

**PAGES**

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**PAGES**

**PAGES**

**PAGES**

**PAGES**

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# Contents

Introduction 3

Just text 7

Floats 9

Footnotes 15

Pages 17



# Introduction

*This manual as well as the mechanism it describes is under construction. Don't use page columns in production. Experimenting is of course fine.*

The T<sub>E</sub>X engine is a progressive typesetter: it takes input and does something with it and can do that for quite a while. It can process massive input and produce massive output. In that process it never looks back. Now, it is of course possible to collect content and delay some aspects of the rendering but to what extent that content can be manipulated is limited. In L<sup>A</sup>T<sub>E</sub>X one can do a bit more but even then the basic typesetting process is mostly linear.

When a text gets typeset there are several properties that play a role:

- the width of the lines in a paragraph which is the main unit of processing
- the target height of what gets output, normally this is the height of the text area, excluding headers and footers
- the parameters that determine when the so called output routine gets called, for instance successive broken lines, widow and club penalties
- the presence of so called inserts, for instance footnotes or floating bodies
- the space between lines and paragraphs
- explicitly entered elements or spacing or injected by macros hooked into for instance `\everypar`

It is important to realize that T<sub>E</sub>X has no concept of what a page is. It takes input and occasionally hand over the intermediate result to the output routine. There decisions are made to flush out a page, either of not with ornaments like headers, footers, content left over from previous encounters, footnotes as well as maybe specific trickery liked by the backend that targets at some viewer.

That said, so called multi-column layouts are *not* part of the concepts present in T<sub>E</sub>X. As far as the engine is concerned there is only one column. Among the reasons for not having a native mechanism for columns is that it is very hard to come up with a mechanism for splitting them in ways that suits everybody. In fact, the amount of control needed would make such a mechanism very complex and still limited. You can compare this to math typesetting. That subspace has some fixed characteristics if only because otherwise mathematicians could not communicate. However, there is some control over spacing and one can to some extent intervene. In L<sup>A</sup>T<sub>E</sub>X some of the

hard coded properties are made configureable but still one gets pretty much what the engine considers right. Such an approach would not work with columns. In fact, it doesn't even work well with tables, for which T<sub>E</sub>X provides the alignment mechanism: different kind of tables demand different solutions, which is why in CON<sub>T</sub>E<sub>X</sub>T we have old fashioned tables, tabulated tables (that span pages and can contain paragraphs), natural as well as extreme tables that resemble HTML tables, line tables and framed tables.

So, when we want to support columns we need to write something in T<sub>E</sub>X lingua and for that the `\vsplit` operation can be of help. So far we have in CON<sub>T</sub>E<sub>X</sub>T four mechanisms:

1. the original MKII mechanism that permits mixed single and multi-column text flows, with limited support for floating bodies
2. a reimplementation of mixed columns in a mix of T<sub>E</sub>X and LUA, a bit better with balancing and penalties for keeping section heads with the text, but with very limited support for floating bodies; it works ok with grids
3. a reimplementation of MKII columnsets, a mechanism that is meant for magazine like layouts where floats can span columns and positioned at will: this one assumes relative simple text flows but as a bonus provides spreads; this one is strongly grid based
4. page based columns, where we use the normal (single column) page builder to collect columns that then get combined into a page: this one is quite robust but one has to keep an eye on floats as we don't span across columns otherwise than in top or bottom floats but, on the other hand, one can use so called side floats; this one is still experimental

Given specific demands one can come up with alternatives but it's very hard to combine all demands into one mechanism simply because anything can be part of the text flow. Because it is not much fun to write such mechanisms and because no project ever pays for fundamental development, one just has to accept what CON<sub>T</sub>E<sub>X</sub>T provides, be it with limitations.

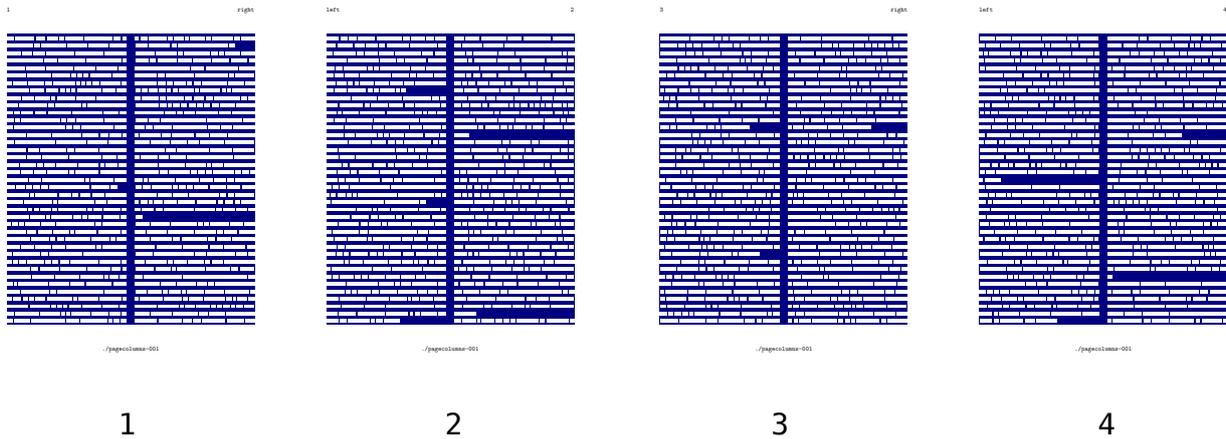
The first mechanism is more or less obsolete and replaced by the second. For instance, we now use the second one when we have an itemize that demands columns. I must admit that I don't like columns and never use them. I was involved in projects where the designer wanted columns but in the end the complexity of the content didn't work well with that that decision: inconsistent whitespace (due to many small sections, lots of images, many tables, math formulas, etc) as well as the result having more pages than the single column variant with side and margin floats. Occasionally I use columned itemize or columned tables of contents and of course registers are often in columns.

One can wonder why columns are supported anyway. It's mostly useful for newspapers that have wide pages or journals that have small print. For magazines and special layout it's fine too although it can look bad when columns are narrow and fancy layout tricks are used. I guess that at some point their use will disappear. A document on a phone or tablet is one narrow columns. An internet page is one long column. A printed book, given that there will be such items in the future is normally typeset in one column. And journals as well as newspapers more and more get replaced by media that better serve their purpose. So, apart from an intellectual challenge, implementing extensive multi-column support is a waste of energy. Which is why we can accept limitations.



# Just text

As with the other mechanism you can define a column instance and use that later. You can also directly pass the settings with the `\startpagecolumns` command but best is to define an instance.



```
001 \definepagecolumns
    [example]
    [n=2]

\setupbackgrounds
    [text]
    [background=color,
    backgroundcolor=color-1]

\starttext

\startpagecolumns[example]
    \dorecurse{20}{\fakewords{100}{200}\par}

\stoppagecolumns

\stoptext
```

We always start at a new page and end on a new one. Footnotes and such don't span columns and we don't balance. When the number of columns equals one you get the normal routine but with the requested settings.



**Just text**

# Floats

You can have floating bodies in columns. When a float doesn't fit it will be flushed at the top of the next page.



1

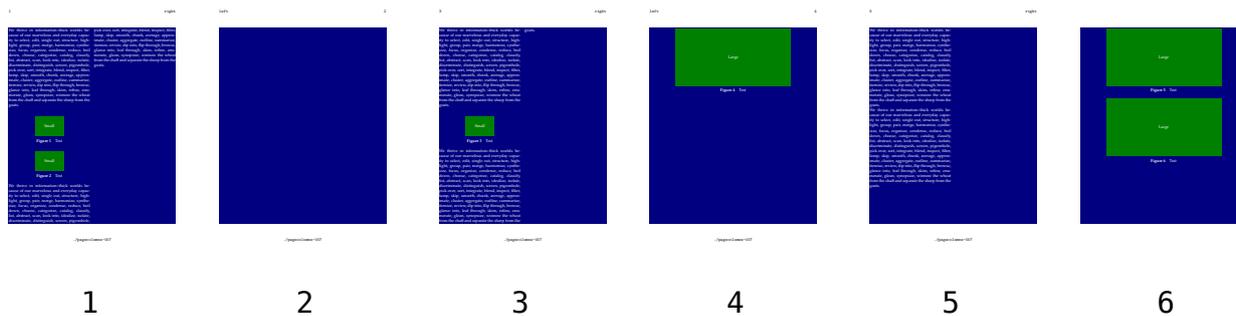
2

3

4

```
002 \definepagecolumns
    [example]
    [n=3,
     distance=\emwidth]
\setupbackgrounds
    [text]
    [background=color,
     backgroundcolor=color-1]
\starttext
\startpagecolumns[example]
\dorecuse {7} {
    \startplacefigure[location={here,none}]
    \framed
        [width=\columnwidth,
         height=1cm,
         frame=off,
         background=color,
         backgroundcolor=color-2]
        {Here: A.#1}
    \stopplacefigure
    \samplefile{tufte}
    \startplacefigure[location={here,none}]
    \framed
        [width=\columnwidth,
```

```
    height=1cm,
    frame=off,
    background=color,
    backgroundcolor=color-2]
    {Here: B.#1}
\stopplacefigure
\samplefile{tufte}
\startplacefigure[location={here,none}]
  \framed
    [width=\textwidth,
    height=1cm,
    frame=off,
    background=color,
    backgroundcolor=color-2]
    {Here: C.#1}
\stopplacefigure
\startplacefigure[location={here,none}]
  \framed
    [width=\measure{twocolumns},
    height=1cm,
    frame=off,
    background=color,
    backgroundcolor=color-2]
    {Here: D.#1}
\stopplacefigure
\samplefile{tufte}
\startplacefigure[location={force,none}]
  \framed
    [width=\columnwidth,
    height=1cm,
    frame=off,
    background=color,
    backgroundcolor=color-2]
    {Force: E.#1}
\stopplacefigure
}
\dorecurse {7} {
  \samplefile{tufte}
  \par
}
\stoppagecolumns
\stoptext
```



```

007 \definepagecolumns[example][n=2,distance=\emwidth]
\setupbackgrounds[text][background=color,backgroundcolor=color-1]
\useMPLibrary[dum]
\starttext
\startbuffer[small]
  \framed
    [width=3cm,
     height=2cm,
     frame=off,
     background=color,
     backgroundcolor=color-2]
    {Small}
\stopbuffer
\startbuffer[large]
  \framed
    [width=12cm,
     height=6cm,
     frame=off,
     background=color,
     backgroundcolor=color-2]
    {Large}
\stopbuffer
\startpagecolumns[example]
  \samplefile{tufte}\par
  \startplacefigure[location=here,title=Test]
    \getbuffer[small]
  \stopplacefigure
  \startplacefigure[location=here,title=Test]
    \getbuffer[small]
  \stopplacefigure
  \samplefile{tufte}\par
\stoppagecolumns
\startpagecolumns[example]

```

# Floats

```

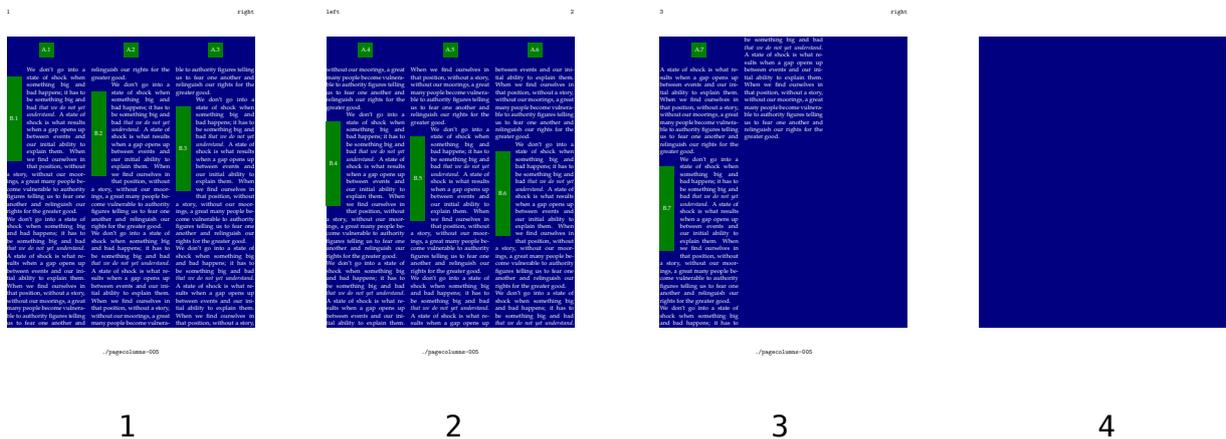
\samplefile{tufte}\par
\startplacefigure[location=here,title=Test]
  \getbuffer[small]
\stopplacefigure
\startplacefigure[location=here,title=Test]
  \getbuffer[large]
\stopplacefigure
\samplefile{tufte}\par
\stoppagecolumns

\startpagecolumns[example]
\samplefile{tufte}\par
\startplacefigure[location=here,title=Test]
  \getbuffer[large]
\stopplacefigure
\startplacefigure[location=here,title=Test]
  \getbuffer[large]
\stopplacefigure
\samplefile{tufte}\par
\stoppagecolumns

\stoptext

```

Side floats are also supported but we don't treat them special so you get the same behaviour as with single column layouts.



```

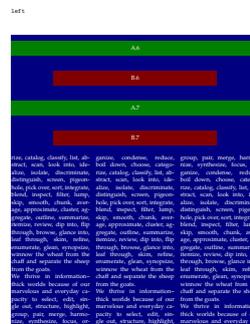
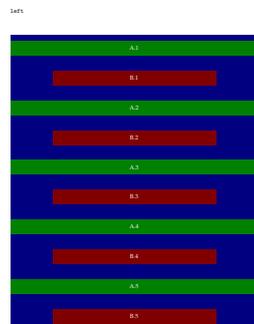
005 \definepagecolumns
  [example]
  [n=3,
  distance=\emwidth]
\setupbackgrounds
  [text]
  [background=color,

```

```

backgroundcolor=color-1]
\starttext
\startpagecolumns[example]
\dorecure {7} {
  \startplacefigure[location={top,none}]
  \framed
  [width=1cm,
  height=1cm,
  frame=off,
  background=color,
  backgroundcolor=color-2]
  {A.#1}
\stopplacefigure
\startplacefigure[location={left,none}]
\framed
[width=1cm,
height=6cm,
frame=off,
background=color,
backgroundcolor=color-2]
{B.#1}
\stopplacefigure
\samplefile{klein}\par
\samplefile{klein}\par
}
\stoppagecolumns
\stoptext

```



```
[example]
[n=3,
 distance=\emwidth]

\setupbackgrounds
 [text]
 [background=color,
 backgroundcolor=color-1]

\starttext

\startpagecolumns[example]

\dorecurse {7} {
 \startplacefigure[location={top,none}]
 \framed
 [width=\textwidth,
 height=1cm,
 frame=off,
 background=color,
 backgroundcolor=color-2]
 {A.#1}
 \stopplacefigure
 \startplacefigure[location={top,none}]
 \framed
 [width=\measure{twocolumns},
 height=1cm,
 frame=off,
 background=color,
 backgroundcolor=color-3]
 {B.#1}
 \stopplacefigure
 \samplefile{tufte}
 \par
}

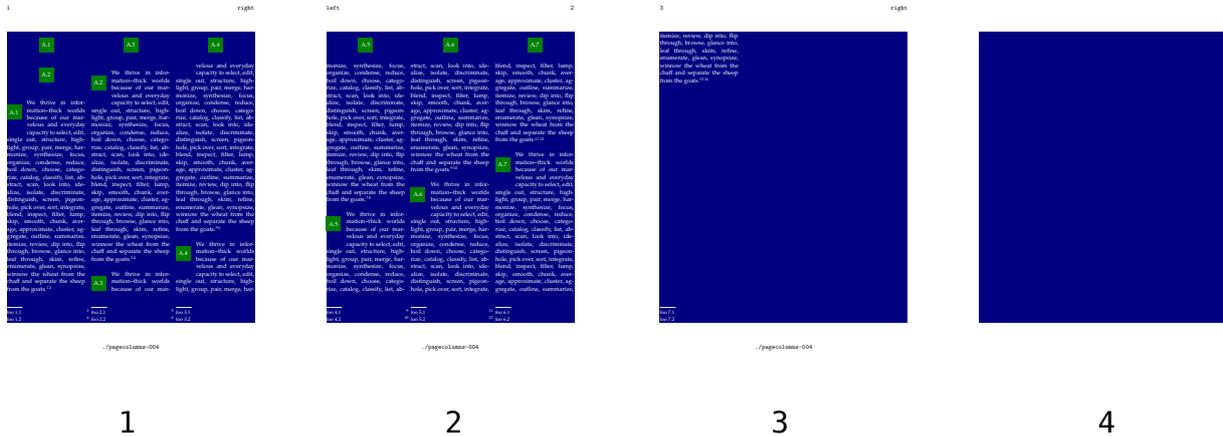
\dorecurse {7} {
 \samplefile{tufte}
 \par
}

\stoppagecolumns

\stoptext
```

# Footnotes

Footnotes are supported but we assume sane usage. You can always revert to endnotes if needed.



```
004 \definepagecolumns
    [example]
    [n=3,
     distance=\emwidth]
```

```
\setupbackgrounds
    [text]
    [background=color,
     backgroundcolor=color-1]
```

```
\starttext
```

```
\startpagecolumns[example]
```

```
\dorecurse {7} {
    \startplacefigure[location={top,none}]
        \framed
            [width=1cm,
             height=1cm,
             frame=off,
             background=color,
             backgroundcolor=color-2]
            {A.#1}
        \stopplacefigure
    \startplacefigure[location={left,none}]
        \framed
            [width=1cm,
```

## Footnotes

```
    height=1cm,
    frame=off,
    background=color,
    backgroundcolor=color-2]
  {A.#1}
\stopplacefigure

\samplefile{tufte}
\footnote{foo #1.1}
\footnote{foo #1.2}

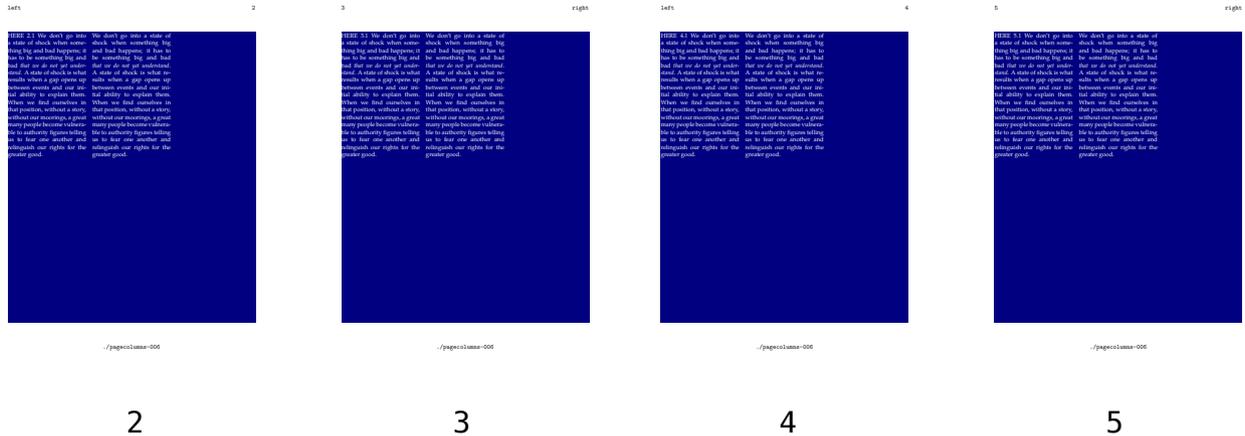
\par
}

\stoppagecolumns

\stoptext
```

# Pages

Going to a new page happens with `\page` and progressing to the next column with `\column`.



```
006 \definepagecolumns
    [example]
    [n=3,
     distance=\emwidth]
```

```
\setupbackgrounds
    [text]
    [background=color,
     backgroundcolor=color-1]
```

```
\starttext
```

```
\startpagecolumns[example]
```

```
\dorecuse {20} {
    HERE #1.1
    \samplefile{klein}\column
    \samplefile{klein}\page
}
```

```
\page[right]
```

```
RIGHT PAGE
```

```
\page[left]
```

```
LEFT PAGE
```

```
\dorecuse {20} {
    HERE #1.2
```

```
\samplefile{klein}\column  
\samplefile{klein}\page  
}  
\stoppagecolumns  
\stoptext
```