

# Evan and Joe Kick Your Ass, L<sup>A</sup>T<sub>E</sub>X Style!

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Drexel University, Philadelphia, PA

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## Alternate Title:

“Everything you ever wanted to know about  $\text{T}_\text{E}\text{X}$  and  $\text{L}_\text{A}\text{T}_\text{E}\text{X}$  without reading piles of books or training with Knuth & Lamport!”



When power fails, VCR clocks flash 0000. When Donald E. Knuth enters a room, VCR clocks flash 1337.

— [knuthfacts.com](http://knuthfacts.com)



It turns out *déjà vu* is actually Leslie Lamport re-synchronizing the universal timeline.

— Neo

# Background

- Critical moments in the history of science:
  - 4000 BCE: Some hairy person invents the wheel.
  - 1800s: Electricity discovered.
  - 1978: Knuth begins writing T<sub>E</sub>X.
  - 1980: Lamport begins writing L<sup>A</sup>T<sub>E</sub>X.
  - 1981 and on: Progress begins in earnest...
- T<sub>E</sub>X  $\equiv$   $\tau\epsilon\chi$  (Greek for “art”/“technology”)
- Primarily concerned with *high-quality* technical manuscripts;
- Motivation: a document that you write in 1980 should be typeset (*i.e.*, look) exactly the same way in 2080.

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## Knuth Says . . .



“When you say it correctly to your computer, the terminal may become slightly moist.”

—Donald Knuth

(*The T<sub>E</sub>X Book*, Page 1)

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## • Pri Knuth Says . . .



“If you merely want to produce a passably good document—something acceptable and basically readable but not really beautiful—a simpler system will suffice. . .

—Donald Knuth

(Knuth, *The T<sub>E</sub>X Book*, Page 1)

s;

peset

ence



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...but you will not find it much harder to go the extra distance, and you'll be able to take special pride in the finished product.”

—Donald Knuth

(Knuth, *The T<sub>E</sub>X Book*, Page 1)

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# Agenda

- 1 Basics
- 2 Highly Useful Stuff
- 3 Coolness
- 4 Wicked Awesome
- 5 Conclusion

# Basic Document Example

```
\documentclass{article}

\usepackage{booktabs}
\usepackage{url}

\title{My Awesome Article}
\author{Tom Wambold\\ \url{taw38@drexel.edu}}
\date{\today}

\begin{document}
\maketitle

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Donec arcu
augue, facilisis et, hendrerit in, vehicula non, arcu. Cras augue est,
commodo quis, pulvinar at, adipiscing sit amet, quam. In hac habitasse
platea dictumst. Pellentesque tempus, dui nec rhoncus adipiscing,
arcu tellus commodo ipsum, vel posuere mi dui sit amet metus. Fusce
nec nisi varius libero tempor lacinia. Curabitur id metus et magna
pulvinar posuere.

\begin{center}
\begin{tabular}[b]{cc}
\toprule
\textbf{Sweet} & \textbf{Table} \\
\midrule
\LaTeX & rocks \\
hellz & yeah \\
\bottomrule
\end{tabular}
\end{center}

Fusce quis dolor eu erat volutpat semper. Fusce hendrerit mauris vitae
metus. Sed ut mauris. Fusce fermentum. Aliquam volutpat est vitae
augue. Mauris sem. Donec imperdiet vehicula neque. Proin hendrerit
adipiscing nibh. Aliquam sagittis elementum sem. Ut suscipit lobortis
nisl. Fusce lobortis tincidunt enim. Vestibulum sit amet tellus.
Praesent cursus, felis vitae hendrerit fringilla, erat lacus
scelerisque turpis, quis venenatis justo velit quis libero.
\end{document}
```

## My Awesome Article

Tom Wambold  
taw38@drexel.edu  
April 20, 2009

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Donec arcu augue, facilisis et, hendrerit in, vehicula non, arcu. Cras augue est, commodo quis, pulvinar at, adipiscing sit amet, quam. In hac habitasse platea dictumst. Pellentesque tempus, dui nec rhoncus adipiscing, arcu tellus commodo ipsum, vel posuere mi dui sit amet metus. Fusce nec nisi varius libero tempor lacinia. Curabitur id metus et magna pulvinar posuere.

Sweet	Table
LaTeX	rocks
hellz	yeah

Fusce quis dolor eu erat volutpat semper. Fusce hendrerit mauris vitae metus. Sed ut mauris. Fusce fermentum. Aliquam volutpat est vitae augue. Mauris sem. Donec imperdiet vehicula neque. Proin hendrerit adipiscing nibh. Aliquam sagittis elementum sem. Ut suscipit lobortis nisl. Fusce lobortis tincidunt enim. Vestibulum sit amet tellus. Praesent cursus, felis vitae hendrerit fringilla, erat lacus scelerisque turpis, quis venenatis justo velit quis libero.

1

Department of  
**Computer Science**



# Stupid Basic Stuff You Should Not Screw Up

- Dashes, hyphens and minus signs are all different things!

\$-\$ Minus signs (-): subtraction;

- Hyphen (-): used for compound words;

- En-dash (–): used for number ranges; and

- Em-dash (—): punctuation

**Example:** “The parenthetical phrase---usually used for thought interruptions---is important.”

!!! You do not generally put spaces before or after any of these.

- Numbers should not open lines, protect them from the horror!

- ~ Hard (non-breaking) space: used to prevent line breaks.

**Example:** “I do not want a line break before a citation~\cite{KopenaSultanik08KickAss}.”

- Get your quotes right, people!

- “” “This is beautiful.”

- " "This is ugly, just like your face~\cite{maddox}."

- Pronounce T<sub>E</sub>X correctly!!!

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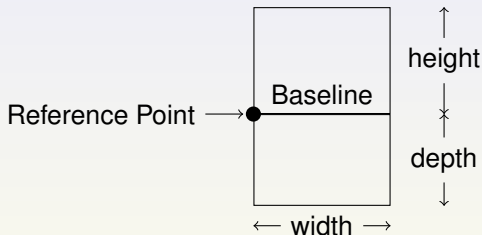
- Pronounce T<sub>E</sub>X correctly!!!

- Curly brackets (`{`, `}`) are not really parameter delimiters.
- Parameters consume tokens, whether they be a single character or a *group*; brackets collect text into groups
  - The group delimiter can be changed, but that's very rare.
- E.g., “`\centerline Centered.`” produces:  
C
- But “`\centerline{Centered.}`” produces:  
Centered.



# hboxes, vboxes, and glue, OH MY!

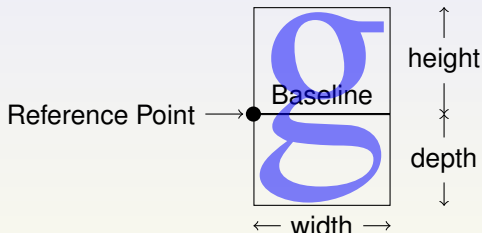
“Boxes in T<sub>E</sub>X are two-dimensional things. . .”



Everything on a page is a conglomeration of boxes pasted (and hierarchically grouped) together.

# hboxes, vboxes, and glue, OH MY!

“Boxes in T<sub>E</sub>X are two-dimensional things. . .”



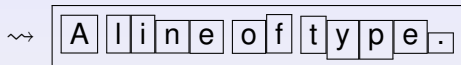
Everything on a page is a conglomeration of boxes pasted (and hierarchically grouped) together.

# hboxes and vboxes

```
\hbox{A line of type.}
```

# hboxes and vboxes

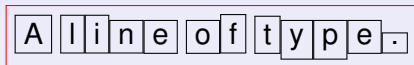
```
\hbox{A line of type.}
```



# hboxes and vboxes

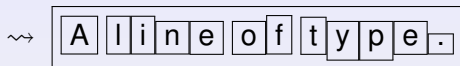
```
\hbox{A line of type.}
```

↪



# hboxes and vboxes

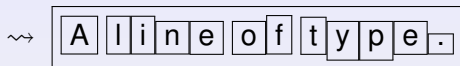
```
\hbox{A line of type.}
```



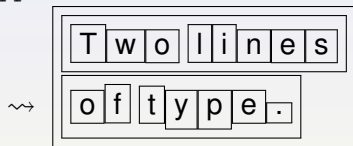
```
\vbox{\hbox{Two lines}\hbox{of type.}}
```

# hboxes and vboxes

```
\hbox{A line of type.}
```

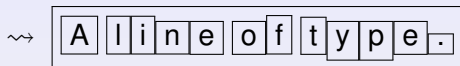


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```

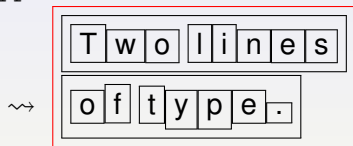


# hboxes and vboxes

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\hbox{A line of type.}
```



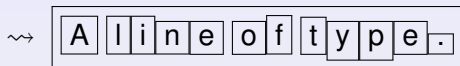
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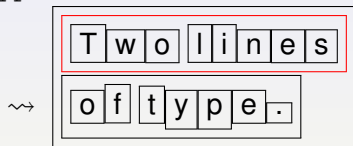


# hboxes and vboxes

```
\hbox{A line of type.}
```

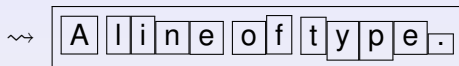


```
\vbox{\hbox{Two lines}\hbox{of type.}}
```

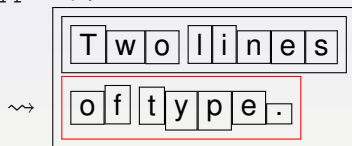


# hboxes and vboxes

```
\hbox{A line of type.}
```

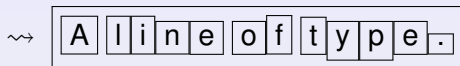


```
\vbox{\hbox{Two lines}\hbox{of type.}}
```

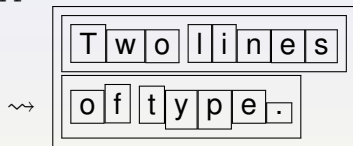


# hboxes and vboxes

```
\hbox{A line of type.}
```



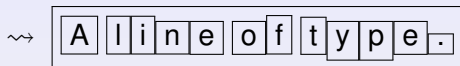
```
\vbox{\hbox{Two lines}\hbox{of type.}}
```



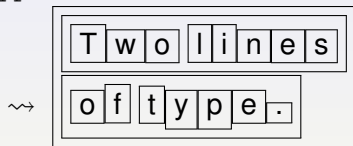
```
\hbox to 4cm{Fixed-width box.}
```

# hboxes and vboxes

```
\hbox{A line of type.}
```



```
\vbox{\hbox{Two lines}\hbox{of type.}}
```

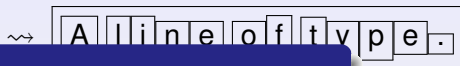


```
\hbox to 4cm{Fixed-width box.}
```



# hboxes and vboxes

```
\hbox{A line of type.}
```



Knuth Says...

```
\vbox{
```



POP QUIZ, H4X0RZ!

```
\hbox to 0pt{OMG}WTFBBQ
```

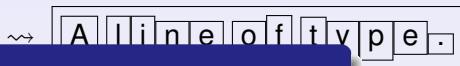
What will be the output?

```
\hbox
```

↪ Fixed-width box

# hboxes and vboxes

```
\hbox{A line of type.}
```



Knuth Says...

```
\vbox{
```



POP QUIZ, H4X0RZ!

```
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What will be the output?

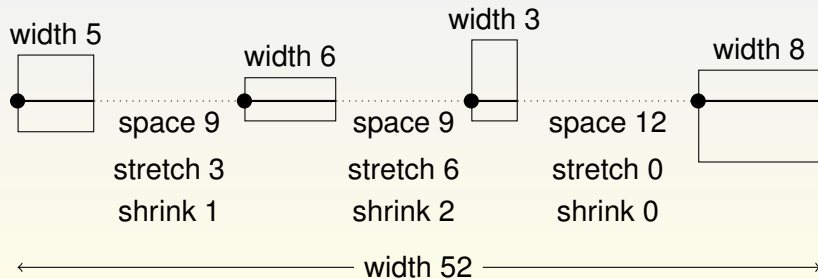
**Answer:** ~~OMG~~BBQ

```
\hbox
```

↔ Fixed-width box

# Glue: “The Magic Mortar”

- *Glue* exists in the spaces between boxes.
- Stretches to ensure 12pt between lines and even margins.
- Glue has three properties:
  - its natural *space*;
  - its ability to *stretch*; and
  - its ability to *shrink*.



# How T<sub>E</sub>X chooses to...

- ... space words;
- ... break pages; and
- ... place floats.



# Font Effects

- Document options set base font sizes:  
`\documentclass[11pt]{article}`
- You can adjust the size with a set of commands: `\tiny`, `\scriptsize`, `\footnotesize`, `\small`, `\normalsize`, `\large`, `\Large`, `\LARGE`, `\huge`, `\Huge`
- Another set changes the style (cumulatively):
  - `\textit{Mushi Mushi}` — *Mushi Mushi*
  - `\textsl{Mushi Mushi}` — *Mushi Mushi*
  - `\textsc{Mushi Mushi}` — MUSHI MUSHI
  - `\textbf{Mushi Mushi}` — **Mushi Mushi**
  - `\textsf{Mushi Mushi}` — Mushi Mushi
  - `\texttt{Mushi Mushi}` — Mushi Mushi
  - `\textit{a \textbf{b} c}` — *a b c*
- `\emph{mushi}` intelligently emphasizes (possibly italic) text
- `\it`, `\tt`, `\bf`, `\rm`, are scope operators

# Sweet Packages You Should Use

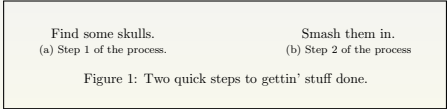
- `url` — Format & properly line break URLs
  - `\url{turnofftheinternet.com}` — `turnofftheinternet.com`
- `verbatim` — Provides `\verb`, `\verbatiminput`
  - `\verb$\textit{mushi}$` — `\textit{mushi}`
  - `\verbatiminput{file}` — Include a file verbatim
- `calc` — Do math in lengths & widths
  - `\parbox{0.5cm+0.5cm}{mushi sushi}` — `mushi  
sushi`
- `color` — Make things more pretty!
  - `\textcolor{red}{a \textcolor{blue}{b} a}` — `a b a`
- `xspace` — Include a space only if not followed by punctuation.
  - `\newcommand{\foo}{Foobar}` produces  
`\foo is \foo!` — `Foobaris Foobar!`
  - `\newcommand{\foo}{Foobar\xspace}` produces:  
`\foo is \foo!` — `Foobar is Foobar!`

- Figures should always be referenced, even subfigures!!!
  - If you're not talking about a figure, you shouldn't have it.
  - The figure should *follow* the reference in the document!
- Use `figure*` to have a figure span columns.
- Use the `subfig` package to group related figures together:

```
\begin{figure}[t]

\subfloat[Step 1 of the process.]{%
Find some skulls.
\label{fig:example-step10}}%
\hfill%
\subfloat[Step 2 of the process]{%
Smash them in.
\label{fig:example-step20}}%

\caption{Two quick steps to gettin' stuff done.}
\label{fig:process-steps}
\end{figure}
```



Find some skulls. Smash them in.  
(a) Step 1 of the process. (b) Step 2 of the process

Figure 1: Two quick steps to gettin' stuff done.

- Questions, comments, concerns?