

Lecture schedule (Mon/Wed 10:30–11:50, CYT G009B)

No programming work in the first three lectures

- **3 Feb (Mon)**
 - Course Introduction (L00)
 - Basics in figures and data presentation I (L01)
- **5 Feb (Wed)**
 - Basics in figures and data presentation II (L02)
- **10 Feb (Mon)**
 - Basics in figures and data presentation – Excercise (L03)

Translated and modified from



Design for Scientific Communication

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DASC 3240

L01 | Basics in figure and data presentation I

2024/25 SPRING SEMESTER

MASAYUKI USHIO, ASSISTANT PROFESSOR AT OCES
USHIO@UST.HK (RM CYT-2013)

Today's outline: Figure and data presentation

1. Introduction to “Figure and data presentation”
2. Font basics
 - Four criteria to choose correct fonts
3. Text layout
4. Better visualization aid
 - Layout
 - Color
 - Figure
5. License

Figure and data presentation

FONT, COLOR, AND LAYOUT

Reference book

亚马逊
amazon.cn
免费试享Prime

浏览
全部商品分类 ▾

我的亚马逊 Z秒杀 礼品卡 我要开店 海外购 帮助 In English

图书 高级搜索 所有分类 新品排行榜 销售排行榜 新书店 教材教辅 少儿 文学 小说 历史 经管 励志 人文社科 生活 科技科

图书 > 社会科学 > 新闻出版、图书馆、档案学

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[日] 高桥佑磨 片山夏 (作者), 林莉莉 (译者)

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(精确送达时间请于结账页面查询)

销售配送: 由亚马逊直接销售和发货。

Translated and modified from

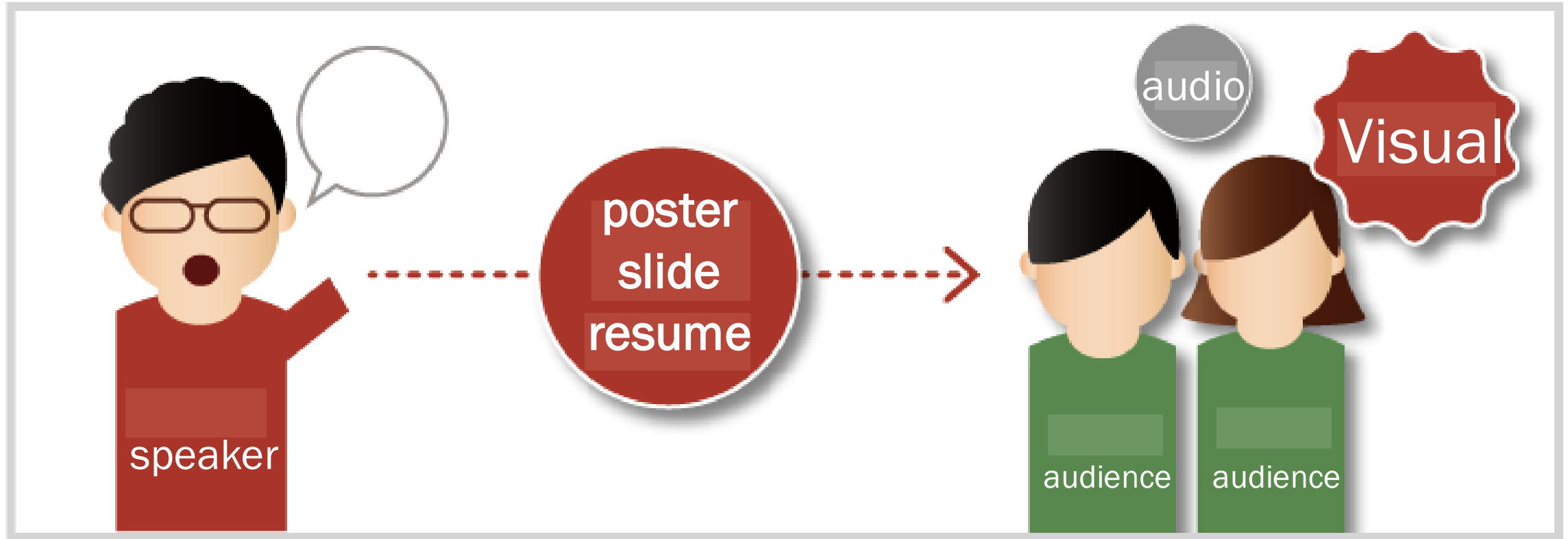
伝わるデザイン
研究発表のユニバーサルデザイン

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Powerful tool for academic communication

Information design



Visual sense is important

Purpose: effective communication

Summary

Better readable layout!

- care about spacing, font, line feed.
- use different font size and face for good contrast.

No single answer!

- best layout depends on situation.
- everyone has different sense and stance.

General rules for improvement!

- personality and rules are not conflicting.
- incorporate personality and general rules.

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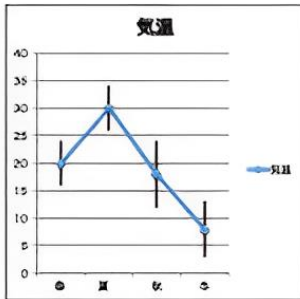
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Improving slides

- default setting is often no good.
- Just little effort and twist improve slides significantly



little twist important

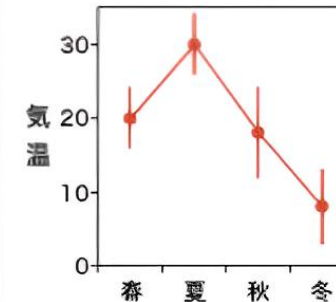
color&line

shape&size

little twist important

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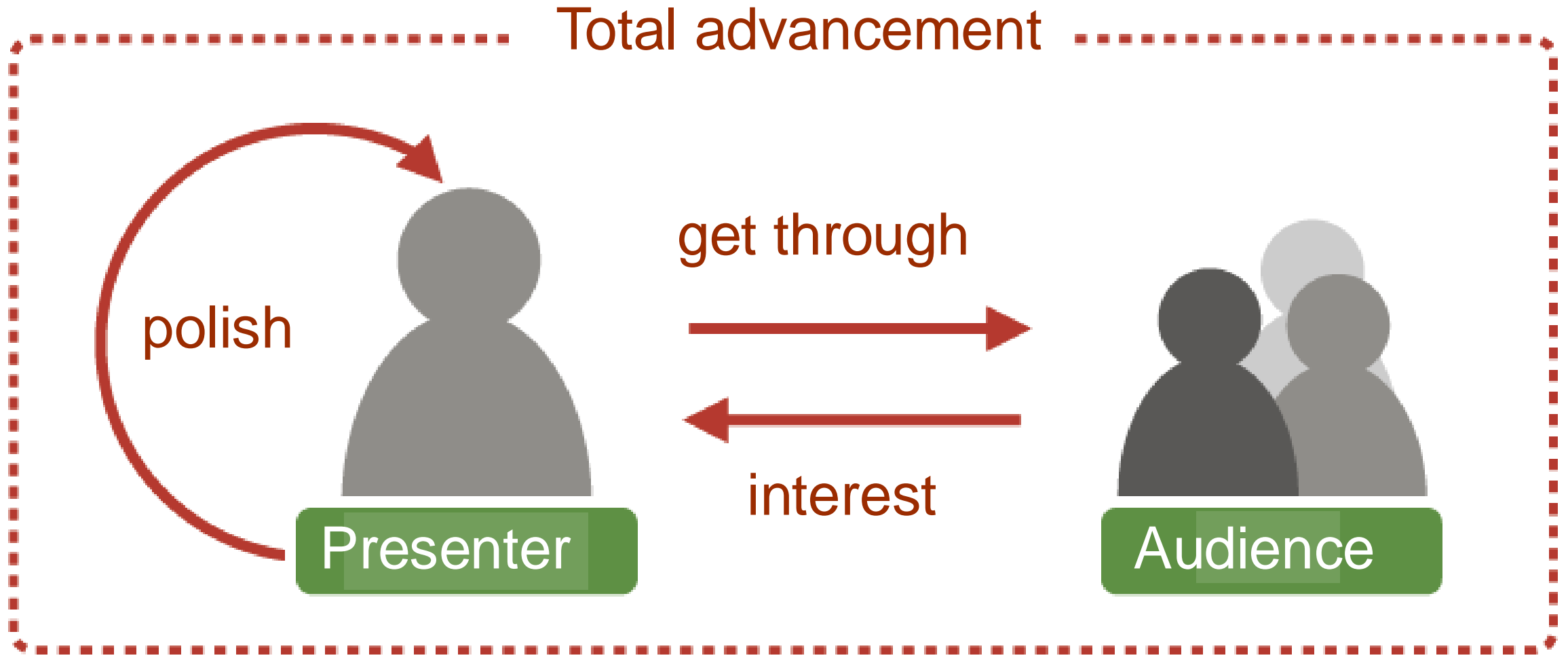
little twist important

color&line

shape&size

little twist important

What information design gives



Feedback between look and contents

Font basics

HOW TO CHOOSE A **CORRECT** FONT

How can we make our text accessible?



Readability

The diagram consists of two large circles side-by-side. The left circle is light gray and contains the word 'Readability'. The right circle is light blue and contains the word 'Legibility'. Both circles are centered horizontally and vertically on the slide.

Legibility

How can we make our text accessible?



Readability

Readability describes how comfortable it is for a person to engage with text created.

Readability

Readability

Readability

Readability

Readability

Readability

How can we make our text accessible?



Legibility

A typeface's glyphs can be correctly identified as characters and words, including how individual characters can be distinguished from one another.

1li o00

1li o00

1 l i o00

1li o00

1li o00

1li o0o

Glosary in the Google Fonts website



× Sections

Knowledge > Glossary

Glossary

Within the vast realms of typography, text, and fonts, the glossary compiles an extensive range of definitions, encompassing a multitude of commonly used terms. Whether to gain a deeper understanding of typographic nuances or explore the intricacies of font design, this section provide succinct yet comprehensive explanations.



A-D

A-D

E-H

I-S

T-Z

▽=e Δ=i ▷=o ◁=a
▷=ne ◁=ni ▷=no ◁=na
▽=ve Δ=vi ▷=vo ◁=va

Abugidas &
alphasyllabary

Left-aligned text
Right-aligned text
Center-aligned text
Justified text

Alignment & justification

How can we make our text accessible?

Low legibility

III 00o
111 000o

High legibility

1l 00o
11 000o

Low readability

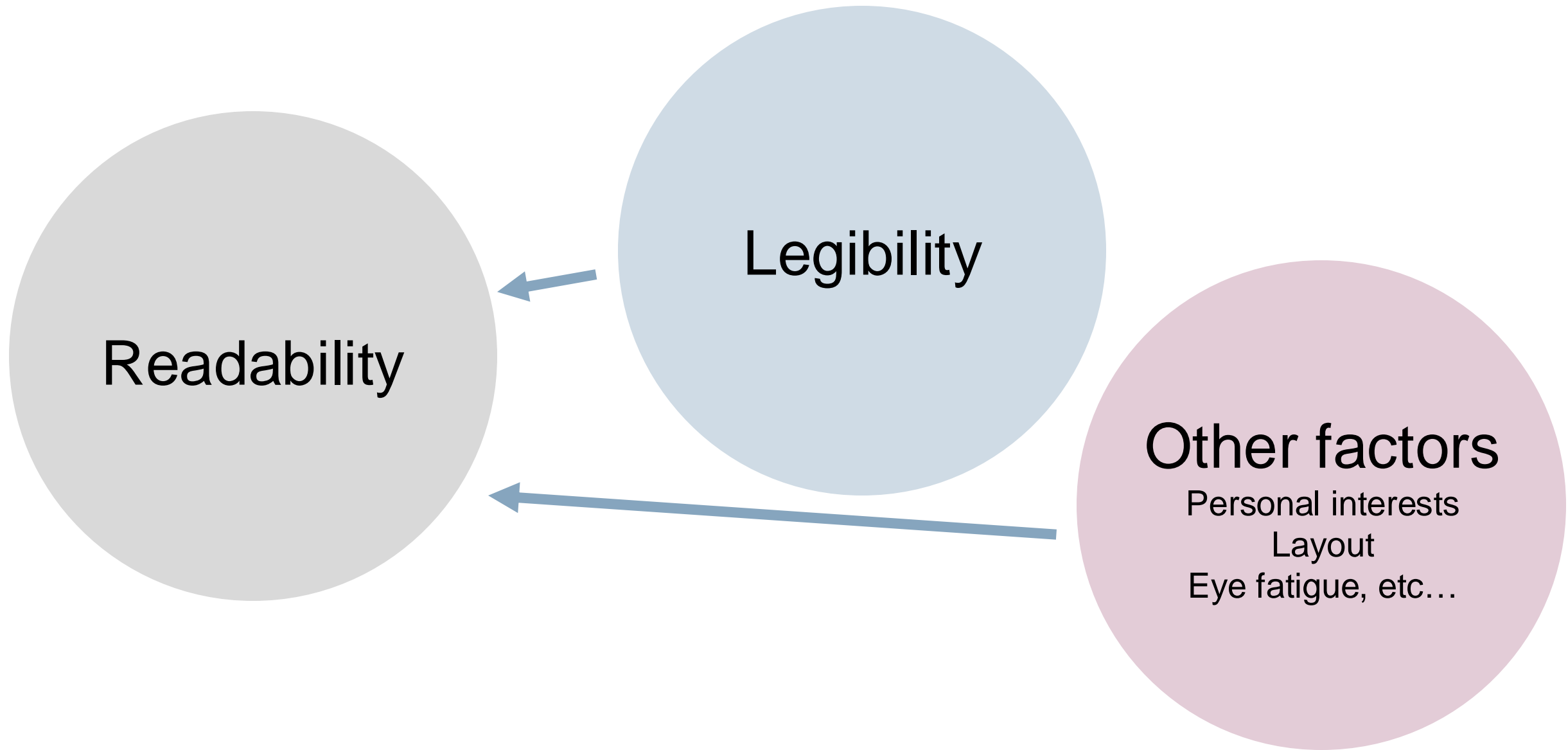
You would acknowledge
the existence of abstract
ideas, such as justice,
beauty, good, evil, which
are severally one, yet in
their various combi-
nations appear to be
many. Those who
recognize these realities

High readability

You would acknowledge the existence of abstract ideas, such as justice, beauty, good, evil, which are severally one, yet in their various combinations appear to be many. Those who recognize these realities are philosophers; whereas the other class hear sounds and see colours, and understand their use in the arts, but cannot attain to the true or waking vision of absolute justice or beauty or truth; they have not the light of knowledge, but of

Top row: A comparison between less legible type set in Gill Sans and Prosto One (left) with more legible type set in Raleway and Noto Sans (right). Bottom row: A comparison between less readable type (left) with more readable type (right). Both paragraphs are set in Roboto and share the same absolute value of line-height for 9 lines, but different font-size values.

How can we make our text accessible?



Font choice

Google

font quiz



serif typefaces

Times

Garamond

T
G

sanserif typefaces

Arial

Corbel

A
C

I LOVE TYPOGRAPHY: BLOG HOME STORE HOME

DEALS OF THE WEEK: 50% off!

The Font Game (level 1)

The **Font Game** is back! Thirty multiple-choice questions to test your font identification skills. This is level one. The game is not timed, so take your time and good luck!

Oh, and if you can **score 50% or more**, then you'll win a gift voucher for 10% off **fonts**!

#1. Myriad

fargo



A

fargo



B

fargo



C

fargo



D

<https://ilovetypography.com/2020/07/01/the-font-game/>

Four criteria to choose correct fonts

HOW TO CHOOSE A **CORRECT** FONT

Four criteria to choose correct fonts

1. Sentence; long or short? (e.g., main text or heading?)
2. Easy to read and beautiful font?
3. Bold and italic faces available?
4. Universal design?

Criterion 1: Sentence; long or short?

sanserif typefaces

Multiple matings are often favored in males rather than females, leading a conflict between sexes over mating. Recent laboratory experiments using model organism have provided evidences that the conflict is an important selective force, and that females are consequently expected to evolve mechanisms to avoid unwilling matings. Female polymorphism is thought to be one of the evolutionary responses against the sexual conflict.



serif typefaces

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For long text, serif such as **Times New Roman** is better.

Criterion 1: Sentence; long or short?

Thick serif

Multiple matings are often favored in males rather than females, leading a conflict between sexes over mating. Recent laboratory experiments using model organism have provided evidences that the conflict is an important selective force, and that females are consequently expected to evolve mechanisms to avoid unwilling matings. Female polymorphism is thought to be one of the evolutionary responses against the sexual conflict.



Thin serif

Multiple matings are often favored in males rather than females, leading a conflict between sexes over mating. Recent laboratory experiments using model organism have provided evidences that the conflict is an important selective force, and that females are consequently expected to evolve mechanisms to avoid unwilling matings. Female polymorphism is thought to be one of the evolutionary responses against the sexual conflict.

Thin serif is better for long text.

Criterion 1: Sentence; long or short?

Thin sanserif

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If you don't like serif typefaces, use “thin” sanserif to increase readability.

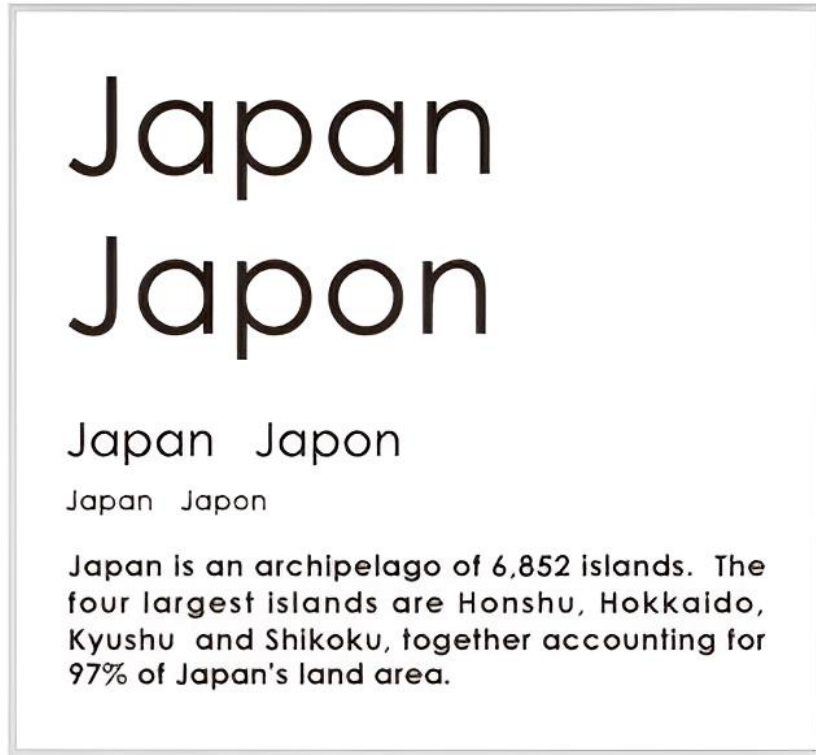
Criterion 1: Sentence; long or short?

Thick sanserif heading

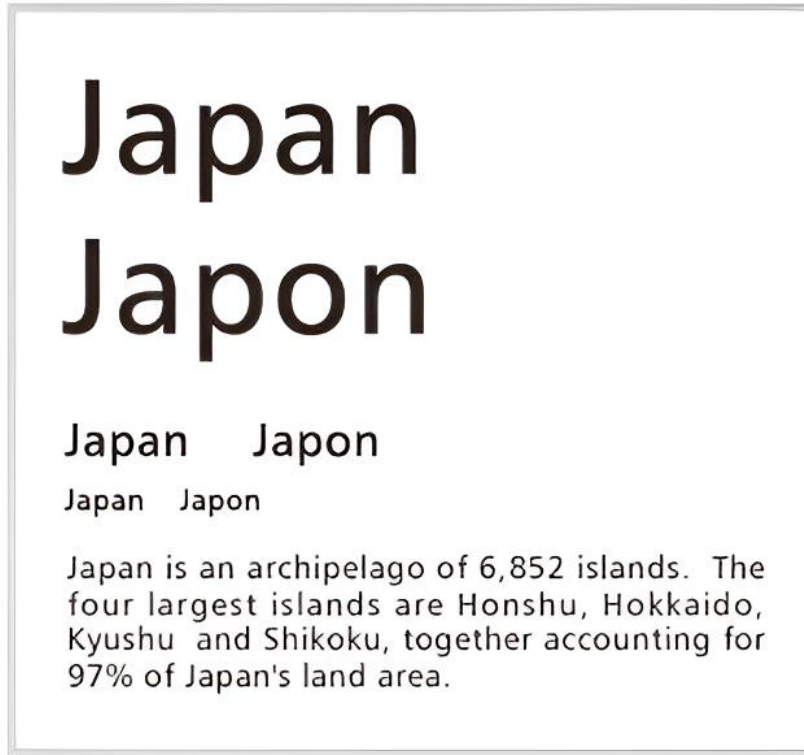
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Use thick sanserif font for heading (e.g., bold Helvetica)

Criterion 2: Easy to read and beautiful font?



Century Gothic



Frutiger

Use legible fonts (e.g., see “a” v.s. “o”)

Criterion 2: Easy to read and beautiful font?

Road
Road

Century Gothic

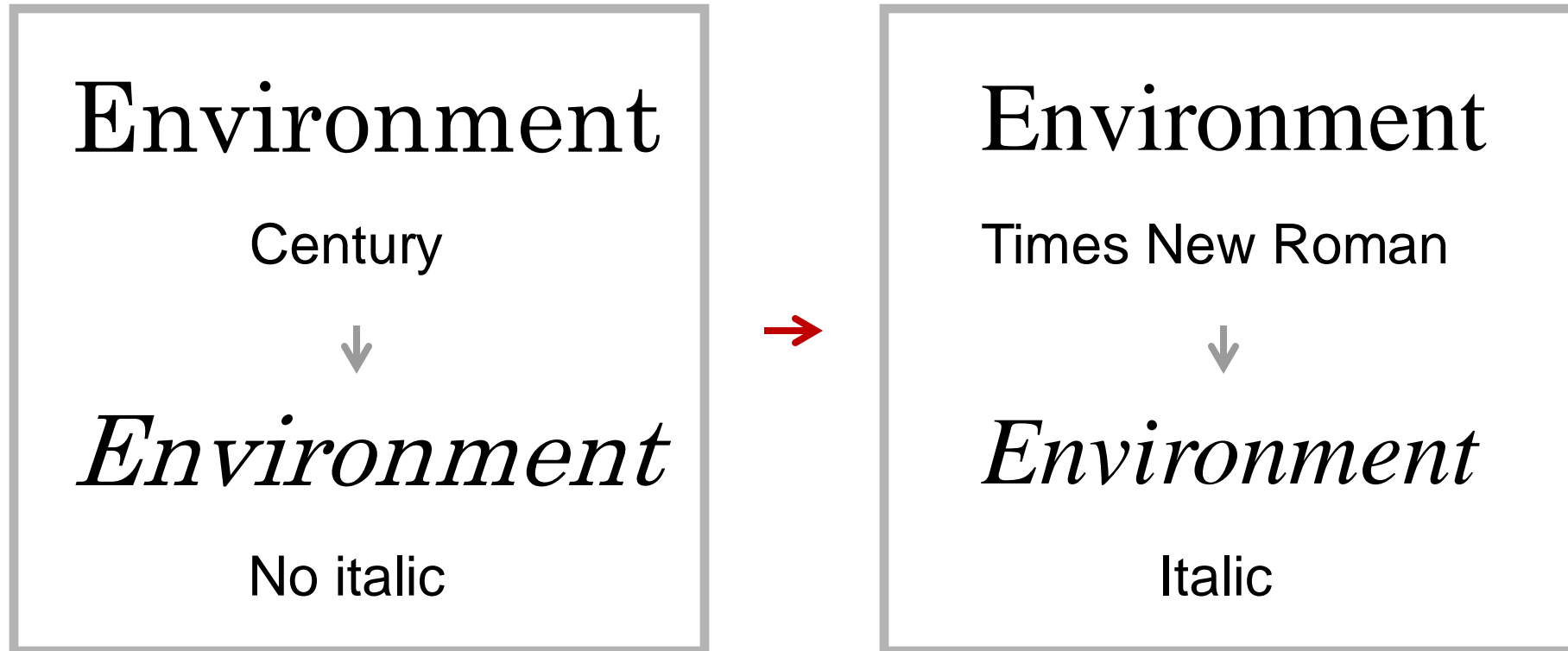


Road
Road

Frutiger

“A” or “O”??

Criterion 3: Bold and italic faces available?

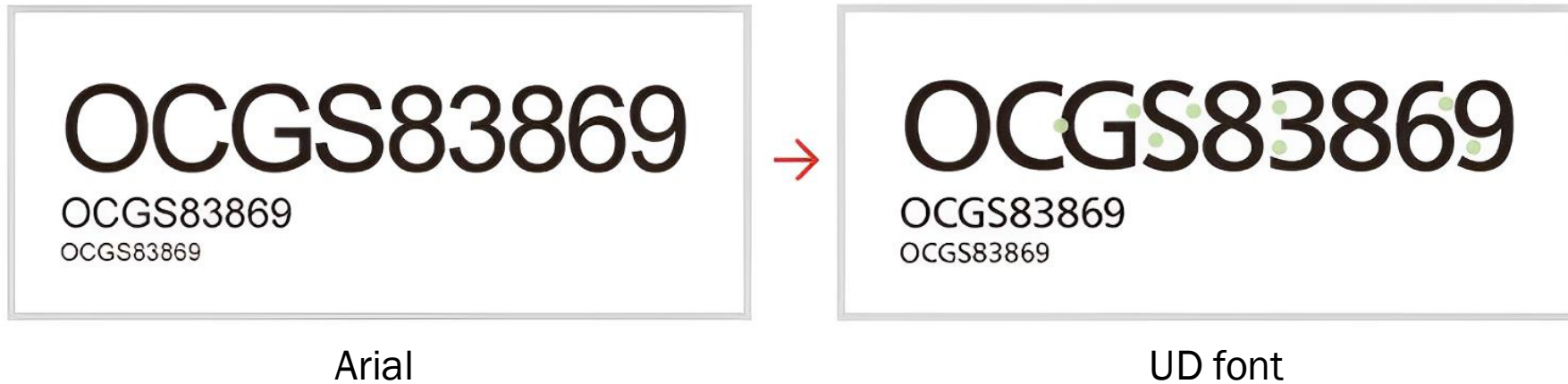


For Times New Roman, italic faces are specifically designed.

For Century, it is “pseudo-italic” (not designed, but just leaned).

Criterion 4: Universal design (UD)?

UD is the design that are accessible and usable by as many people as possible, regardless of their age, ability, or status.



UD font has higher readability, but many of them are not free.

Criterion 4: Universal design (UD)?

Google Fonts Search fonts Sort by: Trending

Specimen Type tester Glyphs About & license Download family

Roboto

Designed by Christian Robertson

Whereas disregard and contempt for human rights have resulted

Select preview text: Continent Language

Styles

Type here to preview text 48px

Thin 100

Whereas recognition of the inherent dignity

Thin 100 Italic

Whereas recognition of the inherent dignity

Light 300

Whereas recognition of the inherent dignity

Select Light 300

Light 300 Italic

Whereas recognition of the inherent dignity

Select Light 300 Italic

Regular 400

Whereas recognition of the inherent dignity

Select Regular 400

Regular 400 Italic

Whereas recognition of the inherent dignity

Select Regular 400 Italic

Medium 500

Whereas recognition of the inherent dignity

Select Medium 500

Medium 500 Italic

Whereas recognition of the inherent dignity

Select Medium 500 Italic

Bold 700

Whereas recognition of the inherent dignity

Select Bold 700

<https://fonts.google.com/specimen/Roboto>

Other tips

Do not use monospaced font

I n t r o d u c t i o n

Monospaced fonts (e.g., Courier New)



Introduction

Proportional fonts (many other fonts)

Do not use monospaced font

Monospaced font

Establishment of geographic morph frequency clines is difficult to explain in organisms with limited gene flow. Balancing selection, such as negative frequency-dependent selection (NFDS), is instead suggested to establish a morph frequency cline on a geographic scale at least theoretically.



Proportional font

Establishment of geographic morph frequency clines is difficult to explain in organisms with limited gene flow. Balancing selection, such as negative frequency-dependent selection (NFDS), is instead suggested to establish a morph frequency cline on a geographic scale at least theoretically.

Readability is low...

Be careful about “full justification”

①

Presentation is the practice of showing and explaining the content of a topic to an audience or learner. A presentation program, such as Microsoft PowerPoint, is often used to generate the presentation content (Wikipedia).

②

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Presentation is the practice of showing and explaining the content of a topic to an audience or learner. A presentation program, such as Microsoft PowerPoint, is often used to generate the presentation content (Wikipedia).

OK for a wide box, but awkward for a narrow box

Some standard fonts for scientific papers/posters

- **Times New Roman** for text
- **Helvetica** for figures
- Other nice fonts
 - Sanserif: **Arial, Helvetica Neue, Calibri**
 - Serif: **Palatino, Minion Pro, Cambria**

Some standard fonts for scientific papers/posters

- Times New Roman: Typography 12345
- Palatino: Typography 12345
- Cambria: Typography 12345

- Helvetica: Typography 12345
- Helvetica Neue: Typography 12345
- Arial: Typography 12345
- Calibri: Typography 12345

Impression is decided by fonts!

Summary

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Text layout

ALIGNING, GROUPING, AND CONTRAST

Some tips to make your layout beautiful



Aligning

Grouping

Contrasting

Aligning and adding indents

Aligning

Care about spacing, font, line feed.
Use different font size and face for good contrast. Best layout depends on situation.
Everyone has different sense and stance.
Personality and rules are not conflicting.
Incorporate personality and general rules.

Add Indents (and bullets)

- Care about spacing, font, line feed.
- Use different font size and face for good contrast. Best layout depends on situation.
- Everyone has different sense and stance.
Personality and rules are not conflicting.
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Grouping and customizing bullets

Grouping

- Care about spacing, font, line feed.
- Use different font size and face for good contrast. Best layout depends on situation.
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Customize bullets

- Care about spacing, font, line feed.
- Use different font size and face for good contrast. Best layout depends on situation.
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Compare the first and last versions

Care about spacing, font, line feed.
Use different font size and face for good contrast. Best layout depends on situation.
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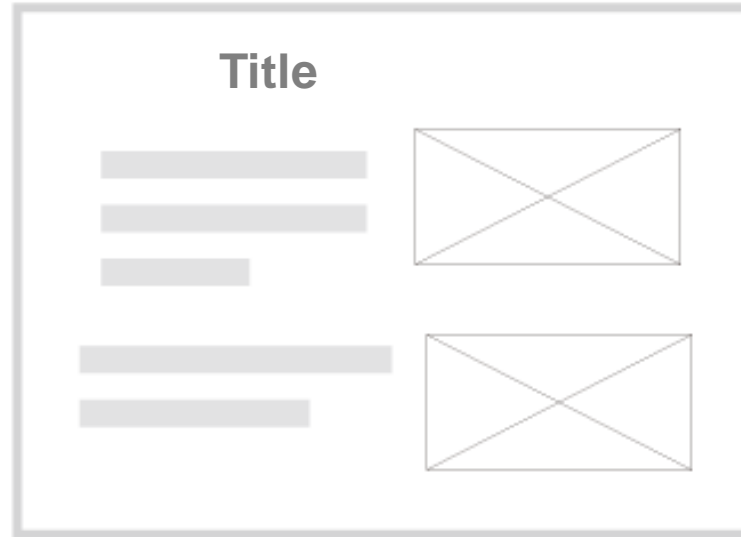
- ✗ Human-induced marine ecological degradation : micropaleontological perspectives
- Human-induced marine ecological degradation: micropaleontological perspectives
- ✗ Latitudinal species diversity gradient of marine zooplankton for the last three million years
- Latitudinal species diversity gradient of marine zooplankton for the last three million years

Better visual aid

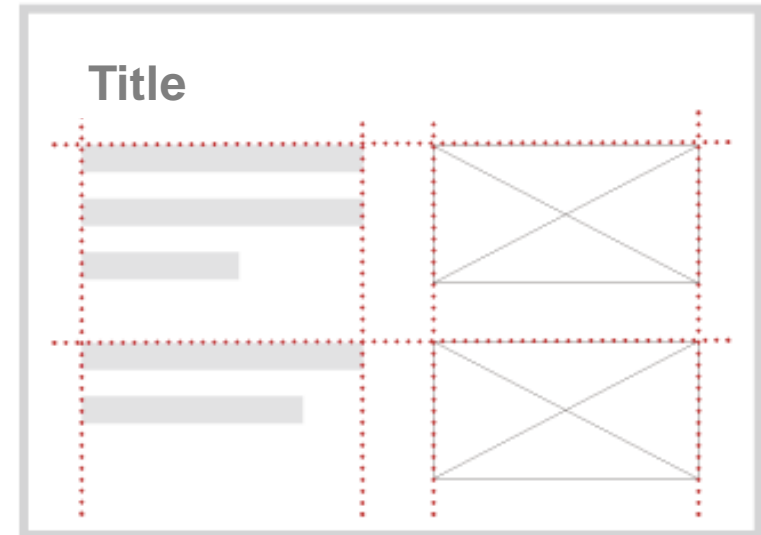
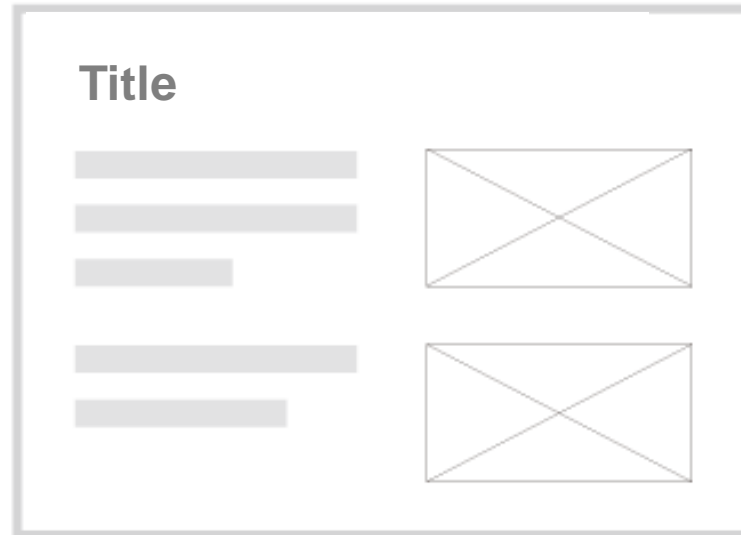
LAYOUT, COLOR, AND FIGURE

Layout | Alignment

Before alignment



After alignment

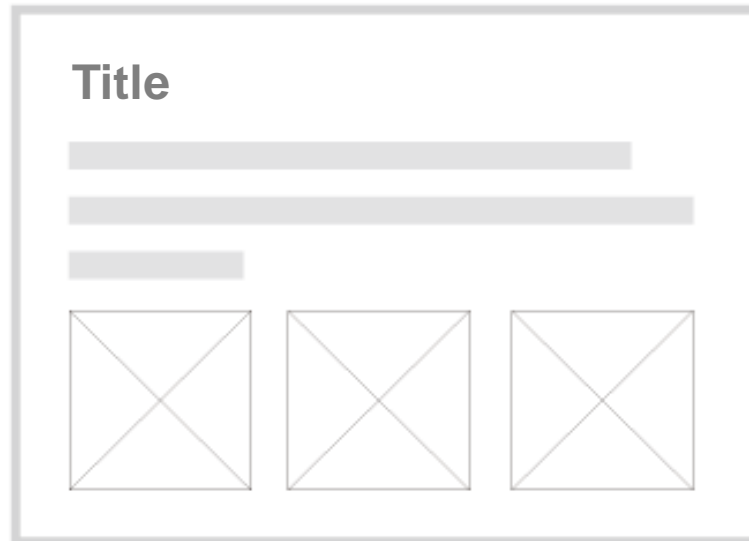


Layout | Alignment

Before alignment

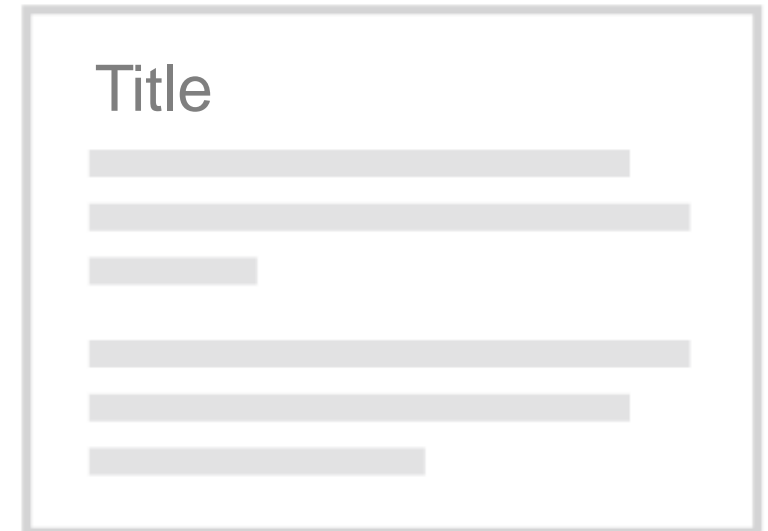
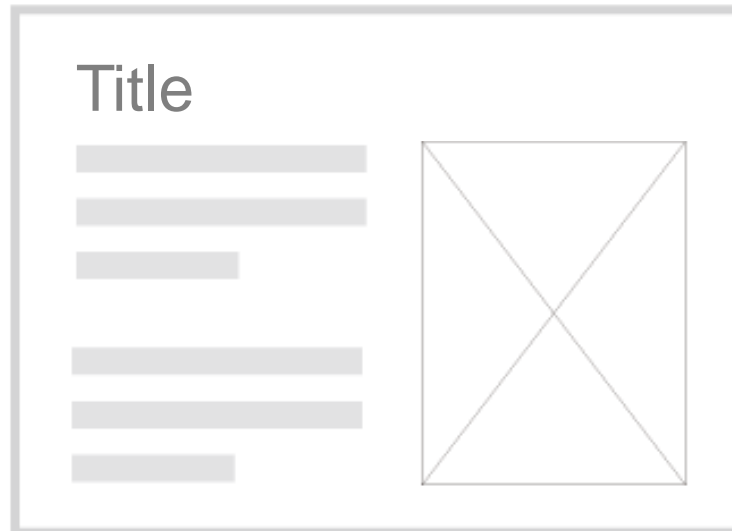
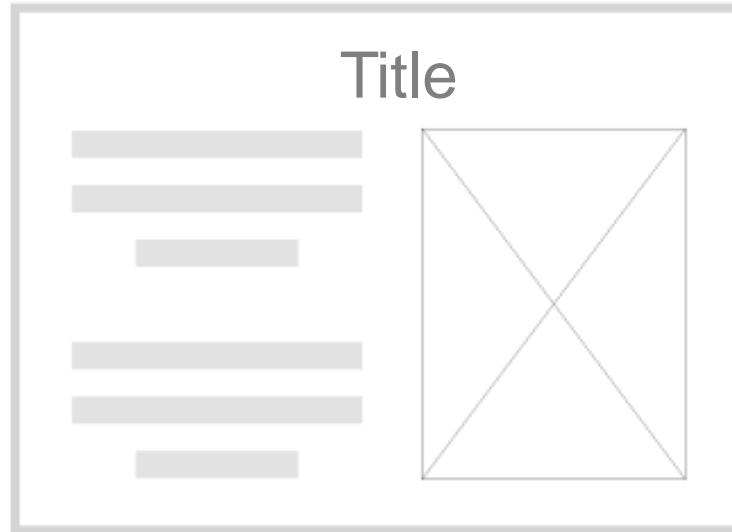


After alignment



Layout | Centering is not good

Centering is not recommended.



Grouping for better understand

Flower

- I am talking about flowers
- Red and white flowers

Cow

- I am talking about cows
- Many cows



Grouping for better understand



Flower

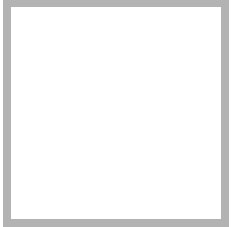
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Cow

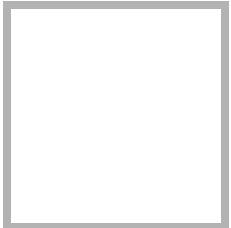
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- Many cows

Grouping for better understand



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- Many cows

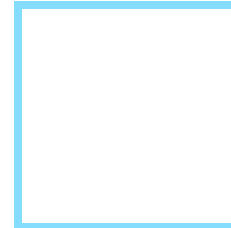


Grouping for better understand



Flower

- I am talking about flowers
- Red and white flowers



Cow

- I am talking about cows
- Many cows

Layout | Grouping

Grouping for highlighting

Grouping is important for highlighting, because of bra bra bra. However bra bra bra. Thus this is very bra bra bra. Grouping is important for highlighting, because of bra bra bra. However bra bra bra. Thus this is very bra bra bra. Grouping is important for highlighting, because of bra bra bra.

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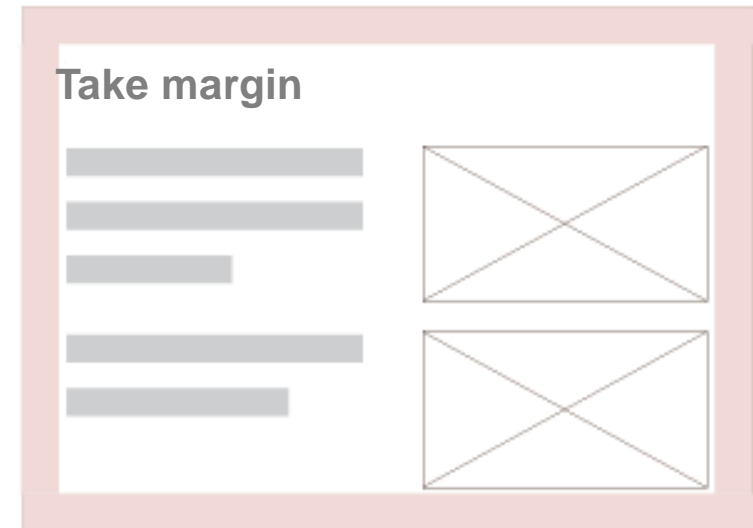
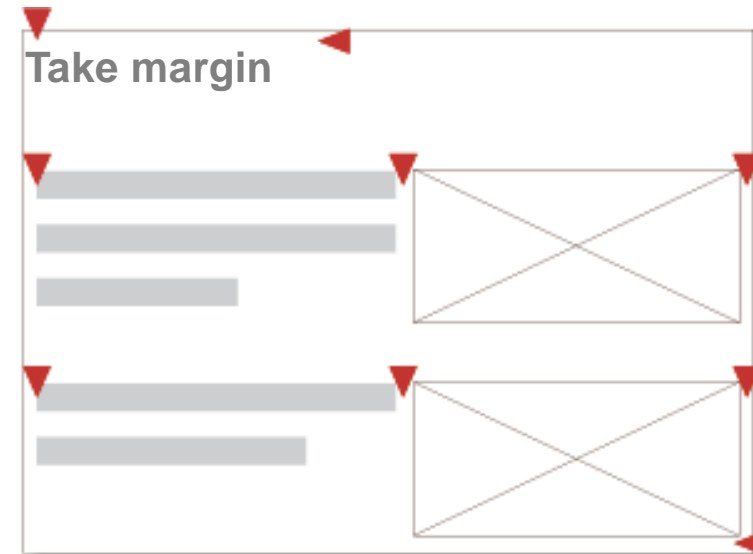
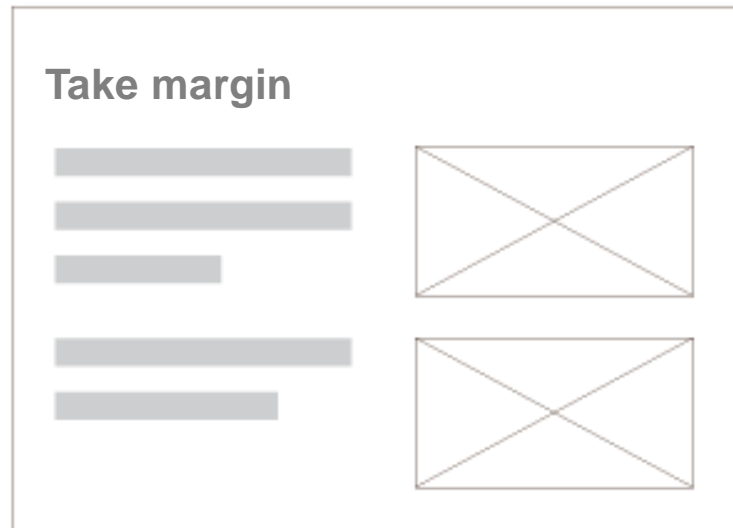
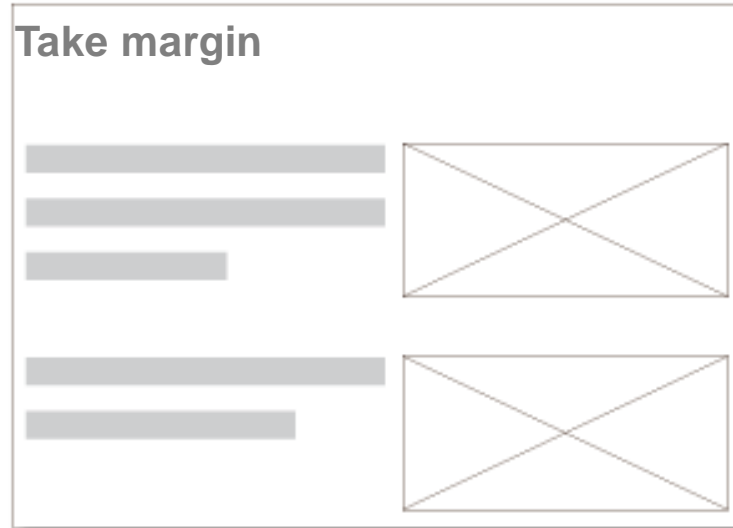
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Layout | Margin



Layout | Margin

Margin is important

Margin is very important because if you did not take enough margins in your slides, it will very awkward and difficult to read.



Margin is important

Margin is very important because if you did not take enough margins in your slides, it will very awkward and difficult to read.

Adapt to NEW environment



Adapt to NEW environment

Making better slides

- **Use good font to make better readable characters and text.**
- **Arrange text and figure good in shape, to make whole layout better.**
- **Use not only font, but also figure and cartoon for better slide**

Designing information is very important!



Making better slides

- Use good font to make better readable characters and text.
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Designing information is very important!

Effective use of bold, color, and size for contrast

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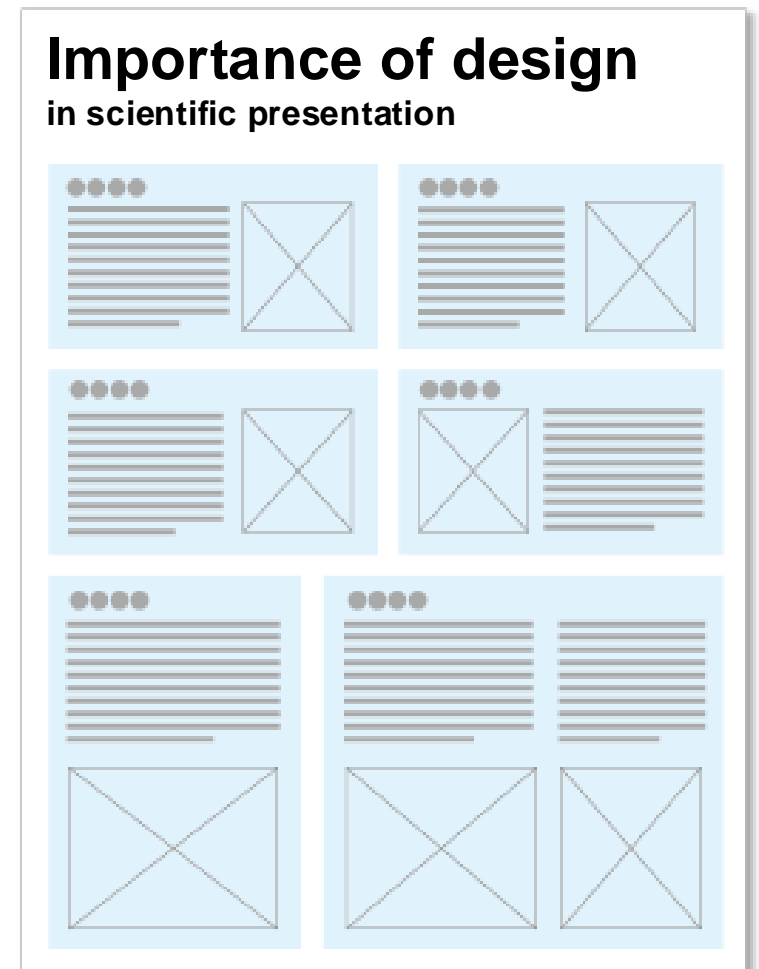
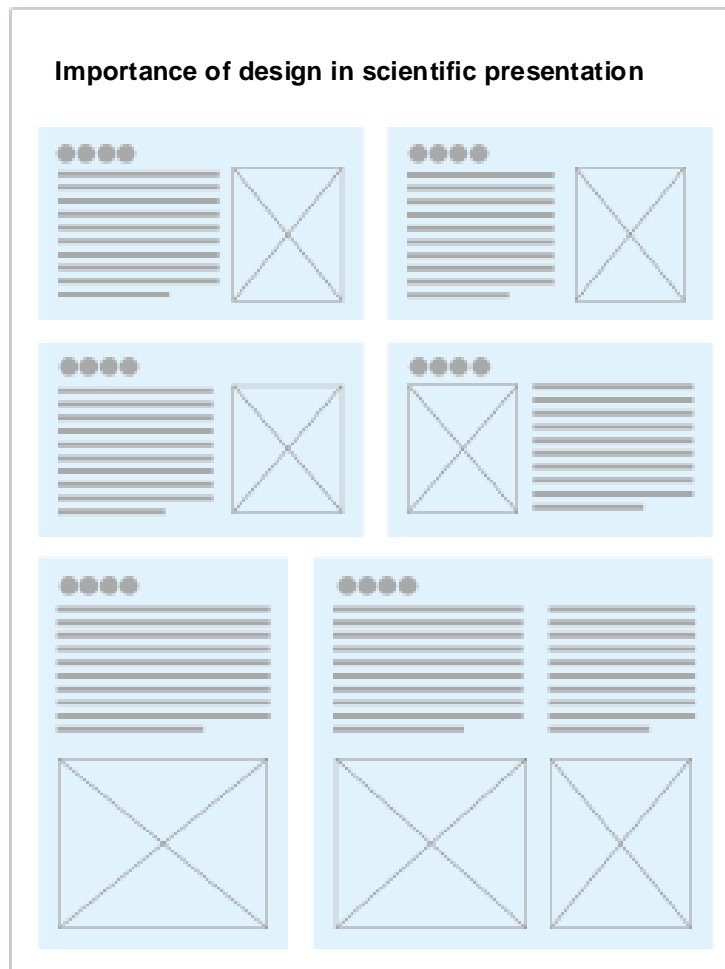
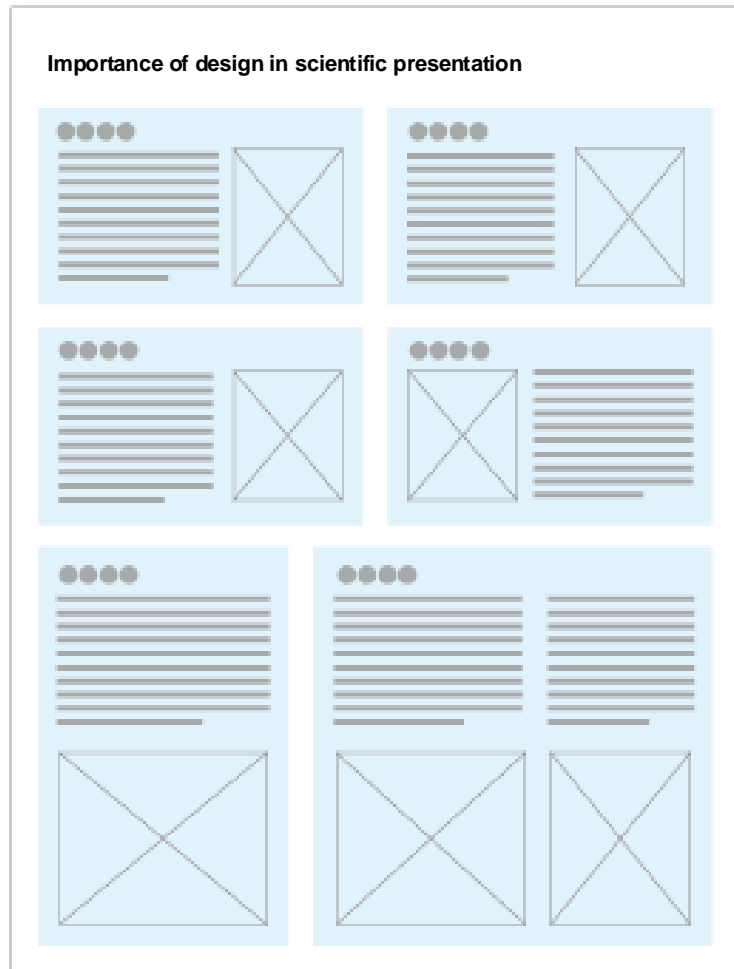
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Using multiple colors is sometimes difficult

Layout | Font



Use a bigger heading and title relative to the main text

Layout | Emphasize headings

Orig

STATISTICAL ANALYSES

All statistical analyses were performed using R version 2.9.0 (R Development Core Team 2009, Vienna, Austria). All values were presented as means with the standard error of the mean.



Bold

STATISTICAL ANALYSES

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Color

STATISTICAL ANALYSES

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Size

STATISTICAL ANALYSES

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Layout | Emphasize headings

Font

STATISTICAL ANALYSES

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Line

STATISTICAL ANALYSES

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Italics

STATISTICAL ANALYSES

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No >3
comb

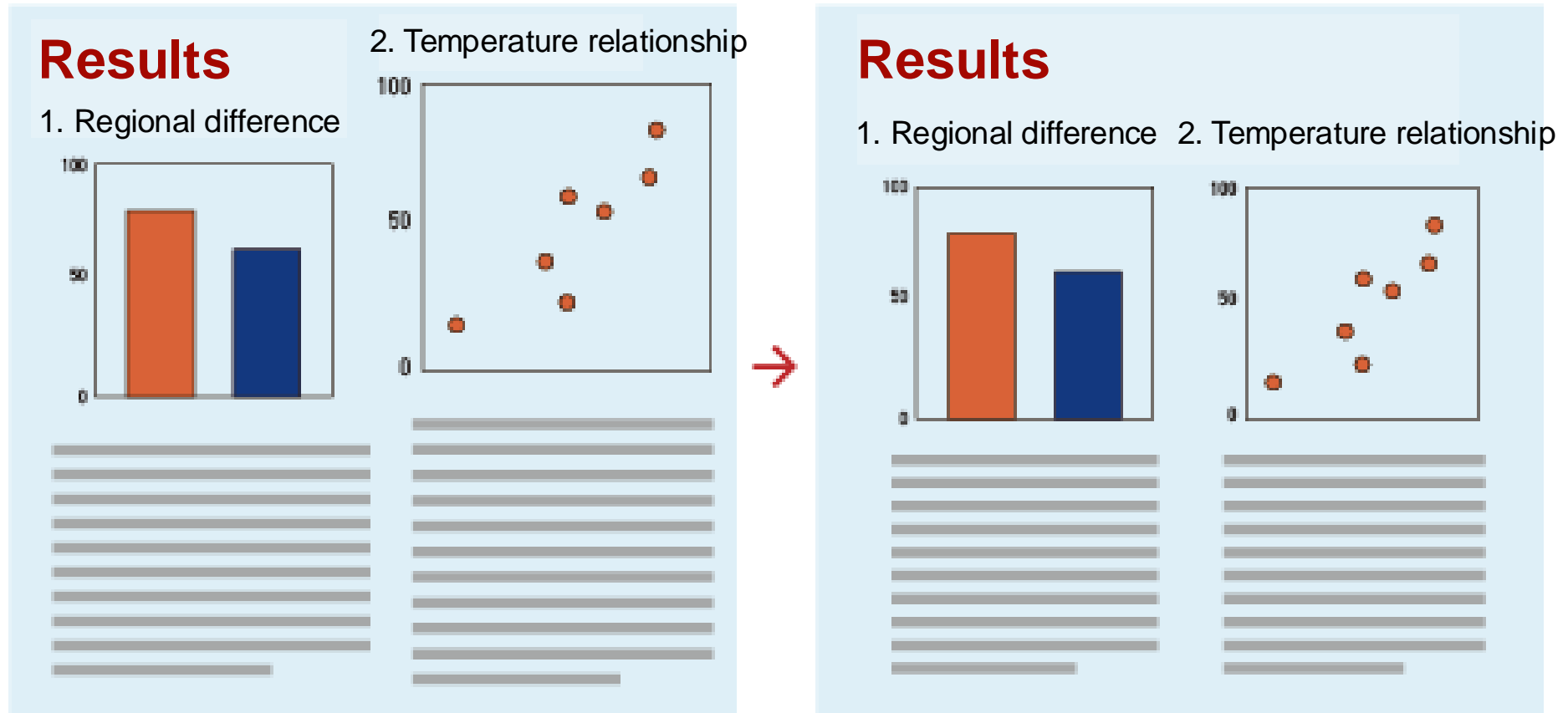
STATISTICAL ANALYSES

All statistical analyses were performed using R version 2.9.0 (R Development Core Team 2009, Vienna, Austria). All values were presented as means with the standard error of the mean.

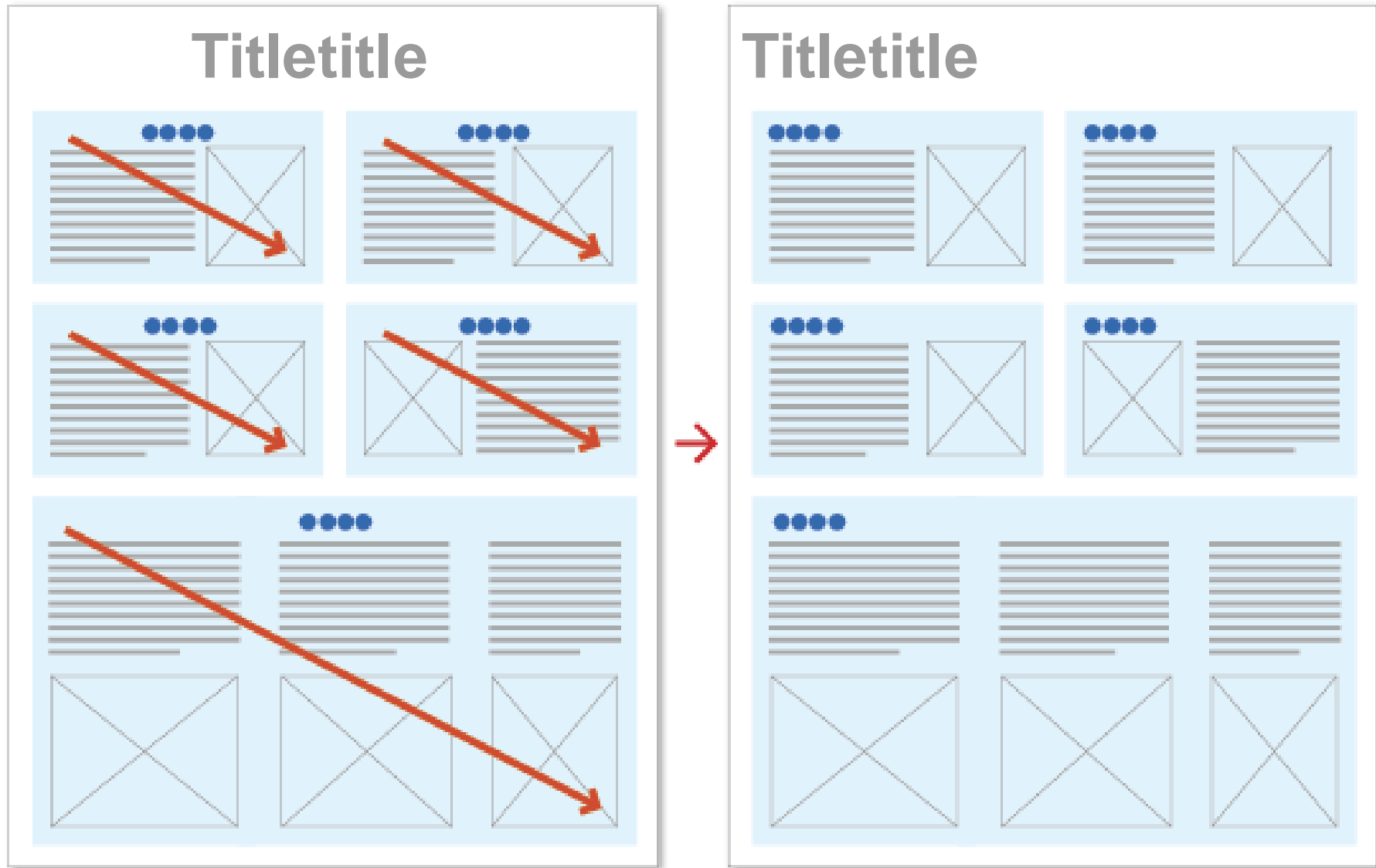
Layout | Avoid to put contents above the title



Layout | Avoid to put contents above the title



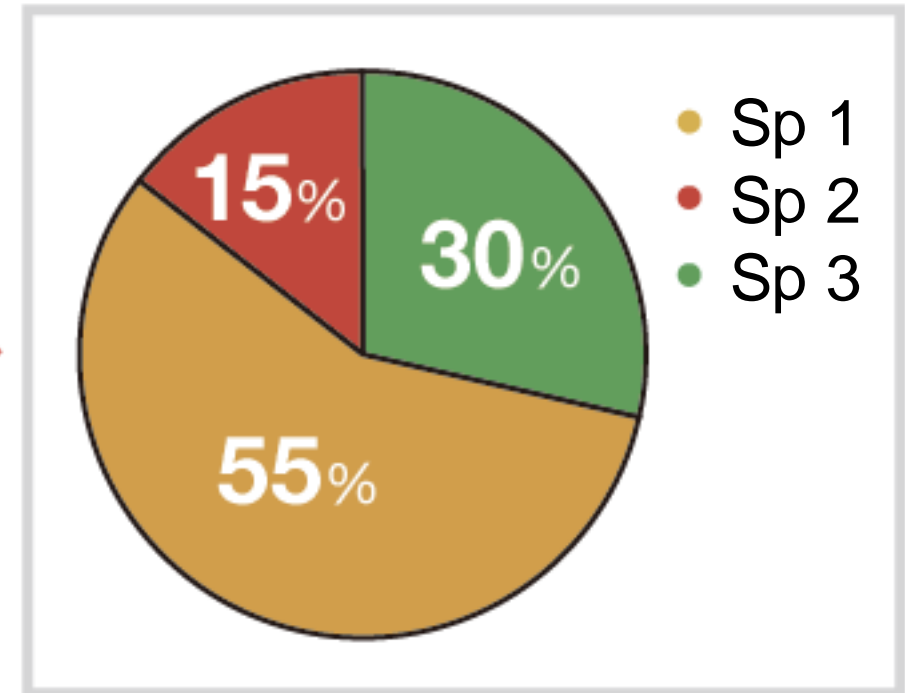
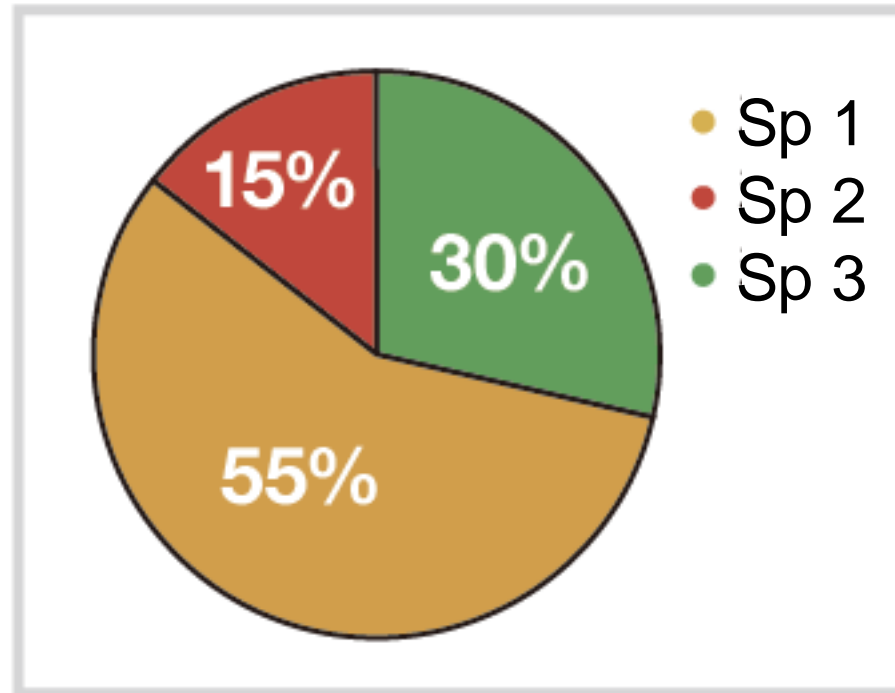
Layout | Align left and care the direction



Some other tips | Numbers

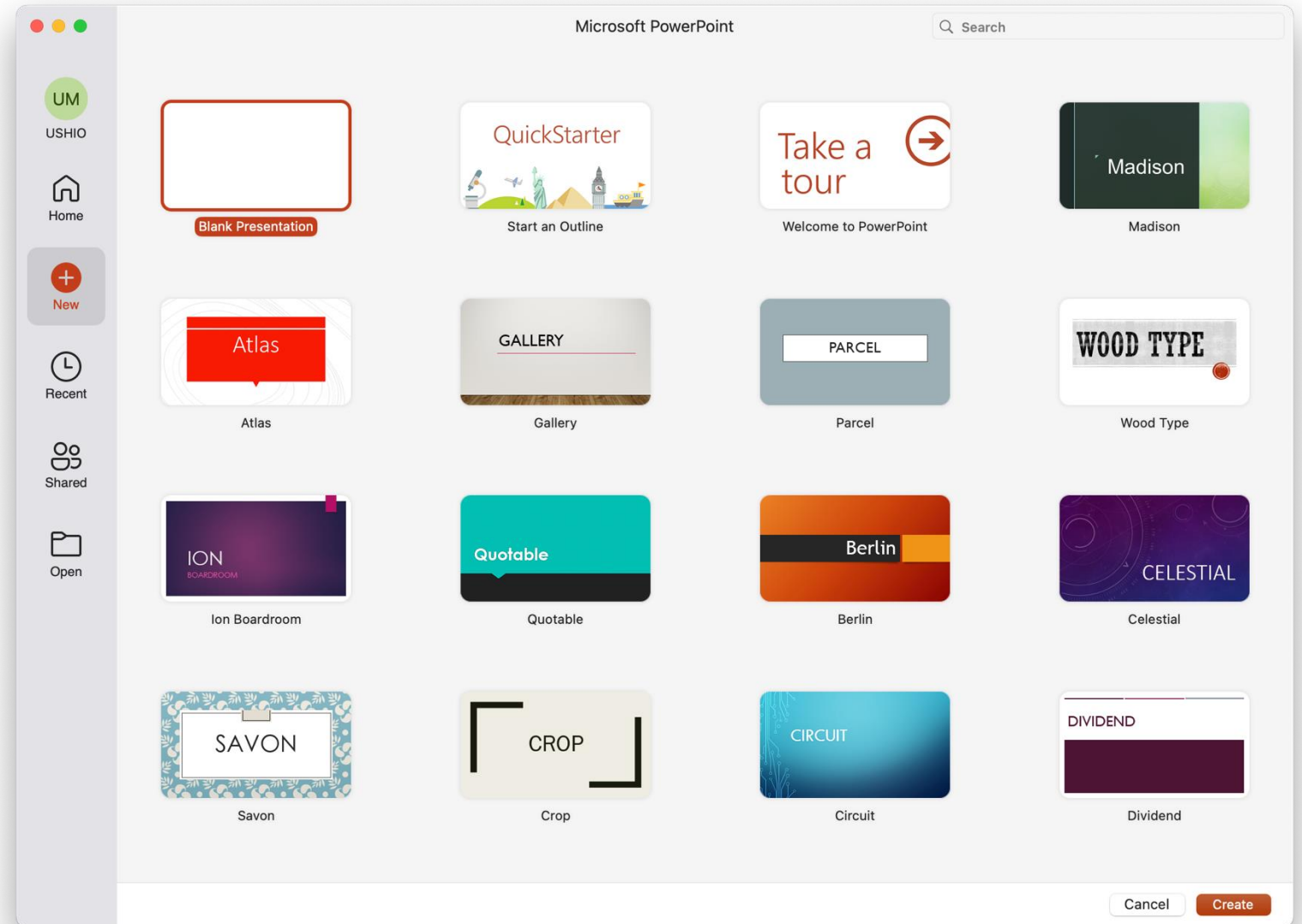
Use small numerics and large unit

3°C 20%
↓ ↓
3°C 20%
↓ ↓
3°C 20%
↓ ↓
3°C **20%**



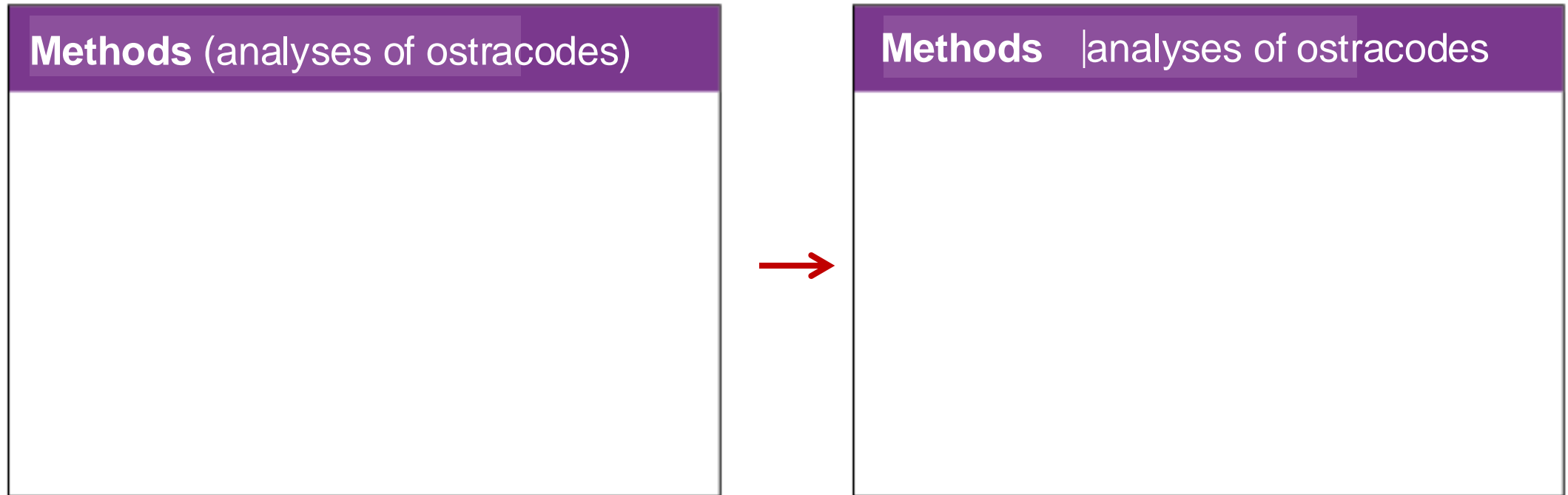
Some other tips | Backgrounds

Use simple backgrounds



Some other tips | Parenthesis

Parenthesis may not be cool



You may avoid colon

Caution: Serious geo-hazard

Note: Prepare for geo-hazard

Caution Serious geo-hazard

Note Prepare for geo-hazard