Beyond standard slideware: Audience-oriented slide preparation using LaTeX and scripting language

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ABSTRACT   Many people start to prepare their slides before identifying their core messages which should be extracted from what they want to talk about. Thus the resulting presentations fail to attract much attention. To avoid this mistake, I apply the "Rule of Three" to all my slides, in each of which I place certain key phrases including my three core messages. These additional editing tasks are performed semi-automatically with the aid of the programming functions of LaTeX and scripting language. My motivation for developing this system is to acquire a sincere attitude towards my audience through *Kata*, an essential concept in the process by which traditional Japanese culture is passed on.

1 Introduction

There have been many warnings about the careless use of slides that results in the speaker's intention becoming unfocused [5, 11]. One source of these warnings is "Presentation Zen" [6], a best selling book of 2008 that has been translated into 14 languages. The author advises us to get away from our computer and identify the core messages of the talk before preparing any slides.

I also spend a lot of time for clarifying my message but with a different approach, namely by applying the "Rule of Three" to all my slides. This approach requires me to determine the three main points of my talk in advance, and to insert related key phrases in every slide. I reduce the work needed for the latter task with the aid of the programming functions of LaTeX and scripting language.

FIGURE 1 shows an example consisting of slides translated from the original Japanese version of a talk I gave at the TeX Conference Japan 2009 [9]. Three brief summaries are listed in the last slide and also parts are shown in Slides 10 and 15. Explanations of other structures are given later, but this format helps the audience to follow the story with its attention well focused.

I learned the basic idea of this format at a presentation seminar in 1995 [3]. Since then, I have developed it using LaTeX and have been using it for my academic presentations.

.   *A Japanese translation of this article is available at the homepage of the Asian Journal of TeX, http://ajt.ktug.kr.

FIGURE 1. Example of slides prepared using "Rule of Three".

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FIGURE 2. *Shu-Ha-Ri* — Fuhaku Kawakami (1719–1807), calligraphy by Hiroyuki Hijiya.
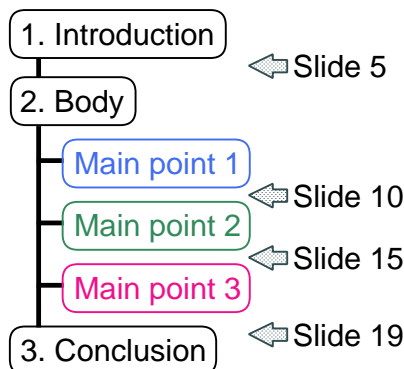
FIGURE 3. Structure of "Rule-of-Three"-based presentation. Slide numbers with arrows show the point where the corresponding slides in FIG. 1 are placed.

Whenever I prepare my slides in this manner, I am conscious of *Kata* [4, 7], an essential concept in the process of passing on traditional Japanese culture including performing arts and martial arts (see Slide 1 of FIG. 1). *Kata* can be translated into English as "form", but this word does not fully express the concept of *Kata*.

Most of Japanese traditional arts are transferred by copying *Kata* demonstrated by masters. *Kata* itself is not an art but it shows the way of mastering the art by demonstrating its functionality, rationality and beauty. This learning stage is called *Shu*, followed by *Ha* and *Ri* (see FIG. 2). In the *Ha* stage, learners break with their masters' *Kata* but have not yet totally achieved their own style. In the *Ri* stage, the learners create their own *Kata*.

In 1995, I recognized what I had learned in the presentation seminar as *Kata* for slide preparation, although the lecturers might not have had such an intention. In this paper, I describe my present *Kata* expressed by LATEX, tips for managing its source code, and the benefit of this *Kata*-based approach to making slides.

2   *Kata* for applying "Rule of Three"

A presentation scheme based on the "Rule of Three" [2, 3] is shown in FIG. 3. The slides shown in FIG. 1 are prepared to realize this structure with two *Kata* in order to keep the audience's attention during the talk.

The first *Kata* consists of inserting some slides providing a short summary before and after the three main points (see Slides 5, 10, 15 and 19). Here, I call them "bird's eye slides". Slide 5

TABLE 1. Macros defined for the slides shown in FIG. 1. In slides indicated
with *, the corresponding phrase does not appear in FIG. 1 due to the effect
of the overlay (see FIG. 4).

Definition of macros	Slides that call the macro in the left
`\def\TitleOne{`Codes`}`	5–10, 15, 19
`\def\IntroOne{`What are the necessary commands?`}`	5, 10*
`\def\SummaryOne{`Definition of strings, designation of colors & . . .`}`	10, 15, 19
`\def\TitleTwo{`Compile`}`	5, 10–15, 19
`\def\IntroTwo{`How do I reduce preparation work?`}`	5, 10, 15*
`\def\SummaryTwo{`Auto-generated templates & Makefile by Ruby`}`	15, 19
`\def\TitleThree{`Benefits`}`	5, 10, 15–19
`\def\IntroThree{`What have I gained after putting this into practice?`}`	5, 10, 15, 19*
`\def\SummaryThree{`Perspective preparation & handout earned . . .`}`	19

poses three questions, whose answers are given in Slide 19, in order to attract the audience's
attention at the beginning of presentation. Slides 10 and 15 summarize the previous content by
displaying the same sentence as that shown in Slide 19, and present the question for the next
main point again.

The second *Kata* consists of placing a header in the top left of every slides except for the
bird's eye slides. I call these "ant's eye slides". The header includes a few words representing
one of the three main points in a different color and it tells the audience which point is currently
being discussed.

The expression of these two *Kata* requires us to place the same phrases in various slides. It
is useful to use TEX's macro definition to manage all the phrases in one place. TABLE 1 lists
the macros defined in the LATEX source code for the slides shown in FIG. 1. We can complete
these macro definitions only after identifying the core messages through a bird's eye view of
what we want to talk about.

In addition, each "bird's eye slide" consists of some overlays in order to display the phrases
in steps. FIGURE. 4 shows the three step transition of the overlays used in Slide 10. The macros
defined for these three slides are listed in the inserted table. This helps the audience to recall
the structure of the speech and frees the speaker from having to memorize the sentences listed
in Slide 5 and 19.

By the way, I have been using classical document classes, SEMINAR [12] and PROSPER [1],
for slide preparation. This is simply because the former package was the most attractive one
for me when I started to use these *Kata* in 1995, and later I found that the latter was compatible
with the former except a few commands. The PROSPER source code for controlling the overlay
in Slides 10 is shown in FIG. 8 in Appendix section.

3   Source code management

It requires a tremendous amount of work to write a LATEX source code with *Kata* expressions
every time from scratch. Thus, it is convenient to use a template containing the required macro
definitions and commands. However, the number of templates increases if we need to prepare
slides in a different language and/or for a different length of talk. For example, I prepare slides

Figure 4 content — slides and table:

Slide 10-1

OVERVIEW

Upgrade slides w/ Rule of Three!

Codes

What are the necessary commands?

Slide 10-2

OVERVIEW

Upgrade slides w/ Rule of Three!

Codes

Definition of strings, designation of colors & overlays

macros	Slide 10		
	1	2	3
\TitleOne	○	○	○
\IntroOne	○		
\SummaryOne		○	○
\TitleTwo			○
\IntroTwo			○
\SummaryTwo			
\TitleThree			○
\IntroThree			○
\SummaryThree			

Slide 10-3

OVERVIEW

Upgrade slides w/ Rule of Three!

Codes

Definition of strings, designation of colors & overlays

Compile

How do I reduce preparation work?

Benefits

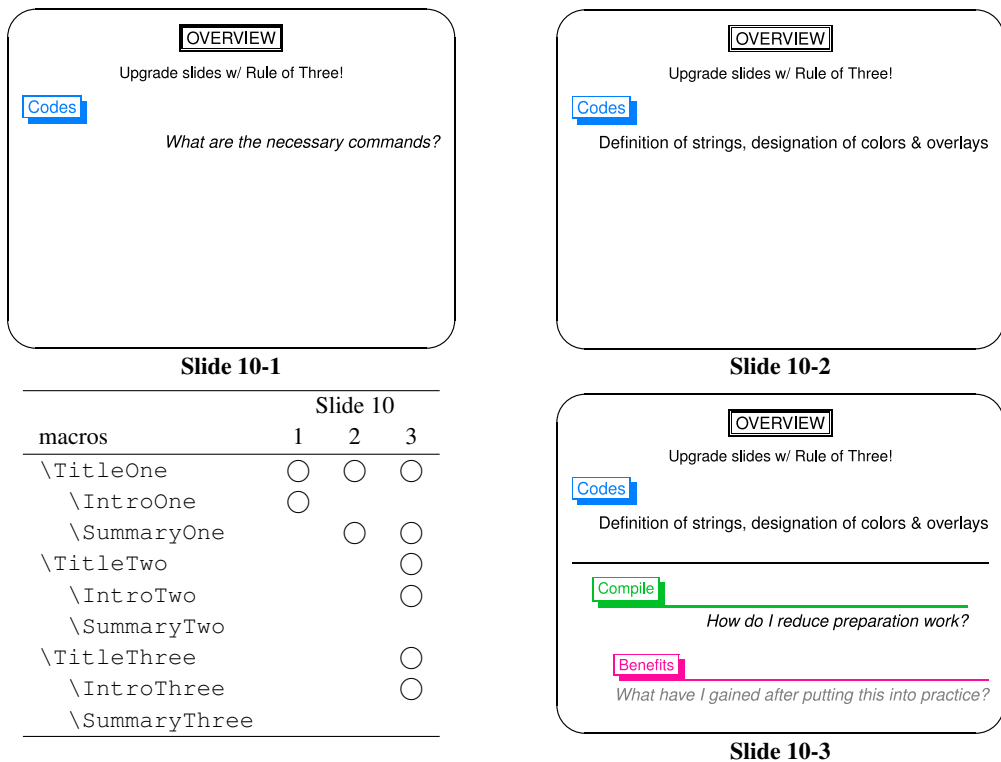*What have I gained after putting this into practice?*

FIGURE 4. Transition of overlays in Slide 10 (see TABLE 1).

for a talk of more than 30 minutes in a complex ternary form (3 parts × 3 main points, see the slides of Ref. [8]). For the collective management of various templates, I wrote a Ruby script to generate a template for the specified conditions (see Slide 12 in FIG. 1). A detailed description is given in Appendix section including how to prepare PROSPER-based slides and SEMINAR-based handout from a single source code.

4 The benefits

Here I describe three merits of my *Kata*-based slides that I have discovered through my fourteen years of experience.

Firstly, I obtained a wider perspective than before. Since I cannot prepare "ant's eye slides" before finishing the "bird's eye slides", I acquired a habit of switching these two viewpoints during slide preparation (see Slide 16 in FIG. 1). It is a very common occurrence with scientific presentations that additional experiments are performed before the presentation.[1] Therefore, we sometimes have to modify the contents. In such cases, the task is minimized if we manage the key phrases in one place as in TABLE 1.

This collective management also facilitates slide translation.[2] The translated slides are useful for any members of the audience who cannot understand the speaker's language. The

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1. I think this is the main reason why many researchers begin to prepare their slides just before the presentations and forget to identify their core messages due to shortage of time.
2. Slides written in two languages should be avoided because they look busy and may be unreadable.

presenter can project the slides on a separate screen or provide a printed version beforehand.

Secondly, the *Kata* also makes the printed slides easier to understand if groups of 4 or 6 slides are arrayed in a paper, that is, the *Kata* provides the reader with a bird's eye view. In principle, we should not distribute the printed slides as a handout before the talk because it draws the audience's attention away from the speaker [6]. However, sometimes this is necessary due to circumstances beyond our control. No matter when the handout is distributed, it should be well-focused. Otherwise, it will be thrown away.

In addition, this arrayed format should not be used as a poster because it attracts less attention from a standing audience than better-designed posters.[3]

Lastly, I gained a good reputation as regards my educational activities directed at improving presentation skills. In 2000, I started to write articles and give lectures introducing *Kata*-based slide preparation without describing LaTeX know-how (see Slide 18 of Ref. [9]). The most interesting feedback came from a science university where I presented an 80-minute lecture once a year to sophomores. Since I delivered the lecture using my *Kata*-based slides, they learned the concept aurally and visually at the same time. After the first trainees had been assigned to research laboratories, I heard that there was an increase in the number of prize winners for excellent presentations awarded by academic societies. This seems to be a good example of the *Shu*-stage of learning.

5 Conclusion

With the aid of LaTeX and a scripting language, audience-oriented slides are prepared by applying the "Rule of Three" to all the slides using two *Kata* that I proposed in the text. The policy forces the author to identify his/her core messages before slide preparation and thus both the author and the audience are given a bird's eye view through the *Kata* expression. I hope other standard slideware will afford a function for the easy preparation of *Kata*-based slides.

Acknowledgements

Here I express my sincere thanks to Mr. Charles LeBeau and Mr. Michael Strother who gave me the basic idea of my *Kata*, and Dr. Hiroyuki Hijiya who kindly provided me the calligraphy.

A Appendix

A minimum set of source codes for producing the "Rule-of-Three"-based slides is distributed at my homepage.[4] It includes two Ruby scripts, two style files and one TEX file and is tested under my Debian GNU/Linux 5.0.3 (lenny) environment. This section briefly describes the functions of these files.

A.1 `seminit` and `SEMTdrk.sty`

`seminit` is the start-up command to generate a template file and Makefile. The following six commands are used for slide preparation.

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3. I tried to apply my *Kata* to poster preparation (see Ref. [10]).
4. http://www.geocities.jp/tokyo_1406/slides4ajt.html

- `mkdir` *foo*

- `cd` *foo*

- `seminit`   # generate template and Makefile

- `make edit`   # edit template

- `make`   # make PDF file for slides

- `make sem4view`   # make PDF file for handout

In this case, `seminit` generates a template file named *foo*`.tex` using SEMINAR class (see upper box in FIG. 5). `seminit` accepts two command line options to select one of the ternary forms (simple and complex) and/or the languages (English and Japanese, see Slide 12 in FIG. 1). In this file, you can place PROSPER-specific commands but these are cancelled because of the corresponding null definitions written in SEMTdrk`.sty` (see FIG. 6).

In this stage, the slides are formatted by SEMINAR class with `article` option. This output is used to make a handout by the command, `make sem4view`, which calls `psnup` to reduce the size.

A.2 `sem2ppr` and `PPRTdrk.sty`

`sem2ppr` is executed when you type `make` in order to see the effect of PROSPER-specific commands through a PDF previewer. `sem2ppr` modifies three kinds of commands in the way shown in FIG. 5 to save a PROSPER-based code named *foo*`+ppr.tex`. The resulted code calls PPRTdrk`.sty` instead of SEMTdrk`.sty`, and contains slide environments with an empty argument (see lower box in FIG. 5). In PPRTdrk`.sty`, PPRdefault`.sty` is loaded and some re-definitions of macros are made in order to adjust the layout difference between these two classes.

A.3 `COMTdrk.tex`

This file is included by the two style files and contains the definition of `\pagetop` (see FIG. 7) that is used for placing a header and a slide title, instead of using the argument of slide environment in PROSPER class.


```
                    seminit
foo.tex              ⇓                               semcolor.sty
┌─────────────────────────────────────┐               ↑
│ \documentclass[dvips,article]{seminar}│   ⟶  SEMTdrk.sty
│ \usepackage{SEMTdrk}                  │               ↓
│   ⋮                                   │      COMTdrk.tex ⟶ fancybox.sty
│ \begin{slide}                         │               ↑
foo+ppr.tex         ⇓sem2ppr           │
┌─────────────────────────────────────┐   ⟶  PPRTdrk.sty
│ \documentclass[pdf,Tdrk]{prosper}     │               ↓
│ %\usepackage{SEMTdrk}                 │      PPRdefault.sty
│   ⋮                                   │
│ \begin{slide}{}                       │
└─────────────────────────────────────┘
```
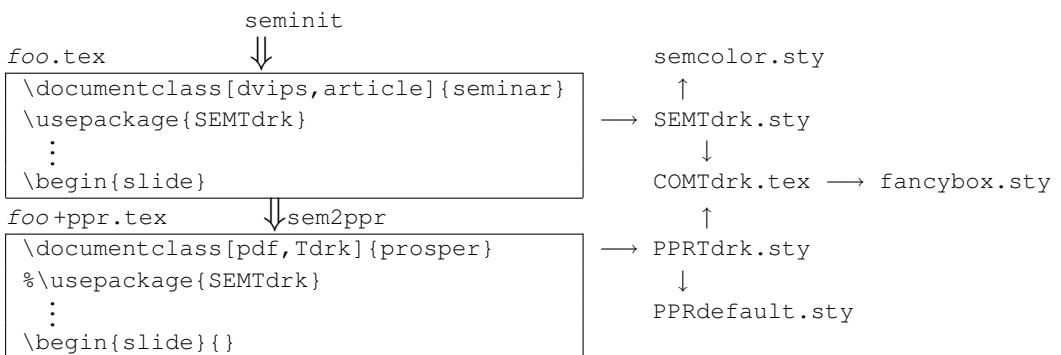
FIGURE 5. Source code conversion by `sem2ppr` (left) and loading sequence of related style files (right).

```
1   \newcommand{\overlays}[2]{#2}
2
3   \long\def\fromSlide{%
4     \@ifstar\fromSlide@E\fromSlide@NE}
5   \long\def\fromSlide@NE#1#2{#2}
6   \long\def\fromSlide@E#1#2{}
7
8   \long\def\onlySlide{%
9     \@ifstar\onlySlide@E\onlySlide@NE}
10  \long\def\onlySlide@NE#1#2{#2}
11  \long\def\onlySlide@E#1#2{}
12
13  \long\def\untilSlide{%
14    \@ifstar\untilSlide@E\untilSlide@NE}
15  \long\def\untilSlide@NE#1#2{#2}
16  \long\def\untilSlide@E#1#2{}
17
18  \newenvironment{itemstep}{\begin{itemize}}{\end{itemize}}
```

FIGURE 6. Deactivation of PROSPER-specific commands defined in SEMTdrk.sty.

```
1   \usepackage{fancybox}
2
3   \newcommand{\myframe}[1]{%
4     \shadowbox{\small #1}\hfill\llap{\rule{0.95\textwidth}{1pt}}}
5   \newcommand{\pagetop}[3]{%
6     \textcolor{#1}{\myframe{#2}}\llap{\raisebox{1ex}{\large #3}}%
7     \par\vspace{-0.5\slideparskip}}
```

FIGURE 7. Definition of \pagetop in COMTdrk.tex.

A.4   "Bird's eye slides" and "Ant's eye slides"

FIGURE 8 and 9 show typical examples of the source code for "bird's eye slides" and "ant's eye slides", respectively, using overlays.

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    http://norvig.com/lancet.html.

```
1    \overlays{3}{
2     \begin{slide}%{}<--Not needed because it is added by sem2ppr!
3     \begin{center}\doublebox{OVERVIEW}\end{center}
4     {\small\begin{center}Upgrade slides w/ Rule of Three!\end{center}}
5
6     \textcolor{blue}{\shadowbox{\TitleOne}}
7     \newline\hfill
8     \onlySlide*{1}{\slshape\IntroOne}
9     \fromSlide{2}{\SummaryOne}
10
11    \onlySlide{3}{
12     \par\smallskip\rule{\textwidth}{1pt}\par\smallskip\hfil\hfil
13     \begin{minipage}{0.9\textwidth}
14      \pagetop{green}{\TitleTwo}{}\hfill{\slshape\IntroTwo}
15     \end{minipage}\par\bigskip
16     \hfill
17     \begin{minipage}{0.9\textwidth}
18      \pagetop{red}{\TitleThree}{}\hfill
19                       \textcolor{gray}{\slshape\IntroThree}
20     \end{minipage}\par\bigskip
21    }
22     \end{slide}
23    }
```

FIGURE 8. Source code for Slide 10, one of the "bird's eye slides" shown in FIG. 4. \pagetop appears at the 14th and 18th lines (see FIG. 7.)

```
1    \overlays{2}{
2     \begin{slide}%{}<--Not needed because it is added by sem2ppr!
3     \pagetop{red}{\TitleThree}{Perspective preparation}
4     \includegraphics[width=\textwidth]{schedule}\par\medskip
5     \fromSlide{2}{
6     \quad\shortstack[l]{Bird's eye\\\& Ant's eye}
7     \includegraphics[width=0.4\textwidth]{bird-ant}\hfill
8     Easy to translate
9     }
10     \end{slide}
11    }
```

FIGURE 9. Source code for Slide 16, one of the "ant's eye slides" shown in FIG. 1.

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