

The `latex-lab-testphase-new-or-2` code*

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Abstract

1 Introduction

This code implements changes to the output routine.

2 Hooks and configuration points

Note: the configuration points do not have an interface mechanism yet and all their names are temporary right now.

2.0.1 Configuration points

To cater for different layouts with respect to text, footnotes, and bottom-floats placements there are two configuration points for now.

`\@makecol@cfgpoint` (**0 arguments**) In this configuration point the `\@outputbox` (holding the galley text for the current column or page) is augmented by attaching floats and footnote areas together with appropriate spacing. Before the code is run any existing glue at the bottom of the `\@outputbox` is removed and stored in a safe place. If needed, it can be reinserted with one of the helper commands.

To support setting this up the following helper commands are available:

`\@outputbox@append` (**1 argument**) This general purpose command alters the `\@outputbox` box by appending material to it.

`\@outputbox@appendfootnotes` (**0 arguments**) This command appends the footnotes to the `\@outputbox` (if there are any). If not, then it does nothing.

`\@outputbox@attachfloats` (**0 arguments**)

`\@outputbox@attachtopfloats` (**0 arguments**)

`\@outputbox@attachbottomfloats` (**0 arguments**) Attaching top and bottom floats can usually be done in one go, but for special layouts we might want more control so we provide also separate commands.

`\@outputbox@reinsertbskip` (**0 arguments**) Reinsert the bottom skip of the `\@outputbox` that was saved before.

*

Testing for existence of material There are a number of helpers to run conditional code depending on whether or not there are footnotes or bottom floats. They are `\@if@footnotes@TF` and `\@if@bfloats@TF` (names are likely to change).

This configuration point needs an appropriate definition; a default is already given in the kernel.

`\@makecol@cfgpointii` (**0 arguments**) This configuration point is used to manipulate the footnote material inside `\box\footins`. It if contains code, it is supposed to do some processing of that box and then write the result back into it (and nothing else!). By default it does nothing.

3 The Implementation

1 `*code`

3.1 File declaration

2 `\ProvidesPackage{latex-lab-testphase-new-or-2}`
 3 `[2022-11-04 v0.1c changes to the output routine]`

3.2 `\@makecol` reimplementation

In order for other packages to prepend or append code to `\@makecol`, they can use the generic command hooks `cmd/\@makecol/before` and `cmd/\@makecol/after`, so there is nothing we need to do here.

`\@makecol` `\@makecol` is shortened a lot, basically all the hardwired code in the middle has moved into a configuration point.

4 `\def \@makecol {%`
 5 `\@kernel@before@cc1v`
 6 `\setbox\@outputbox \box\@cc1v`

The only real addition is the next command which either does nothing or removes an infinite glue from the bottom of the `\@outputbox`.

7 `\@outputbox@removebskip`

Any “here” floats in the `\@outputbox` are now handled so we recycle their registers and put them back to the `\@freelist`.

8 `\let\@elt\relax`
 9 `\xdef\@freelist{\@freelist\@midlist}%`
 10 `\global \let \@midlist \@empty`

Here we have the configurable part.

TODO: Interface to configuration points will change in the future

11 `\@makecol@cfgpoint`

The we deal with any `\enlargethispage` or run the normal code to build a column.

12 `\ifvbox\@kludgeins`
 13 `\@makespecialcolbox`
 14 `\else`
 15 `\@makenormalcolbox`
 16 `\fi`
 17 `\global \maxdepth \@maxdepth`
 18 `}`

(End of definition for `\@makecol`. This function is documented on page ??.)

`\@outputbox@depth` We need to know the depth of `\@outputbox` once in a while. Rather than using a temp dimen (as it was done in the past), we give it a proper register.

```
19 \newdimen\@outputbox@depth
```

(End of definition for `\@outputbox@depth`. This function is documented on page ??.)

`\@makenormalcolbox` Taken out of `\@makecol` for readability.

```
20 \def \@makenormalcolbox {%
21   \setbox\@outputbox \vbox to\@colht {%
22     \texttop
23     \@outputbox@depth \dp\@outputbox
24     \unvbox \@outputbox
25     \vskip -\@outputbox@depth
26     \textbottom
27   }%
28 }
```

(End of definition for `\@makenormalcolbox`. This function is documented on page ??.)

`\@makespecialcolbox` Make the colbox when `\enlargethispage` was used.

```
29 \def \@makespecialcolbox {%
30   \@outputbox@append {\vskip-\@outputbox@depth}%
31   \@tempdima \@colht
32   \ifdim \wd\@kludgeins>\z@
33     \advance \@tempdima -\ht\@outputbox
34     \advance \@tempdima \pageshrink
35     \setbox\@outputbox \vbox to \@colht {%
36       \unvbox\@outputbox
37       \vskip \@tempdima
38       \textbottom
39     }%
40   \else
41     \advance \@tempdima -\ht\@kludgeins
42     \setbox \@outputbox \vbox to \@colht {%
43       \vbox to \@tempdima {%
44         \unvbox\@outputbox
45         \textbottom}%
46     \vss}%
47   \fi
48   {\setbox \@tempboxa \box \@kludgeins}%
49 }
```

(End of definition for `\@makespecialcolbox`. This function is documented on page ??.)

`\@outputbox@removebskip` This is really a bug fix for the kernel but one we only automatically make in new documents using `\DocumentMetadata`.

TODO: *may make optional for legacy docs*

If `\raggedbottom` is in force, footnotes get attached to the main galley at a distance of `\footskip` on all pages except on those that are ended by `\newpage` or `\clearpage` where the `\vfil` from `\newpage` pushes the footnotes to the very bottom.

This is kind of a weird difference to a page ending with `\pagebreak`—in that case the page is also run short, but the footnotes are not pushed to the bottom.

In `footmisc` `\@outputbox@removebskip` is only applied when `footmisc` is called with with an option specifying the footnote placement, i.e., not in the default case. In new documents we apply it always.

```
50 \def\@outputbox@removebskip{%
```

We first test if we are in a `\raggedbottom` layout. If not we do nothing, but we don't disable the code because `\raggedbottom` may get used only for some parts of the document.

```
51 \ifx\@textbottom\relax \else
```

We then append some negative glue at the end of `\@outputbox` provided it has a glue stretch order of 1 or more (i.e., contains a `fil` or `fill` part).

```
52 \@outputbox@append{%
53   \@tempkipa\lastskip
54   \ifnum \gluestretchorder\@tempkipa>\z@
55     \vskip-\@tempkipa
```

We also record the value so that it can be reinserted elsewhere. As we have to do this globally, we also need to explicitly reset it if we don't find any such glue.

```
\@outputbox@reinsertbskip
```

```
56   \xdef\@outputbox@reinsertbskip
57     {\noexpand\@outputbox@append{\vskip\the\@tempkipa}}%
58   \else
59     \global\let\@outputbox@reinsertbskip\relax
60   \fi
61 }%
62 \fi
63 }
```

We need a trivial top-level definition for `\@outputbox@reinsertbskip` in case the first page has no bottom glue and the command gets called.

```
64 \let\@outputbox@reinsertbskip\relax
```

(End of definition for \@outputbox@removebskip and \@outputbox@reinsertbskip. These functions are documented on page ??.)

```
\@kernel@before@cclv
\@kernel@before@footins
```

These two commands are internal kernel hooks intended for tagging support in case that is active. By default they do nothing (and may have been defined already by `\DocumentMetadata`).

```
65 \providecommand\@kernel@before@cclv{}
66 \providecommand\@kernel@before@footins{}
```

(End of definition for \@kernel@before@cclv and \@kernel@before@footins. These functions are documented on page ??.)

3.3 The output routine configuration components

Here we provide the components that are used to define `\@makecol@cfgpoint`.

`\@outputbox@append` This general purpose command alters the `\@outputbox` box by appending material to it. As this is a box typesetting operation we make sure that the last line of the box reflects the true depth of the last line (in case that is needed later). We also expose the current depth of `\@outputbox` as `\@outputbox@depth` before unboxing so that its value can be used by #1 if wanted.

```

67 \def\@outputbox@append #1{%
68 % \if!\detokenize{#1}\else
69   \setbox\@outputbox \vbox {%
70     \boxmaxdepth \@maxdepth
71     \@outputbox@depth\dp\@outputbox      % if needed in #1
72     \unvbox \@outputbox
73     #1%
74   }%
75 % \fi
76 }

```

(End of definition for \@outputbox@append. This function is documented on page ??.)

`\@outputbox@appendfootnotes` This command appends the footnotes to the `\@outputbox` (if there are any). If not then it does nothing.

```

77 \def\@outputbox@appendfootnotes {%
78   \ifvoid\footins \else

```

First come two configuration points: what to do if we are in a split footnote situation and a second one that does some manipulation of the `\footins` box before it gets appended.

TODO: this code will get revised as part of CP handling in the future

```

79   \@makecol@handlesplitfootnotes
80   \@makecol@cfgpointii

```

Then the footnotes are appended:

```

81   \@outputbox@append{%
82     \vskip \skip\footins
83     \@kernel@before@footins
84     \color@begingroup
85     \normalcolor
86     \footnoterule

```

Support for pdfcolfoot, eventually this can go once color is properly supported.

```

87     \csname pdfcolfoot@current\endcsname
88     \unvbox \footins
89     \color@endgroup
90   }%
91 \fi
92 }

```

(End of definition for \@outputbox@appendfootnotes. This function is documented on page ??.)

`\@outputbox@attachfloats` Attaching top and bottom floats can usually be done in one go, but for special layouts we might want more control so we provide also separate commands.

```

\@outputbox@attachbottomfloats 93 \let \@outputbox@attachfloats \@combinefloats

```

```

94 \def \@outputbox@attachtopfloats {%
95   \ifx \@toplist\@empty \else \@cflt \fi
96 }
97 \def \@outputbox@attachbottomfloats {%
98   \ifx \@botlist\@empty \else \@cflb \fi
99 }

```

(End of definition for \@outputbox@attachfloats, \@outputbox@attachtopfloats, and \@outputbox@attachbottomfloats. These functions are documented on page ??.)

\@makecol@handlesplitfootnotes This is only an early draft and doesn't do much. Contains incomplete preparation for tagging commented out.
\@makecol@splitfootnotemessagehook

TODO: Interfaces and code will change in the future

```

100 \def \@makecol@handlesplitfootnotes {%
101 % \ifx\splitfootnote@continuation\@empty \else
102 %   \setbox\footins\ vbox{\splitfootnote@continuation\unvbox\footins}%
103 %   \global\let\splitfootnote@continuation\@empty
104 % \fi
105 \ifnum\insertpenalties>\z@
106   \@makecol@splitfootnotemessagehook
107 %   \setbox\footins\ vbox{\unvbox\footins --- END at split}%
108 %   \gdef\splitfootnote@continuation {--- START after split}%
109 \fi
110 }
111 %\def\splitfootnote@continuation{}

```

This could issue warning if split footnotes are encountered.

```

112 \let \@makecol@splitfootnotemessagehook \@empty

```

(End of definition for \@makecol@handlesplitfootnotes and \@makecol@splitfootnotemessagehook. These functions are documented on page ??.)

\@makecol@cfgpointii Configuration point to support manipulation of footins box (result needs to be moved back in there). Used by the para option.

TODO: Interface will change in the future

```

113 \let \@makecol@cfgpointii \@empty

```

(End of definition for \@makecol@cfgpointii. This function is documented on page ??.)

TODO: Some temp interfaces until configuration points are available.

\@if@flushbottom@TF Test for \flushbottom (currently not used).

```

114 \def \@if@flushbottom@TF{%
115   \ifx\@textbottom\relax
116     \expandafter\@firstoftwo
117   \else
118     \expandafter\@secondoftwo
119   \fi
120 }

```

(End of definition for \@if@flushbottom@TF. This function is documented on page ??.)

`\@if@footnotes@TF` Test if footnotes are present on the current page.

```
121 \def\@if@footnotes@TF{%
122   \ifvoid\footins
123     \expandafter\@secondoftwo
124   \else
125     \expandafter\@firstoftwo
126   \fi
127 }
```

(End of definition for \@if@footnotes@TF. This function is documented on page ??.)

`\@if@bfloats@TF` Test if bottom floats are around.

```
128 \def\@if@bfloats@TF{%
129   \ifx \@botlist\@empty
130     \expandafter\@secondoftwo
131   \else
132     \expandafter\@firstoftwo
133   \fi
134 }
```

(End of definition for \@if@bfloats@TF. This function is documented on page ??.)

3.4 The \@makecol configuration

`\@makecol@cfgpoint` Here is only the configuration for the default case for now, others are provided by footmisc.

```
135   \def\@makecol@cfgpoint {%
136     \@outputbox@appendfootnotes
137     \@outputbox@attachfloats
```

We do, however, reinsert the bottom skip from `\newpage` if it was taken out earlier. This is, strictly speaking, not necessary in most cases, but it is a `\vfil` while `\raggedbottom` is only generating `\vspace{0pt plus .0001fil}`, so if you have several `\vfil` on the page before the `\newpage` you would alter the space distribution if one is taken out.

```
138     \@outputbox@reinsertbskip
139   }
```

(End of definition for \@makecol@cfgpoint. This function is documented on page ??.)

4 Replacement for the footmisc package

The replacement for footmisc. If the new code is used, we must replace the package if it is loaded by the user:

```
140 \declare@file@substitution{footmisc.sty}{latex-lab-footmisc.ltx}
```

5 Temp stuff that is related but should go to the kernel

```
141 \input{latex-lab-footnotes.ltx}
142 \</code>
```

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