

# Making Slides

...and doing it with Beamer

RSI 2010 Staff

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- 1 Intro to Beamer
  - About Beamer
  - Basic Structure
- 2 Overlaying Concepts
  - Specifications
  - Examples: Lists, Graphics, Tables
- 3 Adding that Sparkle
  - Sections
  - Themes

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# What Is Beamer?

- Beamer is a flexible  $\text{\LaTeX}$  class for making slides and presentations.
- It supports functionality for making PDF slides complete with colors, overlays, environments, themes, transitions, etc.
- Adds a couple new features to the commands you've been working with.

# What Is Beamer?

- Beamer is a flexible  $\text{\LaTeX}$  class for making slides and presentations.
- It supports functionality for making PDF slides complete with colors, overlays, environments, themes, transitions, etc.
- Adds a couple new features to the commands you've been working with.
- As you probably guessed, this presentation was made using the Beamer class.

# Document Template: slides.tex

```
\documentclass[pdf]
    {beamer}
\mode<presentation>{}
%% preamble
\title{The title}
\subtitle{The subtitle}
\author{your name}

\begin{document}
```

```
%% title frame
\begin{frame}
    \titlepage
\end{frame}

%% normal frame
\begin{frame}{Frame title}
    The body of the frame.
\end{frame}

\end{document}
```

```
athena% make slides.pdf
```

# What would you like in your sandwich?

- So what can you do between `\begin{frame}` and `\end{frame}`?

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- So what can you do between `\begin{frame}` and `\end{frame}`?
- Pretty much anything you can do in a normal  $\text{\LaTeX}$  document:



# What would you like in your sandwich?

- So what can you do between `\begin{frame}` and `\end{frame}`?
- Pretty much anything you can do in a normal  $\text{\LaTeX}$  document:
  - figures, tables, equations, normal text, etc.

# Don't Do This

- Here is a well-known formula:

$$\sum_{k=0}^n k = \frac{n(n+1)}{2}$$

- Here is a less well-known, but still useful, formula:

$$\sum_{k=0}^n k^2 = \frac{n(n+1)(2n+1)}{6}$$

- This is pretty well-known, too:

$$\sum_{k=0}^n k^3 = \left( \frac{n(n+1)}{2} \right)^2$$

- Who knows about this one?

$$\sum_{k=0}^n k^4 = \frac{n(6n^4 + 15n^3 + 10n^2 + 1)}{30}$$

- Have fun factoring the quartic expression!

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# The Rudimentary pause

Watch this slide grow.

# The Rudimentary pause

Watch this slide grow.

- Hello, World!

# The Rudimentary pause

Watch this slide grow.

- Hello, World!
- Hello, Mars!

# The Rudimentary pause

Watch this slide grow.

- Hello, World!
- Hello, Mars!
- Hello, Alpha Centauri!

# The Rudimentary pause: Backstage

Watch this slide grow.

`\pause`

`\begin{itemize}`

`\item Hello, World!`

`\pause`

`\item Hello, Mars!`

`\pause`

`\item Hello, Alpha Centauri!`

`\end{itemize}`



# The Specification

- Professor: I want you to read the textbook to prepare for tomorrow's lecture.

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- Professor: I want you to read the textbook to prepare for tomorrow's lecture.
- Student: Which chapter should I read?

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- Professor: I want you to read the textbook to prepare for tomorrow's lecture.
- Student: Which chapter should I read?
- Professor: *Specifically*, Chapters <1-3, 6, 10->.

# Specificationizing the Rudimentary pause

Watch this slide grow.

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# Specificationizing the Rudimentary pause: Backstage

Watch this slide grow.

```
\begin{itemize}
```

```
  \item<2-> Hello, World!
```

```
  \item<3-> Hello, Mars!
```

```
  \item<4-> Hello, Alpha Centauri!
```

```
\end{itemize}
```



# Useful Commands that Work with Specifications

|                                   |   |                                 |  |
|-----------------------------------|---|---------------------------------|--|
| <code>\textbf&lt;&gt;{}</code>    | controls when to bold text                    | <code>\only&lt;&gt;{}</code>    | controls when to reveal text, occupies NO space otherwise                            |
| <code>\textit&lt;&gt;{}</code>    | controls when to italicize text               | <code>\uncover&lt;&gt;{}</code> | controls when to reveal text, DOES occupy space otherwise                            |
| <code>\color&lt;&gt;[]{}{}</code> | controls when to change color of text         | <code>\alt&lt;&gt;{}{}{}</code> | reveals first argument when specification is true, otherwise reveals second argument |
| <code>\alert&lt;&gt;{}</code>     | controls when to highlight text (default red) | <code>\item&lt;&gt;</code>      | controls when an item is shown   |

# Lists: The \$1,000,000 Question

Which president said, “Most folks are about as happy as they make up their minds to be”?

Hints:

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A James Madison

Hints:

James Madison ate broccoli.

# Lists: The \$1,000,000 Question

Which president said, “Most folks are about as happy as they make up their minds to be”?

- A James Madison
- B Harry Truman

Hints:

James Madison ate broccoli.

Harry Truman drank milk.

# Lists: The \$1,000,000 Question

Which president said, “Most folks are about as happy as they make up their minds to be”?

- A James Madison
- B Harry Truman
- C Abraham Lincoln

Hints:

James Madison ate broccoli.

Harry Truman drank milk.

Abe Lincoln raised bees.

# Lists: The \$1,000,000 Question

Which president said, “Most folks are about as happy as they make up their minds to be”?

- A James Madison
- B Harry Truman
- C Abraham Lincoln
- D Calvin Coolidge

Hints:

James Madison ate broccoli.

Harry Truman drank milk.

Abe Lincoln raised bees.

And Cal Coolidge grew silk.

# Lists: The \$1,000,000 Question

Which president said, “Most folks are about as happy as they make up their minds to be”?

C Abraham Lincoln

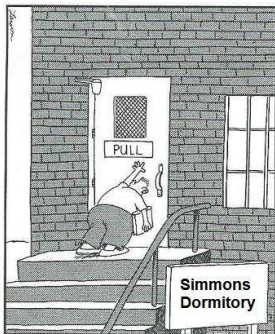
# Lists: The \$1,000,000 Question: Backstage

```
\begin{enumerate}[A]  
  \item<2-5> James Madison  
  \item<3-5> Harry Truman  
  \item<4-> \color<6>[rgb]{0,0.6,0}Abraham Lincoln  
  \item<5-5> Calvin Coolidge  
\end{enumerate}
```

```
\uncover<1-5>{Hints:}\\  
\uncover<2-5>{James Madison ate broccoli.}\\  
\uncover<3-5>{Harry Truman drank milk.}\\  
\uncover<4-5>{Abe Lincoln raised bees.}\\  
\uncover<5-5>{And Cal Coolidge grew silk.}\\
```



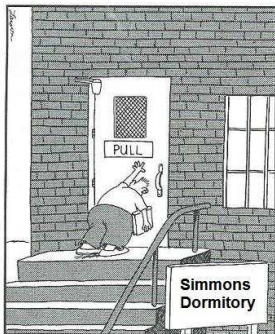
# Columns and Blocks



<sup>a</sup>

<sup>a</sup>Apologies to Gary Larson

# Columns and Blocks



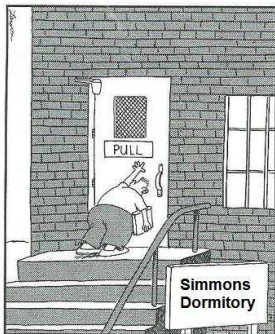
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## Observation 1

Simmons Hall is composed of metal and concrete.

# Columns and Blocks



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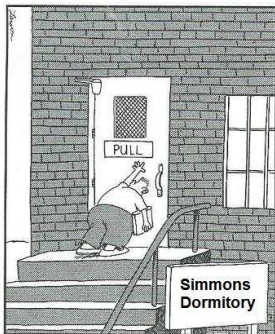
## Observation 1

Simmons Hall is composed of metal and concrete.

## Observation 2

Simmons Dormitory is composed of brick.

# Columns and Blocks



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## Observation 1

Simmons Hall is composed of metal and concrete.

## Observation 2

Simmons Dormitory is composed of brick.

## Conclusion

Simmons Hall  $\neq$  Simmons Dormitory.

# Columns and Blocks: Backstage I

```
\begin{columns}
  \column{0.5\textwidth}
    \begin{figure}[ht]
      \begin{center}
        \includegraphics[height=2in]{LarsonGifted.eps}
        ~\footnote{Apologies to Gary Larson}
      \end{center}
    \end{figure}
\end{columns}
```

# Columns and Blocks: Backstage II

```
\column{0.5\textwidth}  
  \begin{block}<2->{Observation 1}  
    Simmons Hall is composed of metal and concrete.  
  \end{block}  
  \begin{block}<3->{Observation 2}  
    Simmons Dormitory is composed of brick.  
  \end{block}  
  \begin{block}<4->{Conclusion}  
    Simmons Hall $\not=$ Simmons Dormitory.  
  \end{block}  
\end{columns}
```

# Math stuff

## Easy Theorem

*The equation*

$$x^n + y^n = z^n,$$

*has no integer solutions for  $n > 2$  where  $x, y, z \neq 0$ .*

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## Remark

*This problem was first posed in 10,000 B.C.*



# Math stuff

## Easy Theorem

*The equation*

$$x^n + y^n = z^n,$$

*has no integer solutions for  $n > 2$  where  $x, y, z \neq 0$ .*

## Proof

*The proof is trivial and left as an exercise for the reader.*

## Remark

*This problem was first posed in 10,000 B.C.*

# Math stuff: Backstage

```
\newtheorem{thm}{Easy Theorem}
\newtheorem{pf}{Proof}
\newtheorem{rmk}{Remark}

\begin{thm}<1->
  $$x^n+y^n=z^n,$$
  has no integer solutions for  $n>2$ 
  where  $x, y, z \neq 0$ .
\end{thm}

\begin{pf}<3->
  The proof is trivial and left as an exercise.
\end{pf}

\begin{rmk}<2->
  This problem was first posed in 10,000 B.C.
\end{rmk}
```

# Building Tables

| Ice Cream Store | Location | How to Get There |
|-----------------|----------|------------------|
|                 |          |                  |

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| <b>Ice Cream Store</b> | <b>Location</b> | <b>How to Get There</b> |
|------------------------|-----------------|-------------------------|
| Toscanini's            | Central Square  | Just walk!              |

# Building Tables

| Ice Cream Store          | Location                         | How to Get There       |
|--------------------------|----------------------------------|------------------------|
| Toscanini's<br>Herrell's | Central Square<br>Harvard Square | Just walk!<br>Red Line |

# Building Tables

| <b>Ice Cream Store</b>                 | <b>Location</b>                                  | <b>How to Get There</b>            |
|--|--|------------------------------------|
| Toscanini's<br>Herrell's<br>J.P. Licks | Central Square<br>Harvard Square<br>Davis Square | Just walk!<br>Red Line<br>Red Line |

# Building Tables

| Ice Cream Store | Location       | How to Get There |
|-----------------|----------------|------------------|
| Toscanini's     | Central Square | Just walk!       |
| Herrell's       | Harvard Square | Red Line         |
| J.P. Licks      | Davis Square   | Red Line         |
| Ben & Jerry's   | Newbury Street | Green Line       |

# Building Tables: Backstage

```
\begin{table}[bt]
\begin{tabular}{|l|c|c|} \hline
  \textbf{Ice Cream Store}      & & \textbf{Location} \\
  & & \textbf{How to Get There} \\ \hline
  \uncover<2->{Toscanini's}    & & \uncover<2->{Central Square} \\
  & & \uncover<2->{Just walk!} \\ \hline
  \uncover<3->{Herrell's}      & & \uncover<3->{Harvard Square} \\
  & & \uncover<3->{Red Line} \\ \hline
  \uncover<4->{J.P. Licks}     & & \uncover<4->{Davis Square} \\
  & & \uncover<4->{Red Line} \\ \hline
  \uncover<5->{Ben \& Jerry's} & & \uncover<5->{Newbury Street} \\
  & & \uncover<5->{Green Line} \\ \hline
\end{tabular}
\end{table}
```



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# Using Sections

- Treat sections just like you would in a paper.

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- Use `\tableofcontents[section]` to keep audience informed of your talk's general plan.
- Use `\AtBeginSection[] {specialframe}` to help audience follow the structure of your talk.

# Using Sections: Backstage I

```
\section{Intro to Beamer}  
\subsection{About Beamer}  
\subsection[Basic Structure]{Basic Structure}  
\subsection{How to Compile}  
  
\section{Overlaying Concepts}  
\subsection{Specifications}  
\subsection[Examples]{Examples: Lists, Graphics, Tables}  
  
\section[Sparkle]{Adding that Sparkle}  
\subsection{Sections}  
\subsection{Themes}  
  
\section*{References}
```

# Using Sections: Backstage II

```
\AtBeginSection[]  
{  
  \begin{frame}{Table of Contents}  
    \tableofcontents[currentsection]  
  \end{frame}  
}
```

# See, I can get a ToC anywhere!

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# Pre-customized Templates

- To make your presentation use a shiny theme like ours:
  - Find `\mode<presentation>{}` at the top of your file
  - Insert `\usetheme{Warsaw}` into the `{}`
- Also available within each Presentation Theme:
  - **Color themes:** `\usecolortheme{colorthemename}`  
control colors for bullets, background, text, etc.
  - **Inner themes:** `\useinnertheme{innerthemename}`  
control main title, environments, figures and tables, footnotes, etc.
  - **Outer themes:** `\useoutertheme{outerthemename}`  
control head-/foot-lines, sidebars, frame titles, etc.



# A Sampling of Themes

- **General themes:**

|             |            |           |            |
|-------------|------------|-----------|------------|
| default     | Antibes    | Berlin    | Copenhagen |
| Madrid      | Montpelier | Ilmenau   | Malmoe     |
| CambridgeUS | Berkeley   | Singapore | Warsaw     |

- Also available:

- **Color themes:**

- beetle, beaver, orchid, whale, dolphin

- **Inner themes:**

- circles, rectangles, rounded, inmargin

- **Outer themes:**

- infolines, smoothbars, sidebar, split, tree

- See [The Beamer Theme Matrix](#)

# Good sites to visit for Beamer help

- [The Beamer User Guide](#)
- [The Beamer Homepage](#)
- [A Quick Tutorial](#)
- [A Beamer Quickstart](#)
- [A Long Tutorial](#)
- [\$\text{\LaTeX}\$  + Beamer Examples](#)
- [A Beamer Presentation on Beamer](#)