cp@cnt 8 \newcounter{cp@cnt}
cp@tempcnt 9 \newcounter{cp@tempcnt}
\cplabelpref 10 \newcommand{\cplabelprefix}{^_}

11 \gdef\thecp@page{\the\c@page}
\cp@protected@write 12 \long\def\cp@protected@write#1#2#3{% modified \protected@write
13 \begingroup
14 \let\thecp@page\relax
15 #2%
16 \let\protect\@unexpandable@protect
17 \edef\reserved@a{\write#1{#3}}%
18 \reserved@a
19 \endgroup

```

```

20 \if@nobreak\ifvmode\nobreak\fi\fi}

\checkoddpage 21 \DeclareRobustCommand{\checkoddpage}{%
22 \cpoddpagfalse
23 \stepcounter{cp@cnt}\cplabel{\cplabelprefix\thecp@cnt}%
24 \c@cp@tempcnt=\cp@labelref{\cplabelprefix\thecp@cnt}\relax
25 \ifodd\c@cp@tempcnt\cpoddpagetrue\fi}

\cplabel 26 \newcommand{\cplabel}[1]{\@bsphack
27 \cp@protected@write\@auxout{}%
28 {\string\newcplabel{#1}{\thecp@page}}%
29 \@esphack}

\newcplabel 30 \newcommand{\newcplabel}[2]{\global\@namedef{p@#1}{#2}}

\cp@labelref 31 \newcommand{\cp@labelref}[1]{%
32 \expandafter\ifx\csname_p@#1\endcsname\relax
33 0% o if there is no label yet in aux file
34 \else
35 \csname_p@#1\endcsname
36 \fi}

```

End newcommands for strict checking of odd / even page

Copy of some of the code from the ifmtarg package to save requiring ifmtarg

```

37 \begingroup
38 \catcode'\Q=3
39 \long\gdef\@ifmtarg#1{\@xifmtarg#1QQ\@secondoftwo\@firstoftwo%
\@nil}
40 \long\gdef\@xifmtarg#1#2Q#3#4#5\@nil{#4}
41 \endgroup

```

Set the page output parameters

```

\ch@ngetext 42 \DeclareRobustCommand{\ch@ngetext}{%
43 \setlength{\@colht}{\textheight}\setlength{\@colroom}{%
\textheight}%
44 \setlength{\vsize}{\textheight}\setlength{\columnwidth}{%
\textrwidth}%
45 \if@twocolumn%
46 \advance\columnwidth-\columnsep\divide\columnwidth\tw@%
47 \@firstcolumntrue%

```

```

48     \fi%
49     \setlength{\hsize}{\columnwidth}%
50     \setlength{\linewidth}{\hsize}%
51 }

\changetext 52 \DeclareRobustCommand{\changetext}[5]{%
53     \@ifmtarg{#1}{\addtolength{\textheight}{#1}}%
54     \@ifmtarg{#2}{\addtolength{\textwidth}{#2}}%
55     \@ifmtarg{#3}{\addtolength{\evensidemargin}{#3}}%
56     \@ifmtarg{#4}{\addtolength{\oddsidemargin}{#4}}%
57     \@ifmtarg{#5}{\addtolength{\columnsep}{#5}}%
58     \ch@ngetext%
59 }

\change page 60 \DeclareRobustCommand{\change page}[9]{%
61     \@ifmtarg{#1}{\addtolength{\textheight}{#1}}%
62     \@ifmtarg{#2}{\addtolength{\textwidth}{#2}}%
63     \@ifmtarg{#3}{\addtolength{\evensidemargin}{#3}}%
64     \@ifmtarg{#4}{\addtolength{\oddsidemargin}{#4}}%
65     \@ifmtarg{#5}{\addtolength{\columnsep}{#5}}%
66     \ch@ngetext%
67     \@ifmtarg{#6}{\addtolength{\topmargin}{#6}}%
68     \@ifmtarg{#7}{\addtolength{\headheight}{#7}}%
69     \@ifmtarg{#8}{\addtolength{\headsep}{#8}}%
70     \@ifmtarg{#9}{\addtolength{\footskip}{#9}}%
71 }

adjustwidth 72 \newenvironment{adjustwidth}[3][\@empty]{%
73     \begin{list}{}{%
74         \topsep\z@%
75         \listparindent\parindent%
76         \parsep\parskip%
77         \@ifmtarg{#2}{\setlength{\leftmargin}{\z@}}{\setlength{%
78             \leftmargin}{#2}}%
79         \@ifmtarg{#3}{\setlength{\rightmargin}{\z@}}{\setlength{%
80             \rightmargin}{#3}}%
81         \ifx\@empty#1\relax\else
82             \cpoddpagefalse
83             \ifcpstrict\checkoddpagel\else
84                 \ifodd\c@page\cpoddpagetrue\fi
85             \fi
86         \fi
87     }% even numbered page

```

```

85      \@ifmtarg{#3}{\setlength{\leftmargin}{\z@}}{\%
        \setlength{\leftmargin}{#3}}%
86      \@ifmtarg{#2}{\setlength{\rightmargin}{\z@}}{\%
        \setlength{\rightmargin}{#2}}%
87      \fi
88      \fi}
89      \item[]}{\end{list}}

90 \endinput

<eof>

```