4840-1055:
Non-Research Tips for Information Science Researchers
情報科学研究補助技法 (Summer 2024)

Slides

Koya Narumi | Keio University | https://narumi.me/

Disclaimer

Slide design is totally up to you

You learn some design methods, but don't need to stick to them.

Quality-vs-time tradeoff

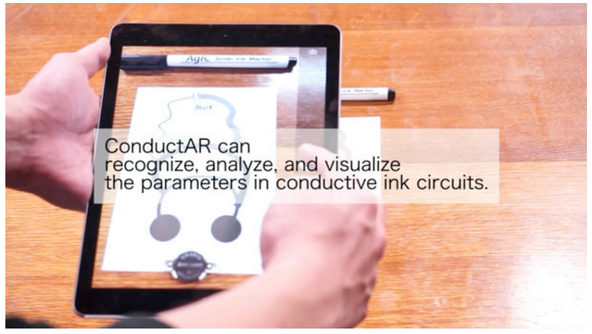
Any type of good presentation requires **long time** to prepare.
Consider how much time you can spend for preparation.

Presentation is as important as research

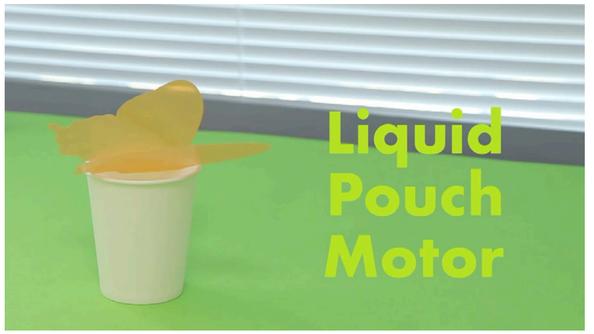
If no one knows, good research is useless.

Presentation lasts even after you leave academia.

Circuit Eraser
ACM CHI EA 2015, Kickstarter

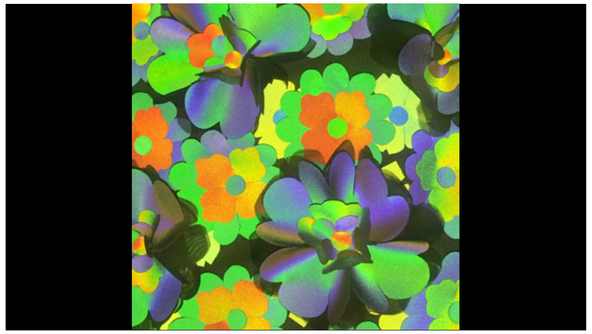


ConductAR
ACM UbiComp 2016

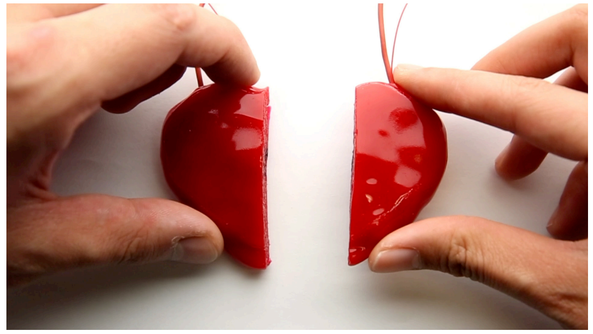


Liquid Pouch motors
IEEE ICRA 2017, IEEE RA-L 2020

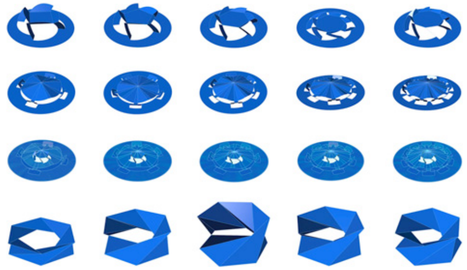
Papilion
Ars Electronica 2017



A LIVE UN LIVE
六本木クロッシング 2018



Self-healing UI
ACM UIST 2019

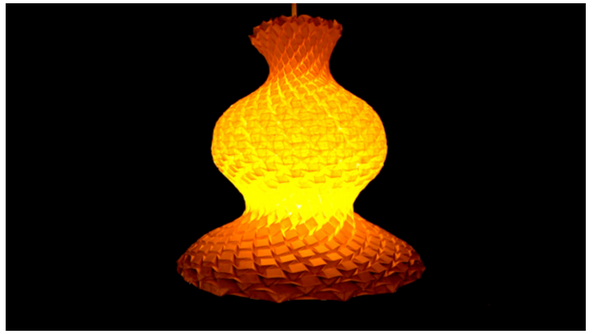


Kirigami Haptic Swatches
ACM CHI 2020

Pop-up Print
ACM UIST 2020

poimo
ACM UIST 2020

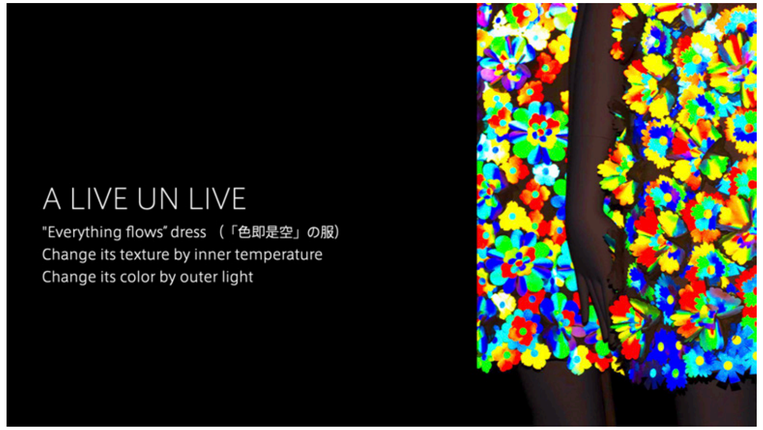
Flower Jelly Printer
ACM CHI 2021



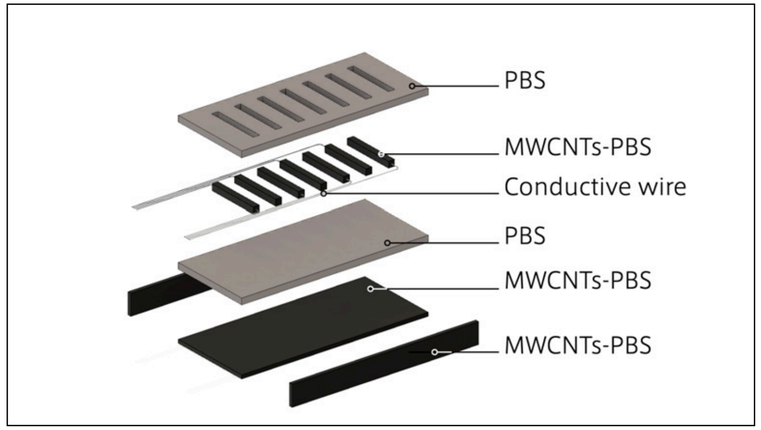
Crane
ACM TOCHI (CHI) 2023

Inkjet 4D Print
ACM TOG (SIGGRAPH) 2023

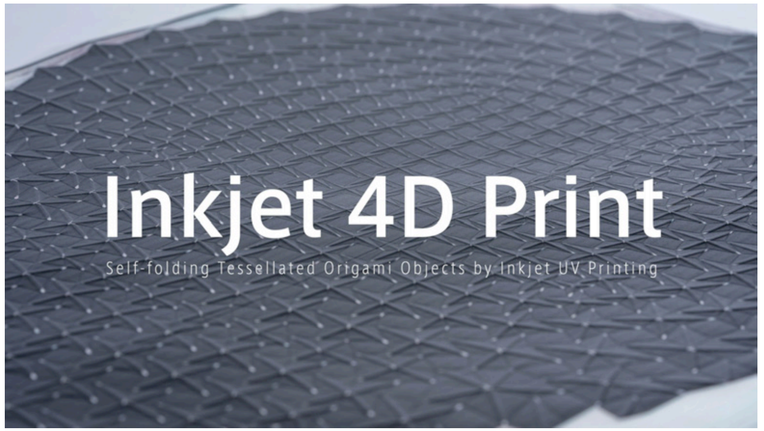
Lets study three presentation methods



Week 3: **Slides**

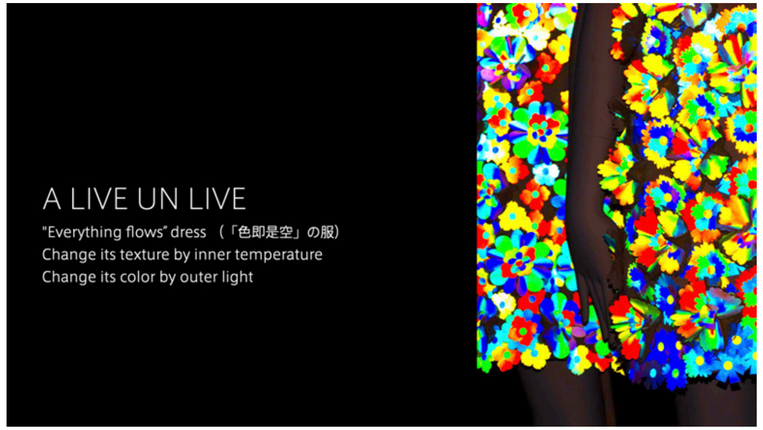


Week5: **Figures**



Week6: **Videos**

Lets study three presentation methods



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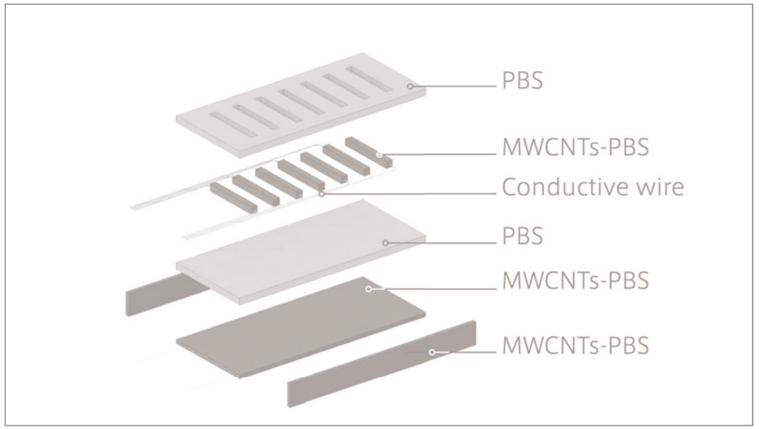
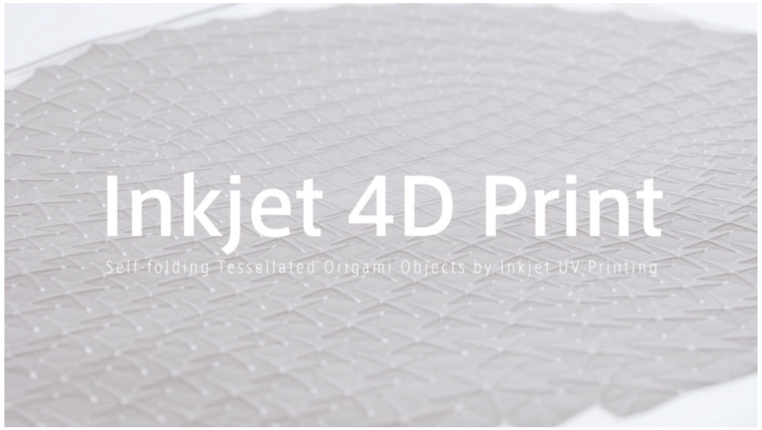


Week5: **Figures**



Week6: **Videos**

Week 1 : Slide

Basic

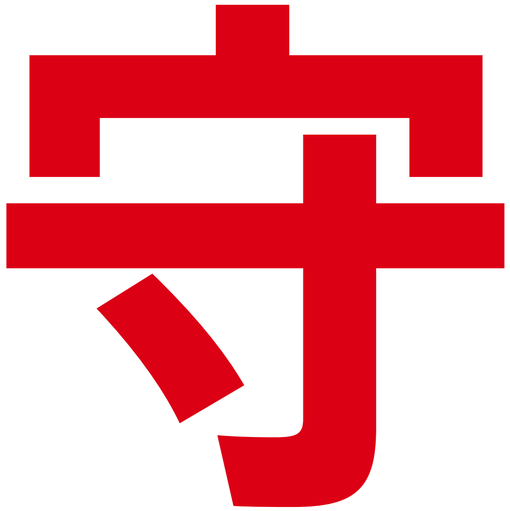
守

Advanced

展

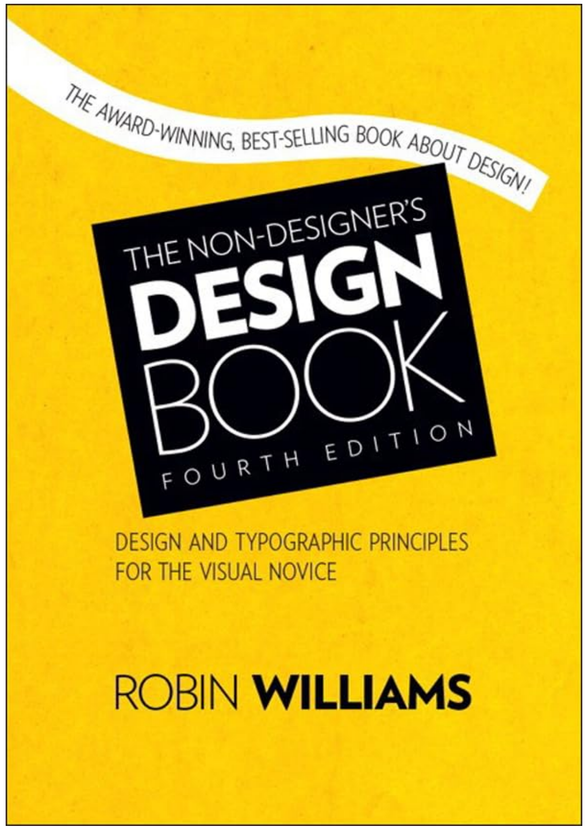
Week 1: Slide

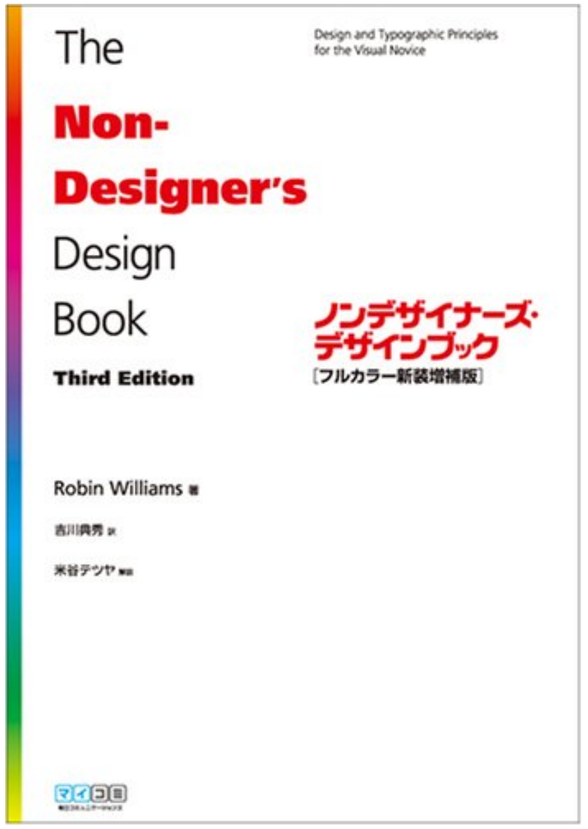
Basic



Advanced

Four Design Principles as Basics





"The Non-Designer's Design Book," English edition & Japanese edition

Four Design Principles as **Basics**

Proximity

Related contents must be **close**. **Unrelated contents** must be **far.**

Alignment

Invisible lines should be as **clear and few** as possible.

Repetition

Repeated concepts improves **consistency.**

Contrast

Meaningful contrasts are **strong rather than subtle.**

Concepts are cited from "The Non-Designer's Design Book"

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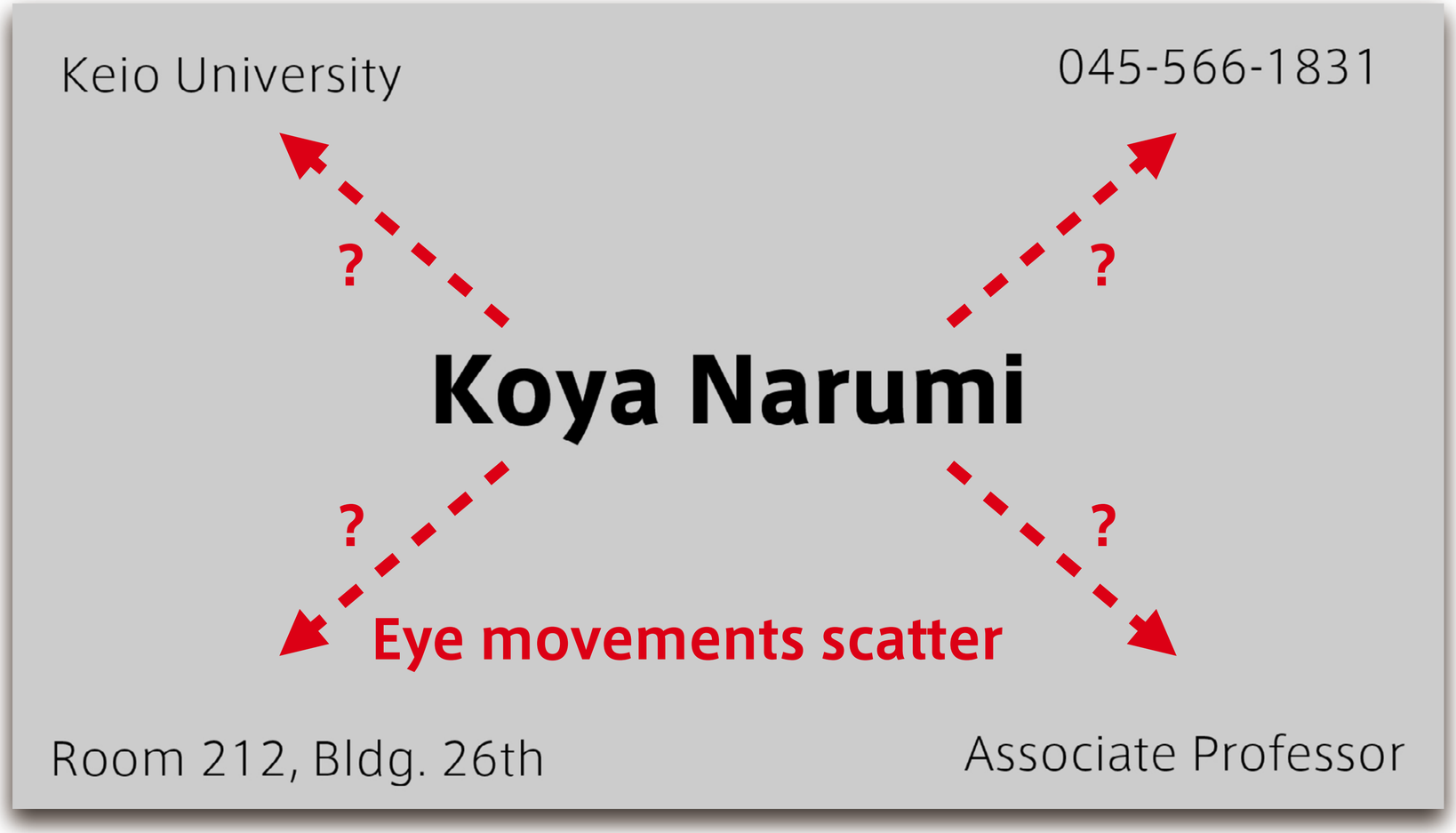

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Koya Narumi
Associate Professor

Room 212, Bldg. 26th
Keio University
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OK

Better

Related contents must be **close.**

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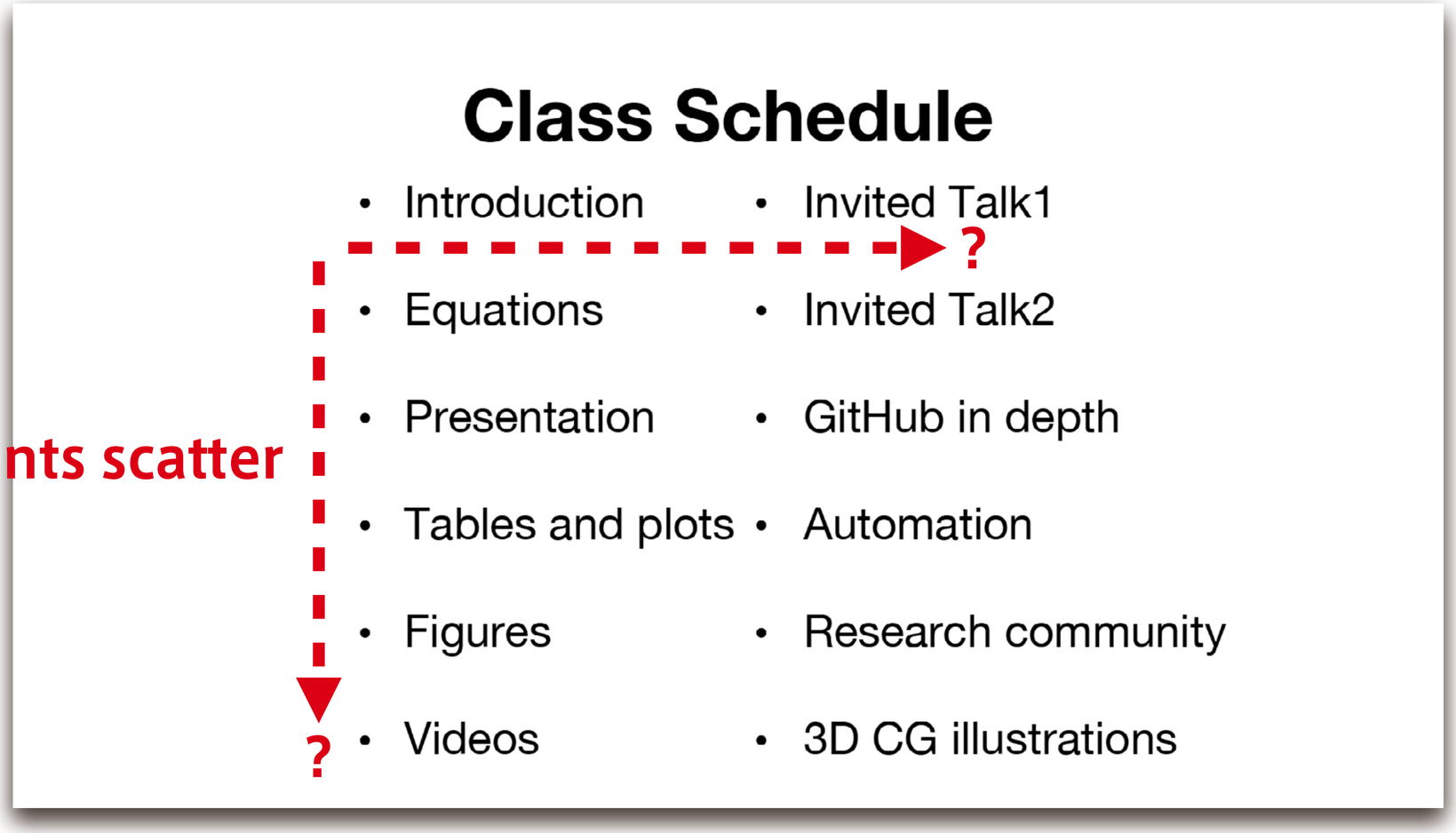
Proximity: Itemization

Class Schedule

- Introduction
- Equations
- Presentation
- Tables and plots
- Figures
- Videos
- Invited Talk1
- Invited Talk2
- GitHub in depth
- Automation
- Research community
- 3D CG illustrations

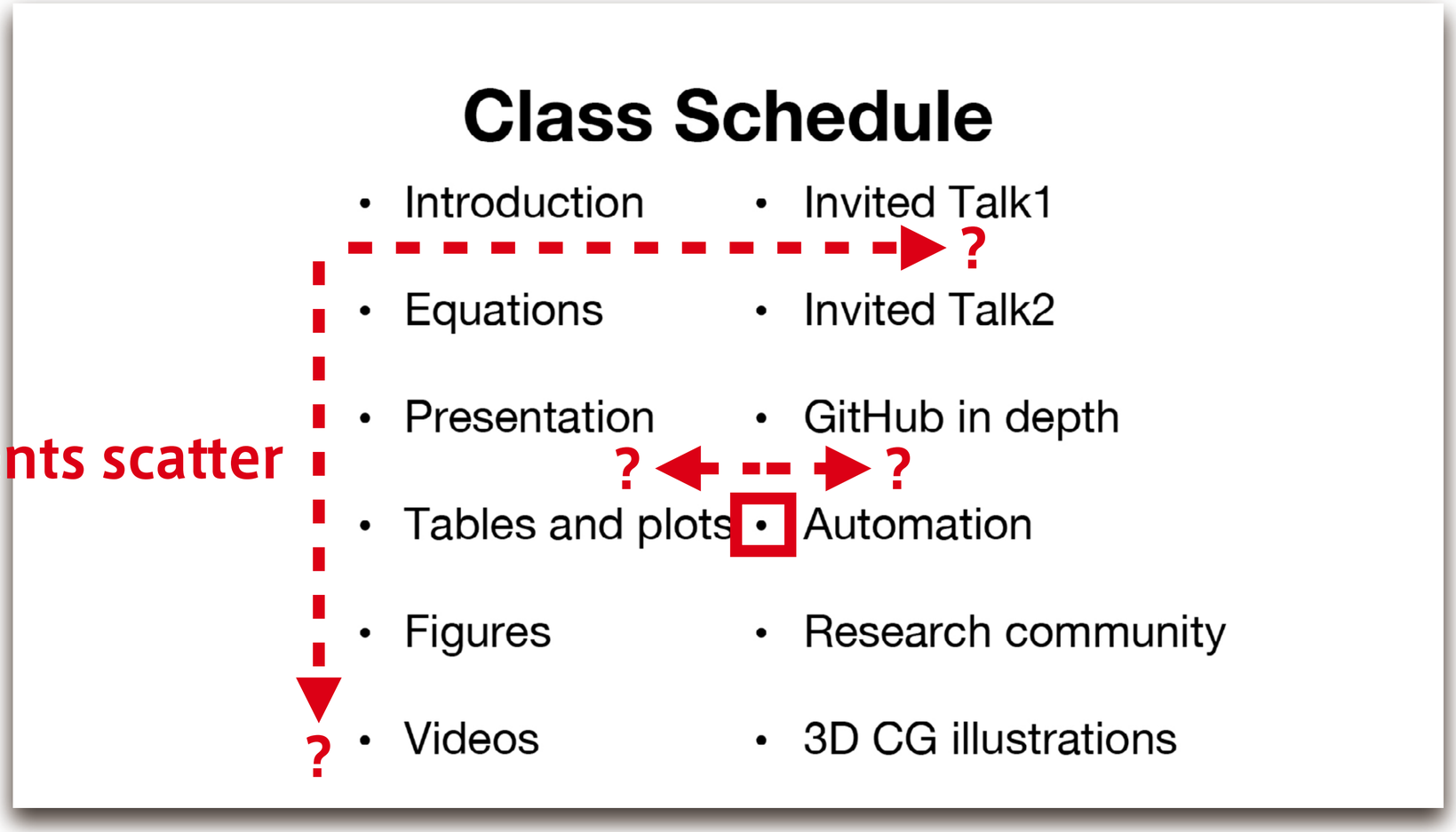
Proximity: Itemization



Eye movements scatter

Proximity: Itemization

Eye movements scatter



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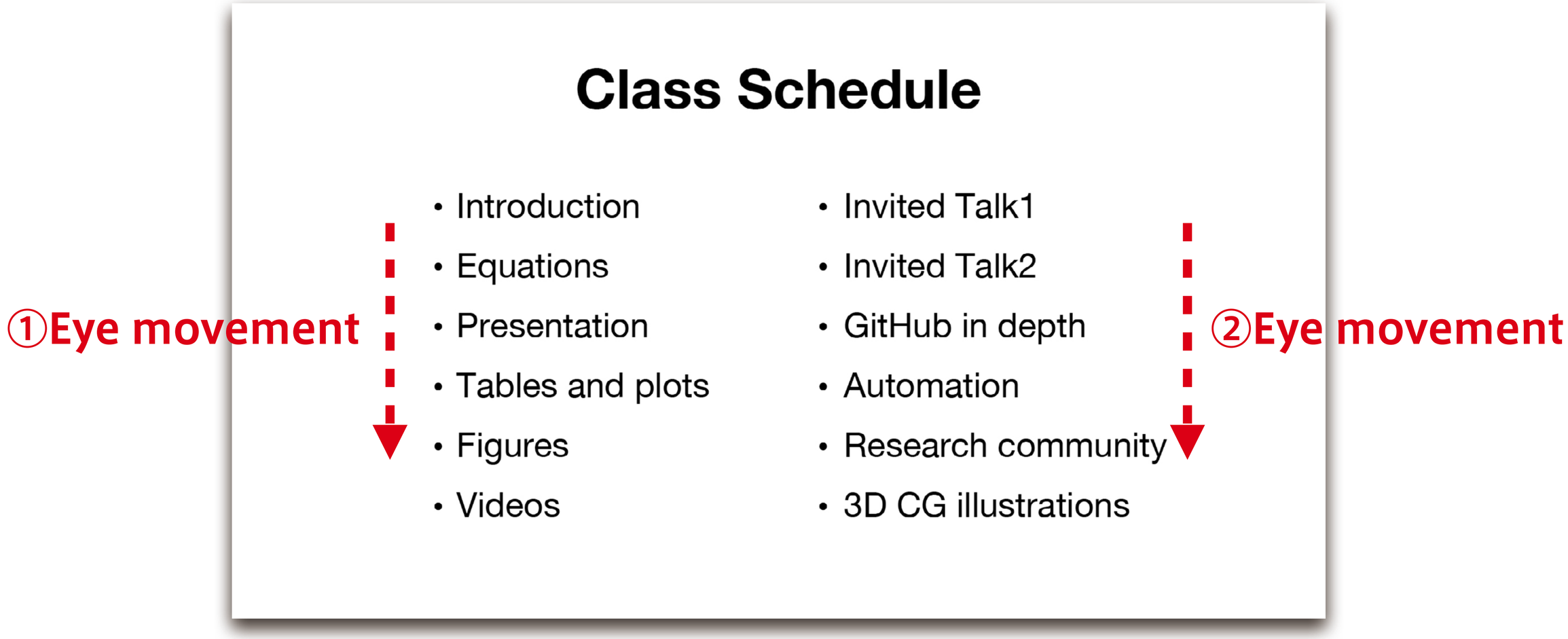

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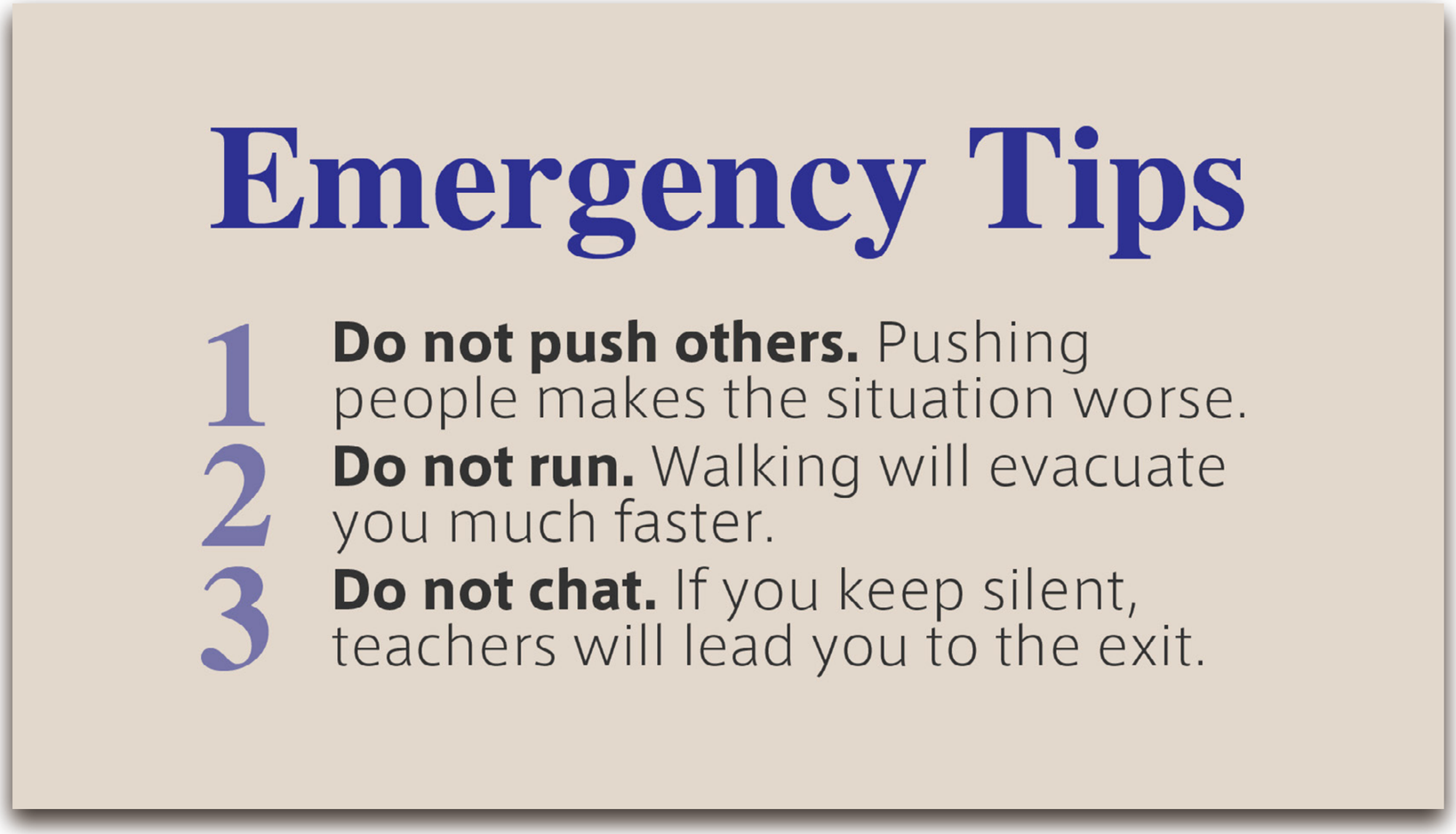

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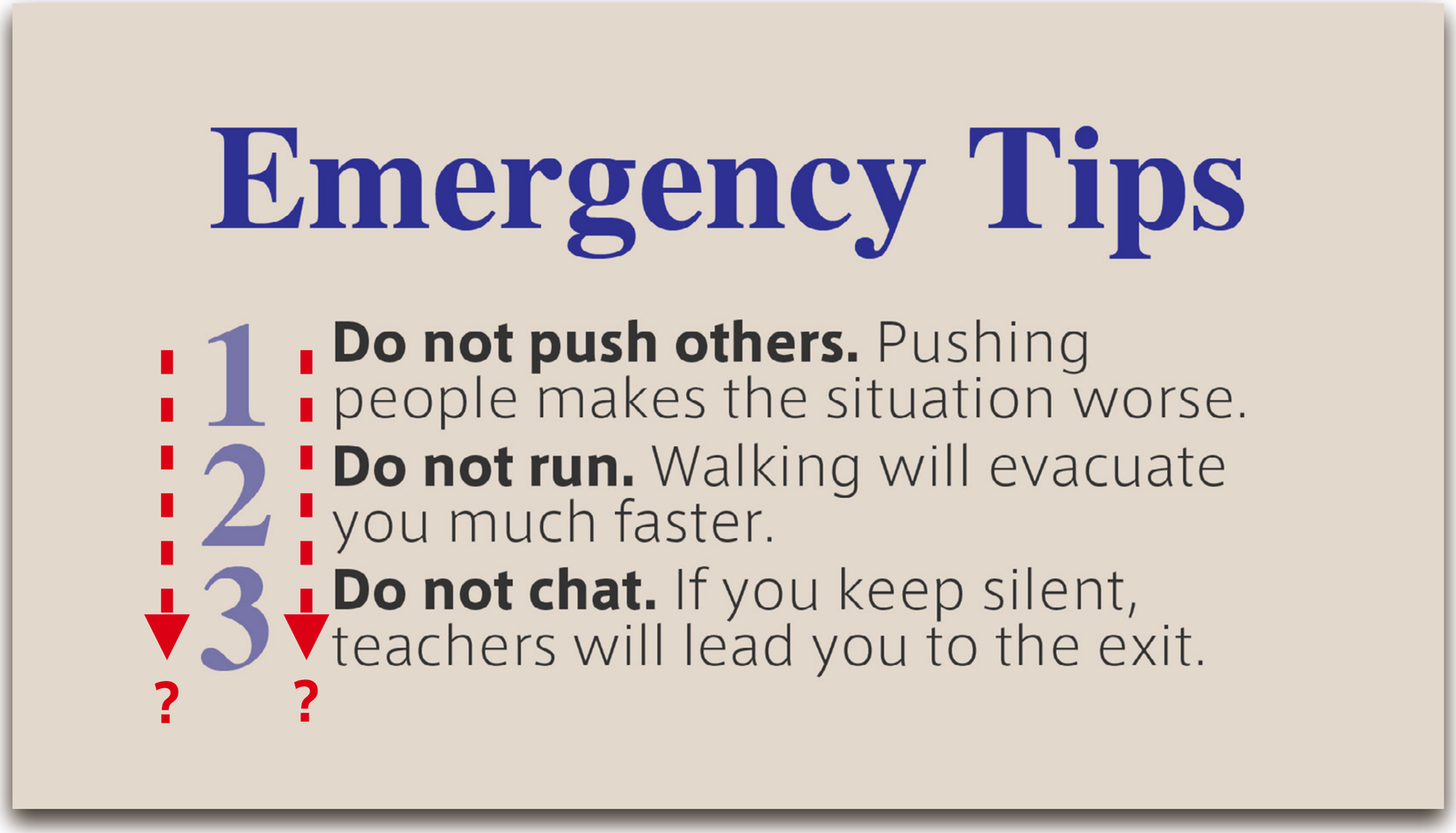

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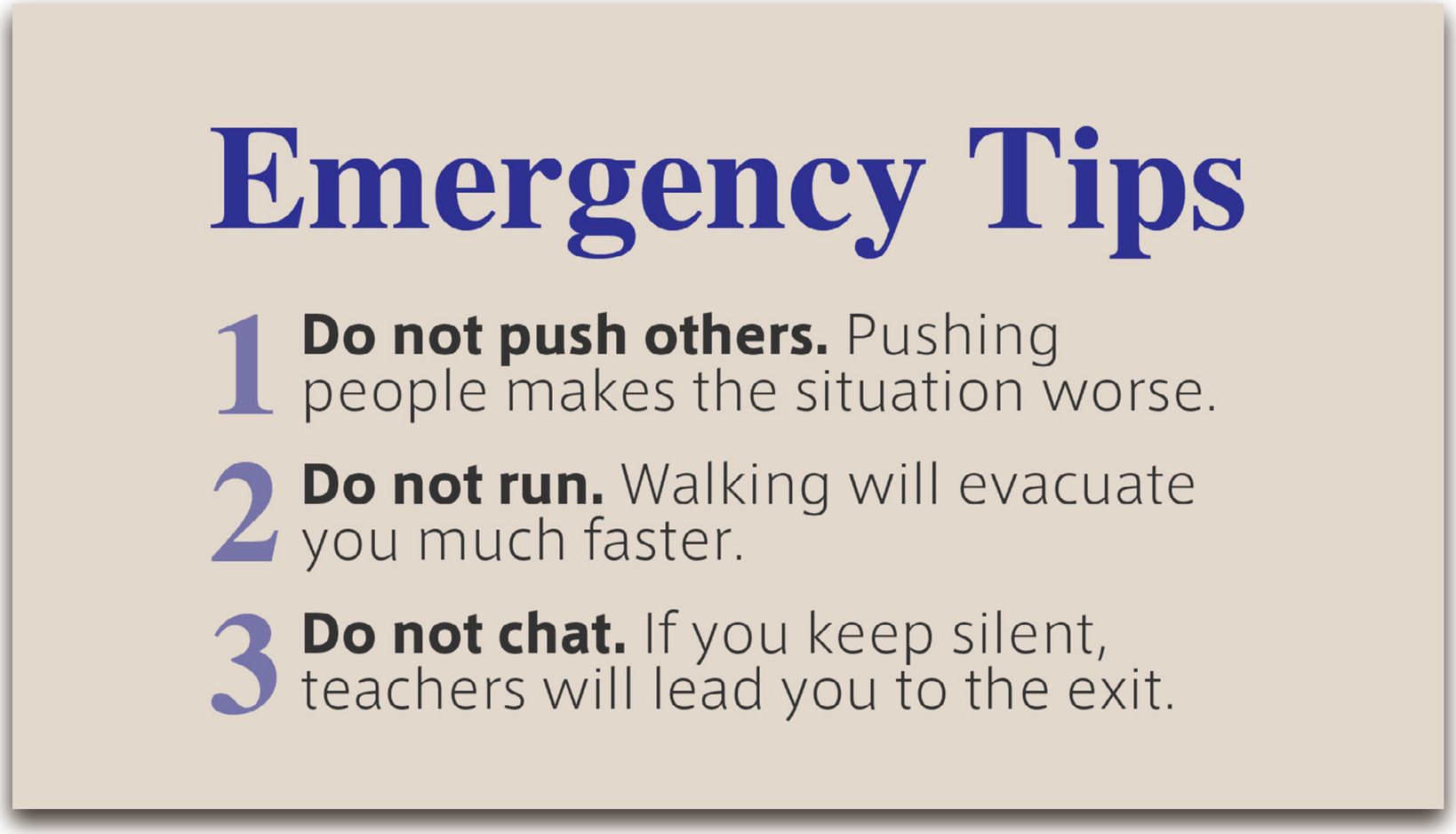

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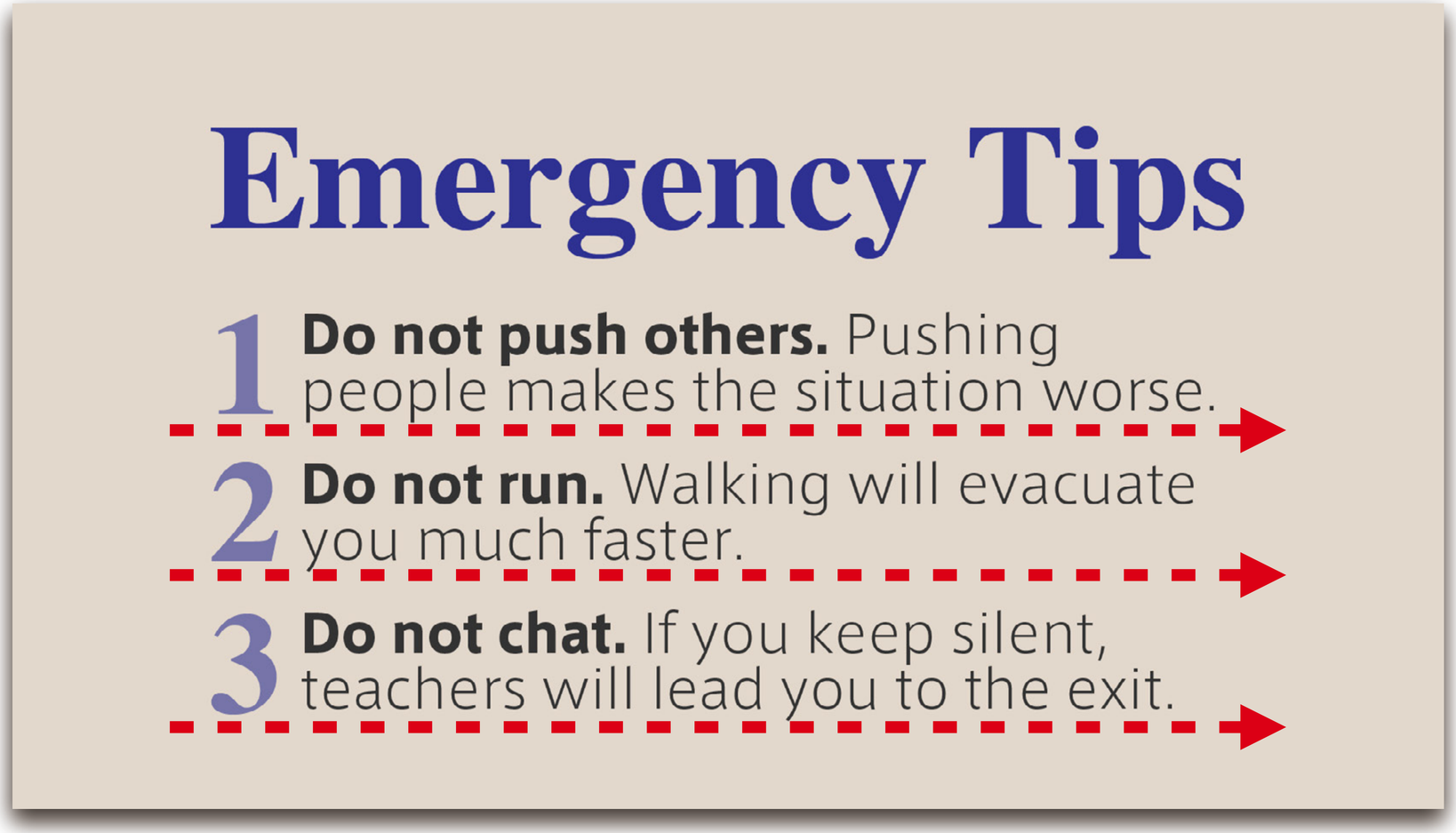

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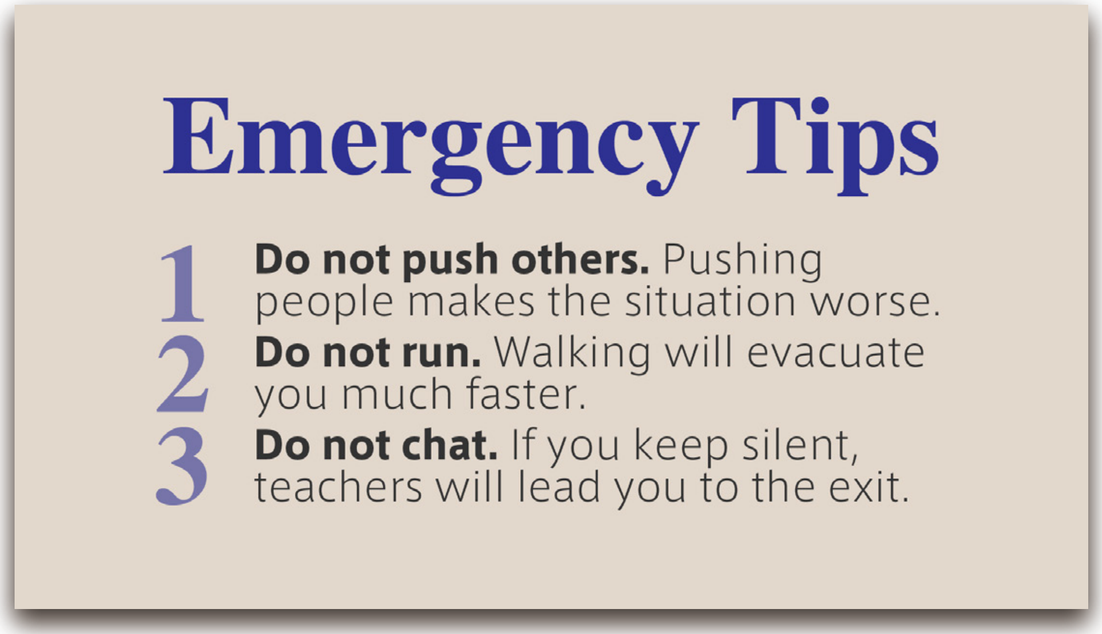
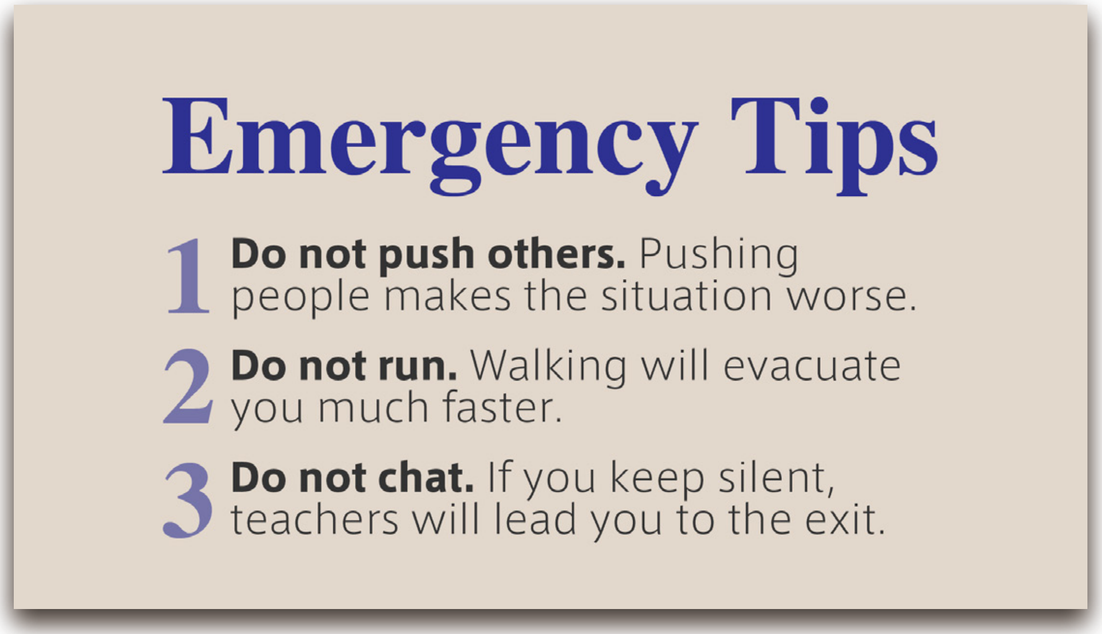


OK



Better

Related contents must be **close.**
Unrelated contents must be **far.**

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Proximity: Title Slide

Computational Fabrication and Material Interaction

Koya Narumi

Presentation at The University of Tokyo

Apr. 24, 2024

Proximity: Title Slide

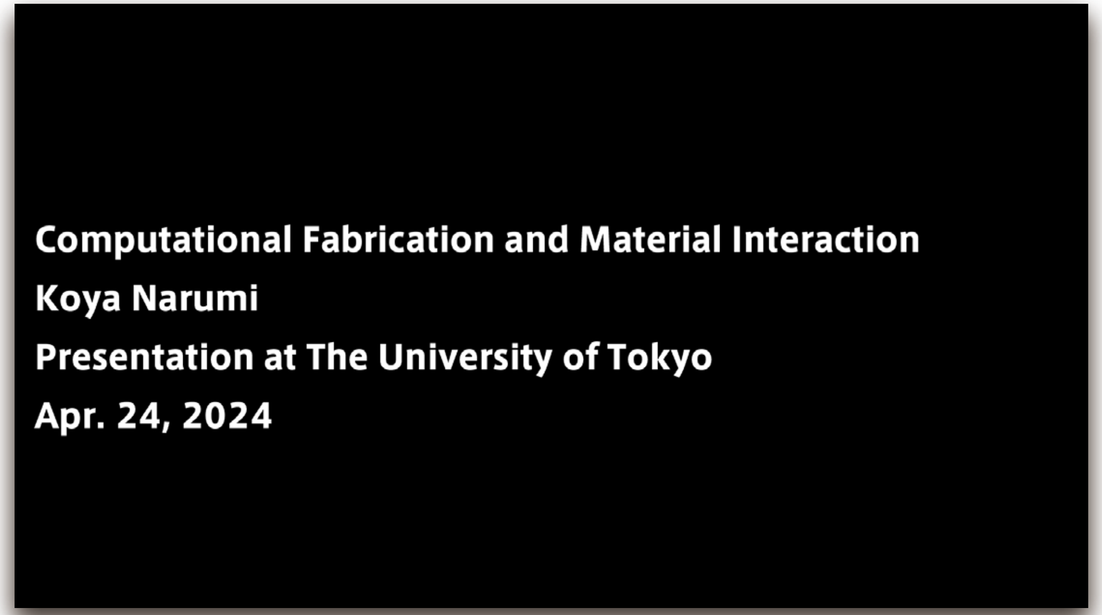
Which one is important?

Proximity: Title Slide

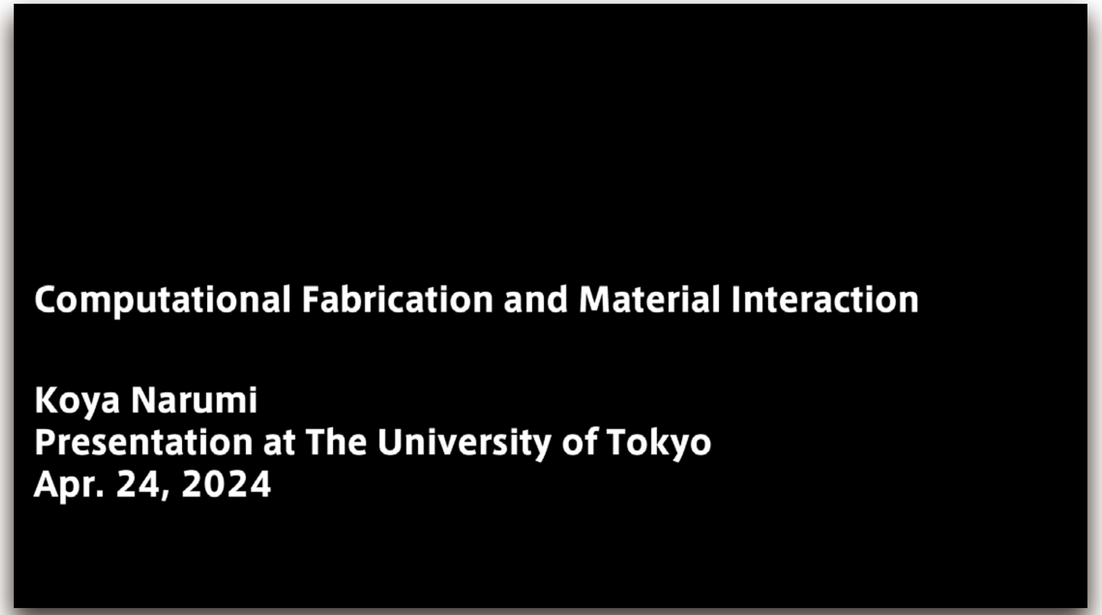
Proximity: Title Slide

Concepts are cited from "The Non-Designer's Design Book"

Proximity: Title Slide



OK



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Four Design Principles as **Basics**

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ALIGNMENT

Invisible lines should be as clear and few as possible

In short,

All the objects in a slide are placed with reasons.

Concepts are cited from "The Non-Designer's Design Book"

Alignment: Name Card

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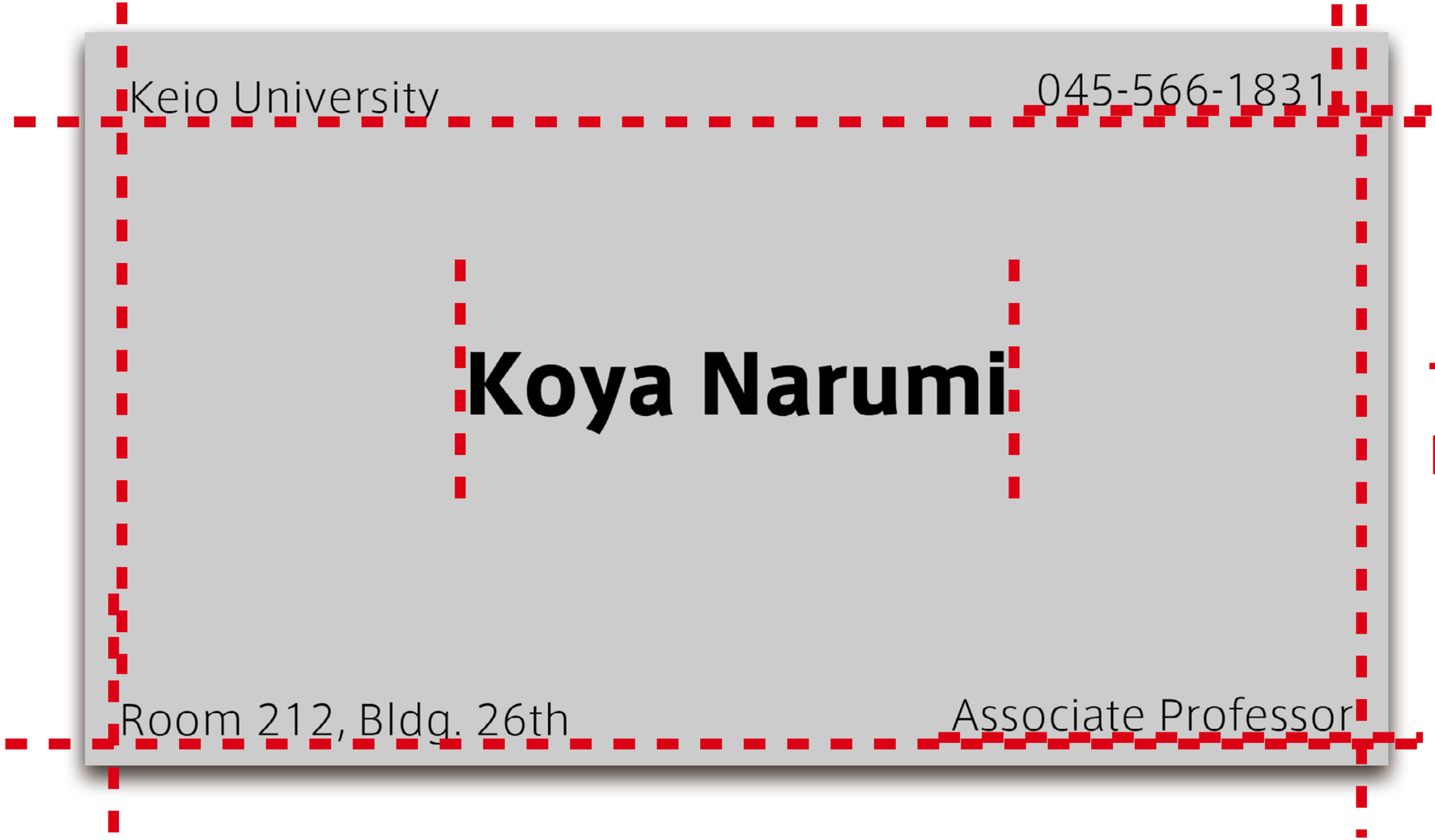
Alignment: Name Card



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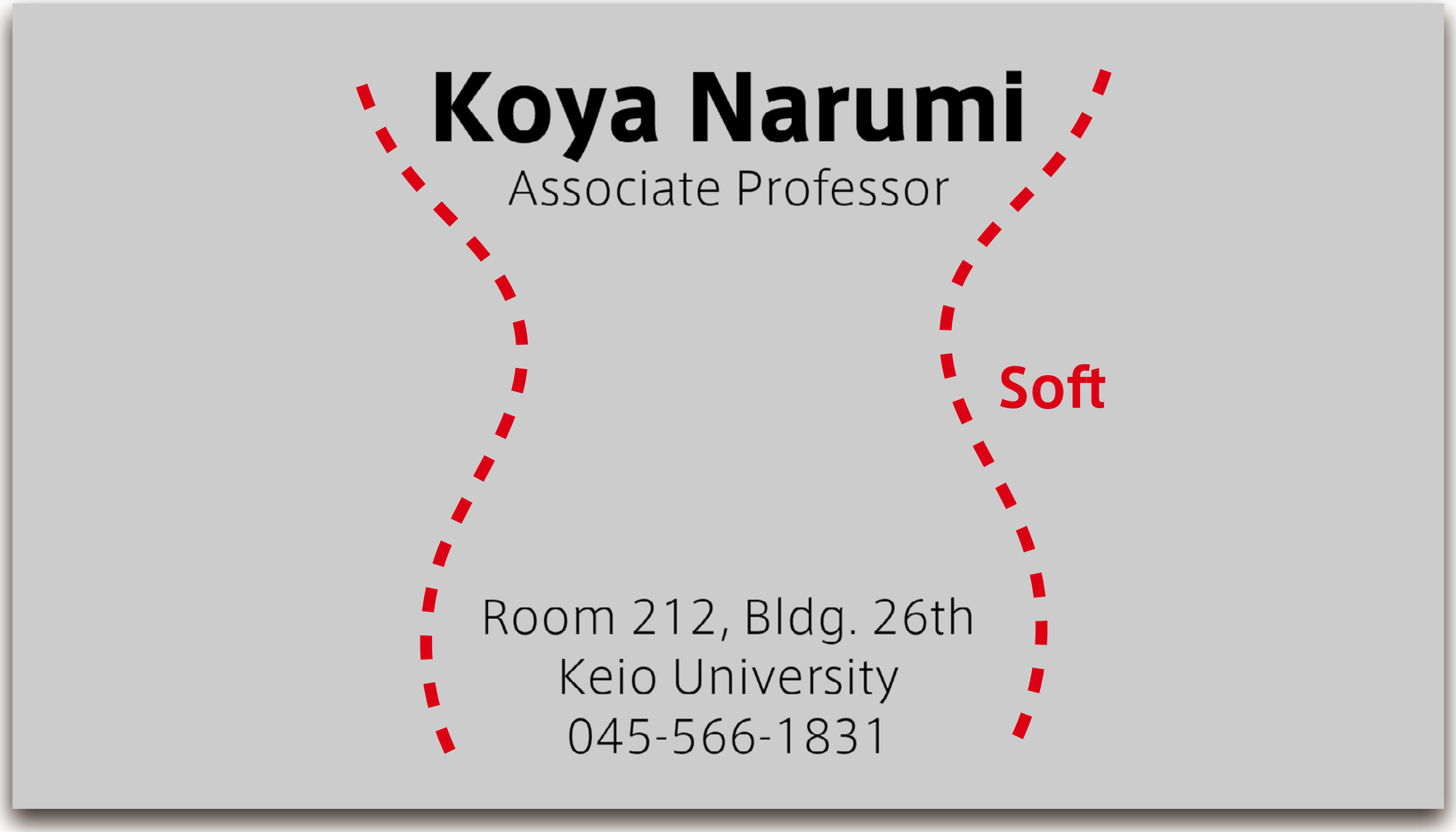

Concepts are cited from “The Non-Designer’s Design Book”

Alignment: Name Card

Concepts are cited from “The Non-Designer’s Design Book”

Alignment: Name Card

Strong line

Concepts are cited from "The Non-Designer's Design Book"

Alignment: Name Card

OK

Better

Much better

Invisible lines should be as clear and few as possible.

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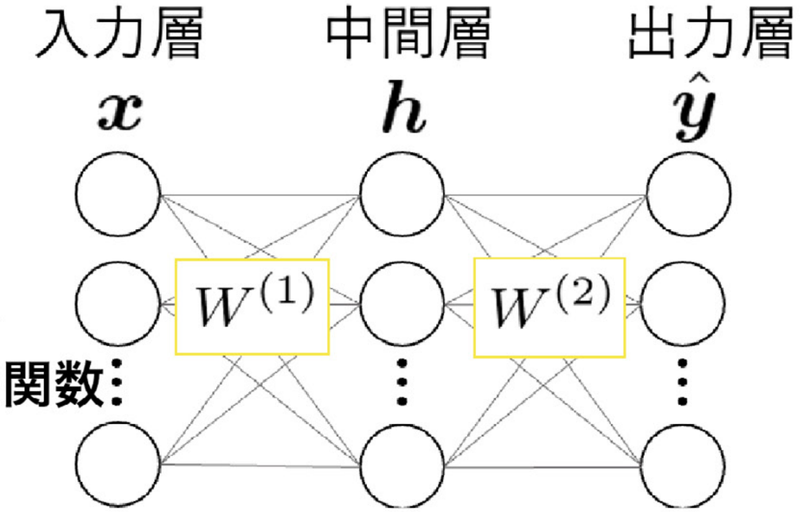
Alignment: Slides (1)

モデル

- 入力：28x28ピクセル画像
- 出力：10次元（0～9のラベルに対応）
- ニューラルネット：3層のFFNN
- 中間層の活性化関数：ReLu
- 中間層のユニット数：128
- 出力層の活性化関数：Softmax
- 損失関数：交差エントロピー誤差関数：
- 最適化手法：ミニバッチSGD



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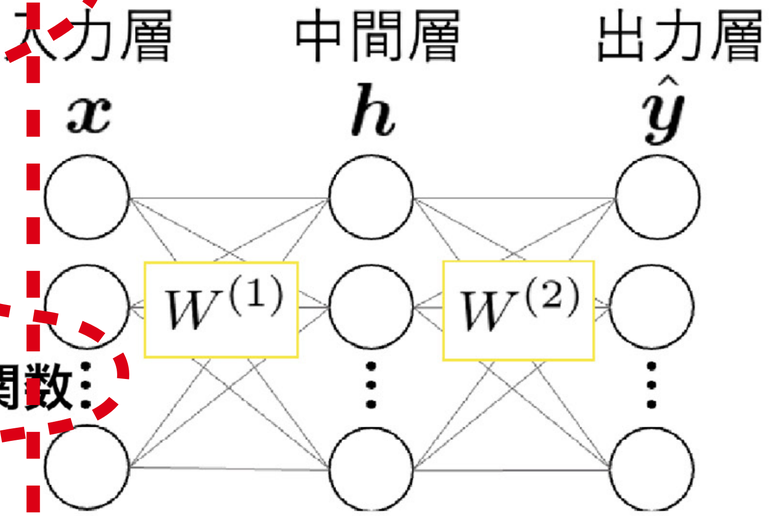

Intersecting lines

Alignment: Slides (1)

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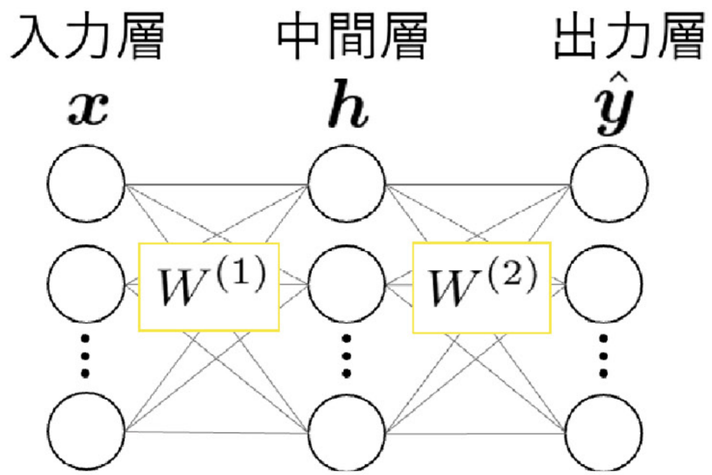

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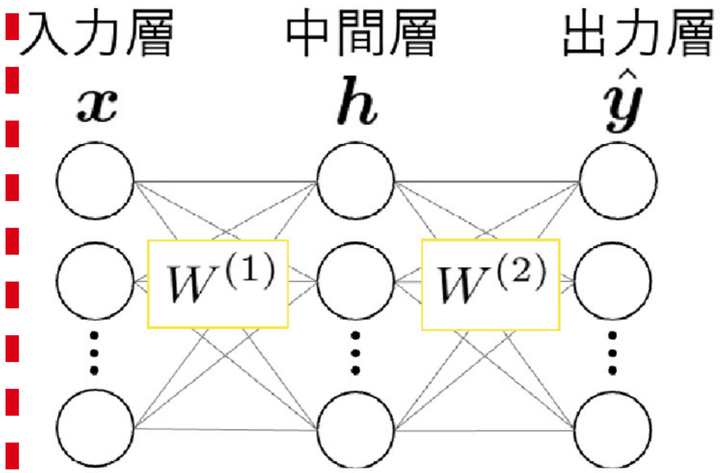

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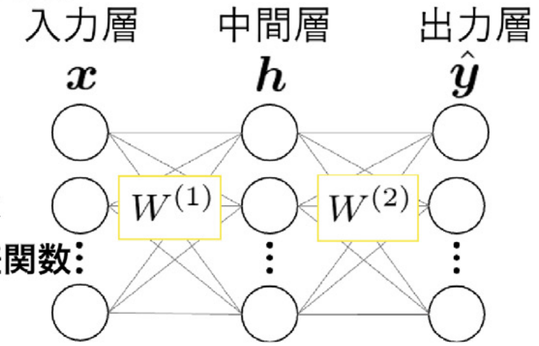

OK

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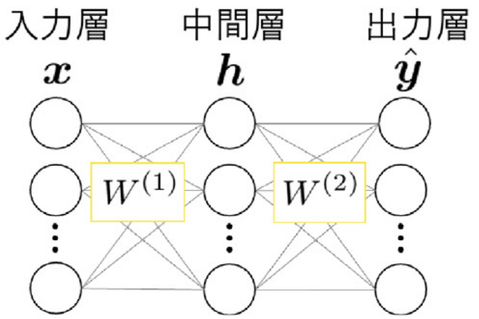

Better

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Concepts are cited from “The Non-Designer’s Design Book”

Alignment: Slides (2)

Bio

東京大学 工学部 電子情報工学科 卒業

東京大学 大学院工学系研究科 修士課程

日本学術振興会特別研究員（DC1）

JSPS ACT-I「情報と未来」個人研究者

東京大学 大学院情報理工学系研究科 博士課程

東京大学 大学院情報学環 助教

東京大学 大学院工学系研究科 特任講師

慶應義塾大学 理工学部 准教授

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東京大学 大学院情報学環 助教

東京大学 大学院工学系研究科 特任講師

慶應義塾大学 理工学部 准教授

Alignment: Slides (2)

Bio

東京大学 工学部 電子情報工学科 卒業

東京大学 大学院工学系研究科 修士課程

日本学術振興会特別研究員（DC1）

JSPS ACT-I「情報と未来」個人研究者

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OK

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慶應義塾大学 理工学部 准教授

Better

Invisible lines should be as clear and few as possible.

Concepts are cited from “The Non-Designer’s Design Book”

Please do not aimlessly
use center-aligned texts.
It automatically increases
the amount of invisible lines.
Consider left- / right- aligned
texts as default.

Concepts are cited from “The Non-Designer’s Design Book”

Please do not aimlessly
use center-aligned texts.
It automatically increases
the amount of invisible lines.
Consider left- / right- aligned
texts as default.

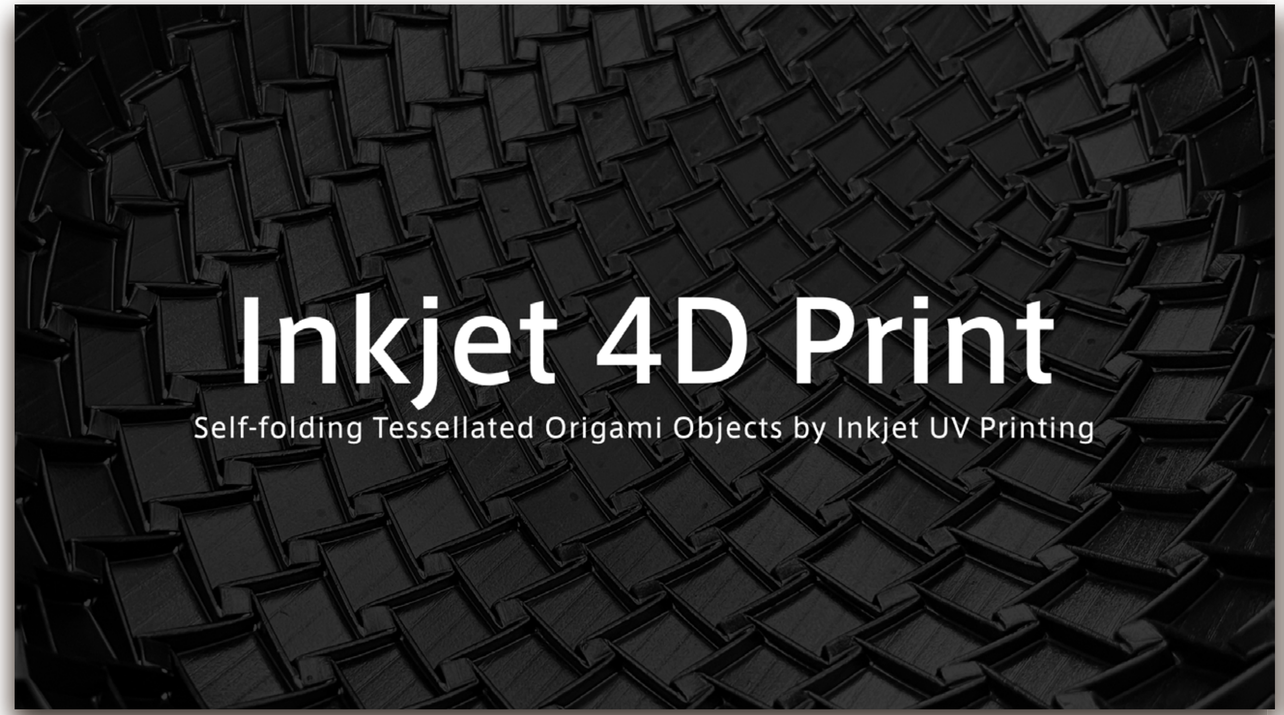
Concepts are cited from “The Non-Designer’s Design Book”

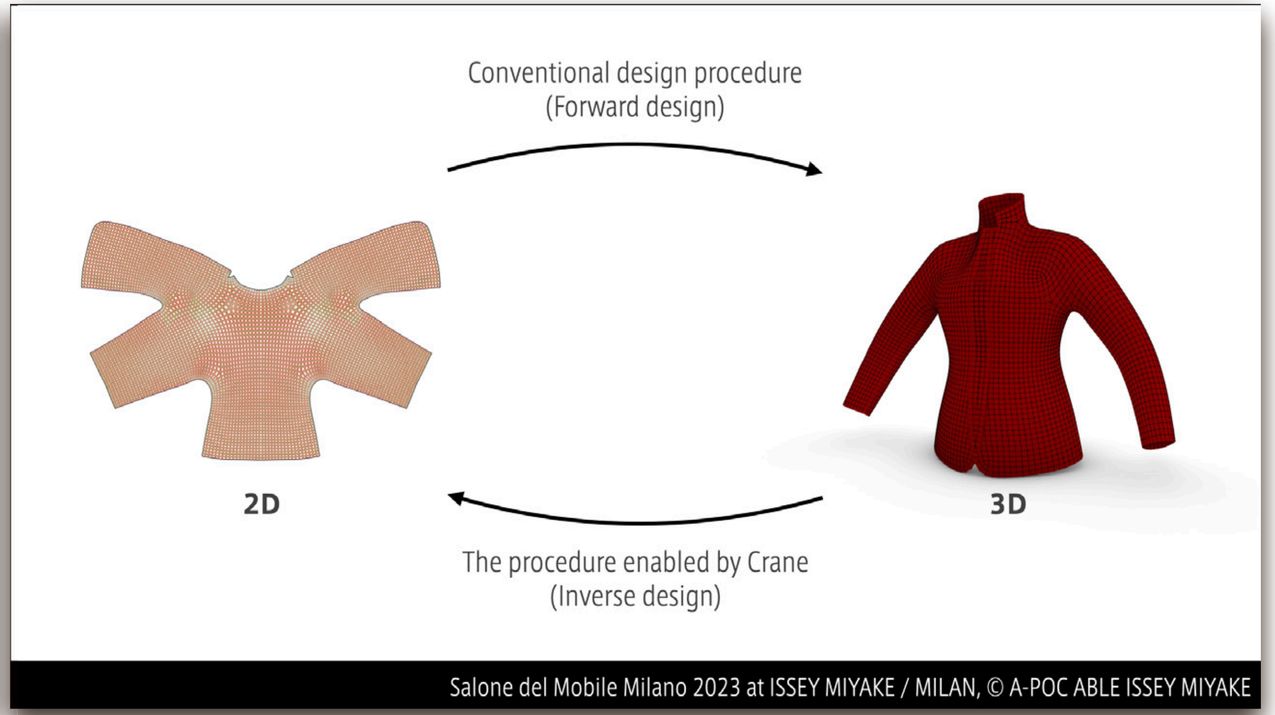
In short,

Try not using center-aligned texts.

Concepts are cited from “The Non-Designer’s Design Book”

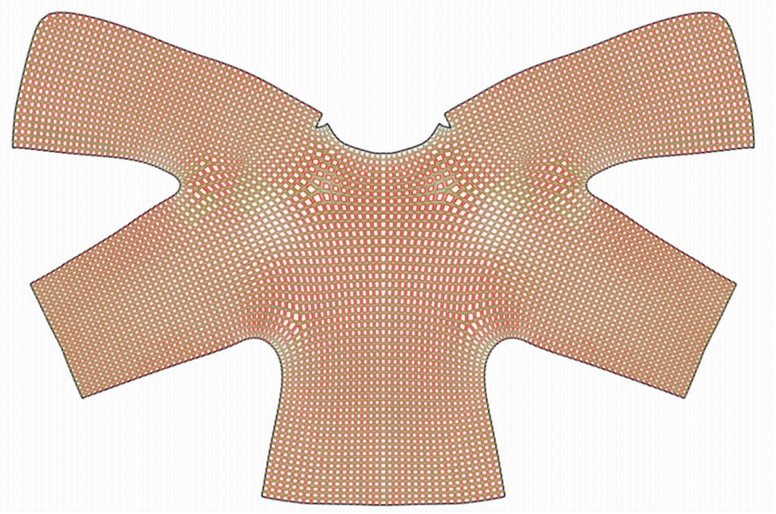
NOTE: Center-aligned texts are **NOT Always Bad**





Properly designed center-aligned texts are formal and powerful.

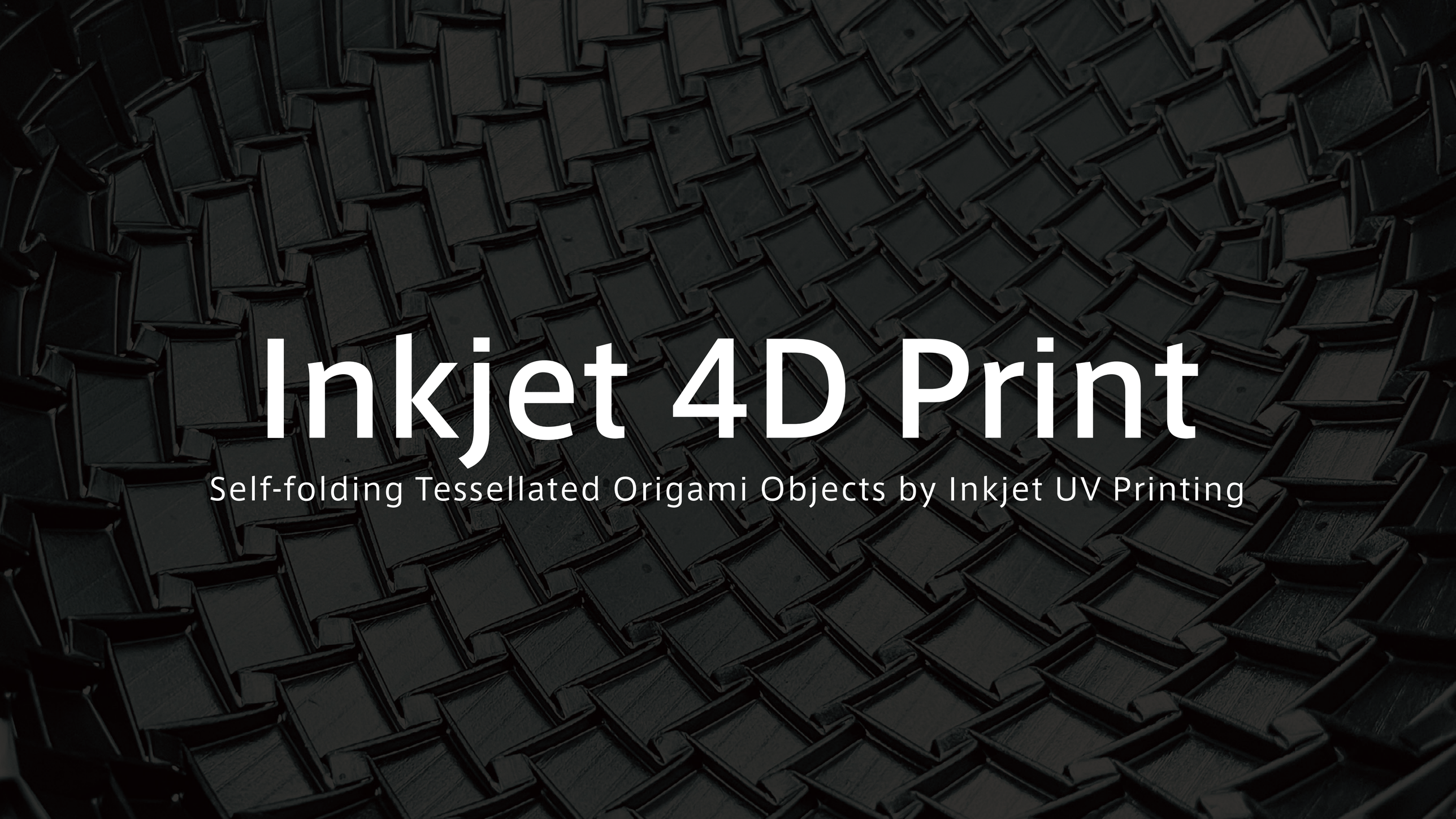
Conventional design procedure
(Forward design)



2D

3D

The procedure enabled by Crane
(Inverse design)



Inkjet 4D Print

Self-folding Tessellated Origami Objects by Inkjet UV Printing

Four Design Principles as **Basics**

Proximity

Related contents must be **close**. **Unrelated contents** must be **far.**

Alignment

Invisible lines should be as **clear and few** as possible.

Repetition

Repeated concepts improves **consistency.**

Contrast

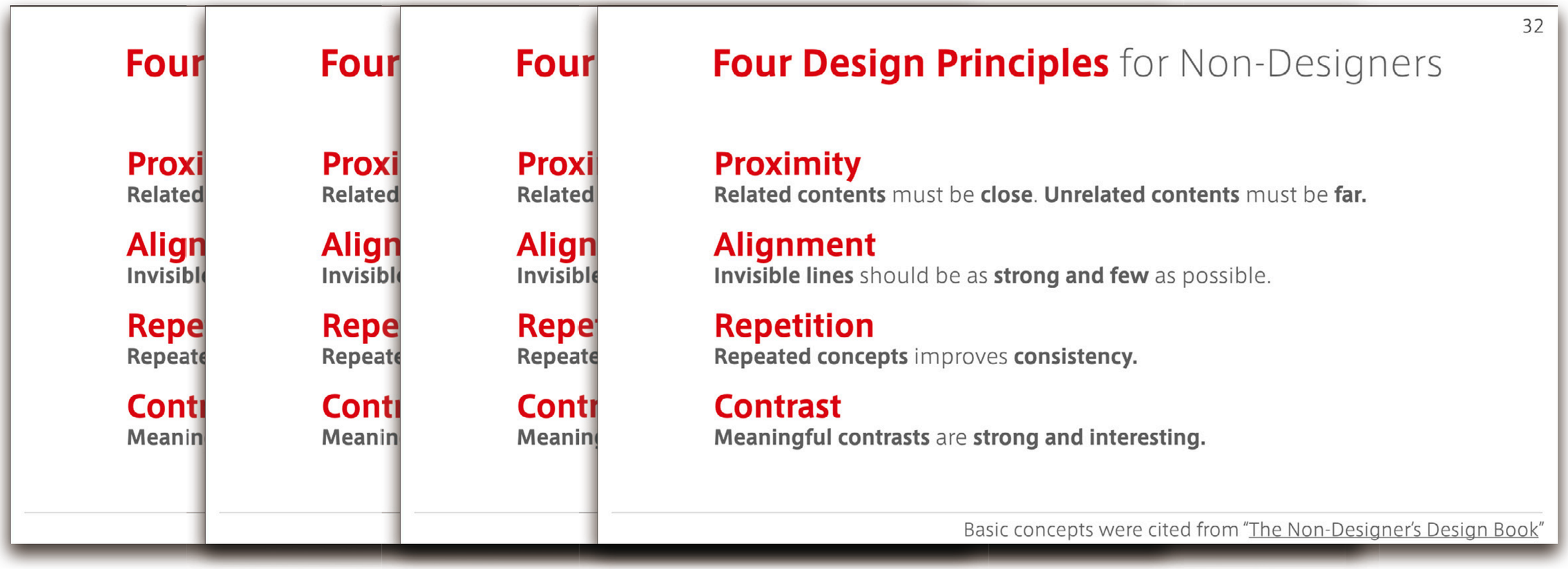
Meaningful contrasts are **strong rather than subtle.**

Concepts are cited from "The Non-Designer's Design Book"

REPETITION

Repeated concepts improves consistency

Repeated contents tell **where you are**

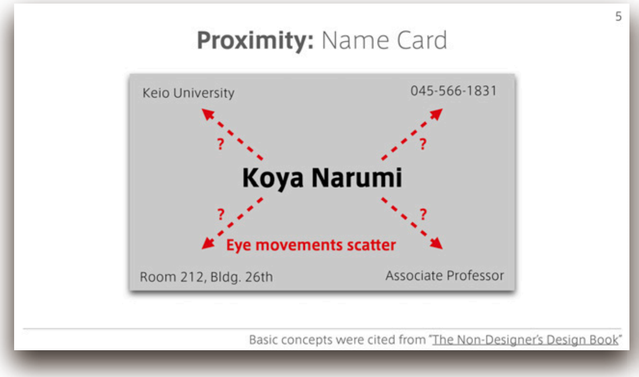


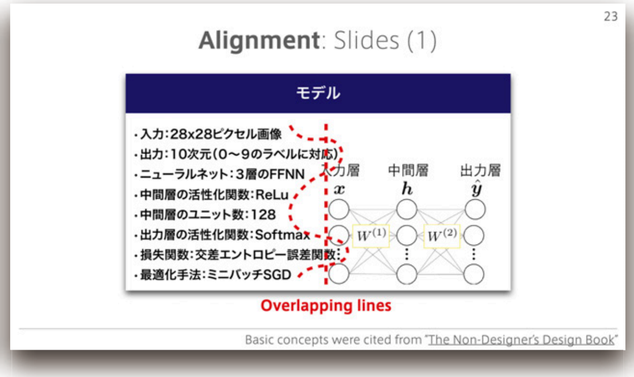
Don't hesitate to use the same slide as **a table of contents.**

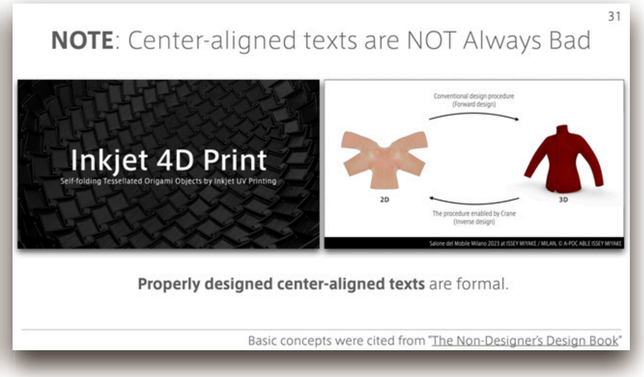
Repeated contents tell **where you are**

Don’t hesitate to use the same slide as **a table of contents.**

Repeated structure guarantees **consistency**







From the same structure, people can tell that **slides deal with similar topics**.

Example template

Figures / tables / graphs / etc

Conclusions are here.
Conclusions are here.

Title → # Example template

Page number

Figures / tables / graphs / etc

Citation grid

Conclusions are here.
Conclusions are here.

← Conclusions

Citation place

Example template

Never change the height

Never change the height

Never change the height

Conclusions are here.

Conclusions are here.

If You Do Not Strictly Repeat Structures

Figures / tables / graphs / etc

Conclusions are here.
Conclusions are here.

If You Do Not Strictly Repeat Structures

Figures / tables / graphs / etc

Conclusions are here.

Conclusions are here.

Subtle movements are quite annoying.
keep pixel-perfect.

Even if the objects change like this, keep pixel-perfect.

Four Design Principles as **Basics**

Proximity

Related contents must be **close**. **Unrelated contents** must be **far.**

Alignment

Invisible lines should be as **clear and few** as possible.

Repetition

Repeated concepts improves **consistency.**

Contrast

Meaningful contrasts are **strong rather than subtle.**

Concepts are cited from "The Non-Designer's Design Book"

CONTRAST

Meaningful contrasts are strong rather than subtle

Failure of font size contrasts

- The default setup of
  - PowerPoint somehow changes the font size
    - very slightly for each intdentation level (by 2pt)
      - This has almost no contrast.

Change drastically, or **don't change**

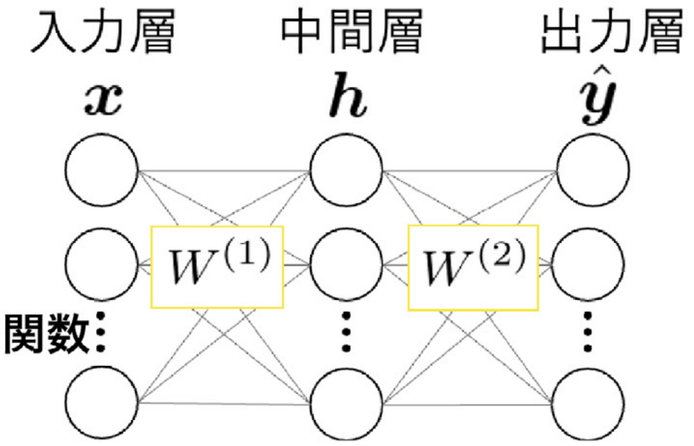
- Change the font size drastically if you have some intention.
- Subtle change is imperceptible and looks inconsistent.

Concepts are cited from "The Non-Designer's Design Book"

Don’t Emphasize Everything

モデル

- 入力：28x28ピクセル画像
- 出力：10次元（0〜9のラベルに対応）
- ニューラルネット：3層のFFNN
- 中間層の活性化関数：ReLu
- 中間層のユニット数：128
- 出力層の活性化関数：Softmax
- 損失関数：交差エントロピー誤差関数
- 最適化手法：ミニバッチSGD



“A curse of large fonts” taught by your advisors.

Designers use **small fonts** or **white space** as well to better contrast.

Don’t Emphasize Everything

モデル

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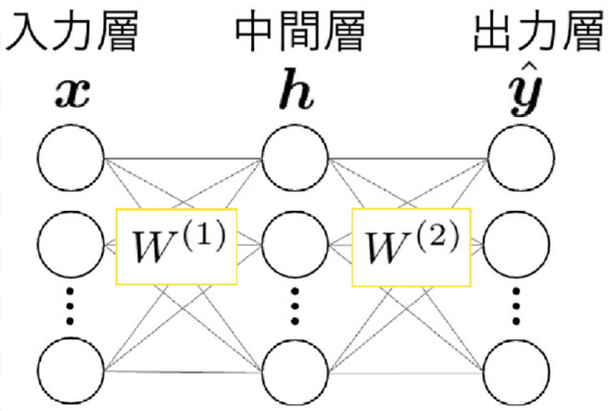
Appropriate space



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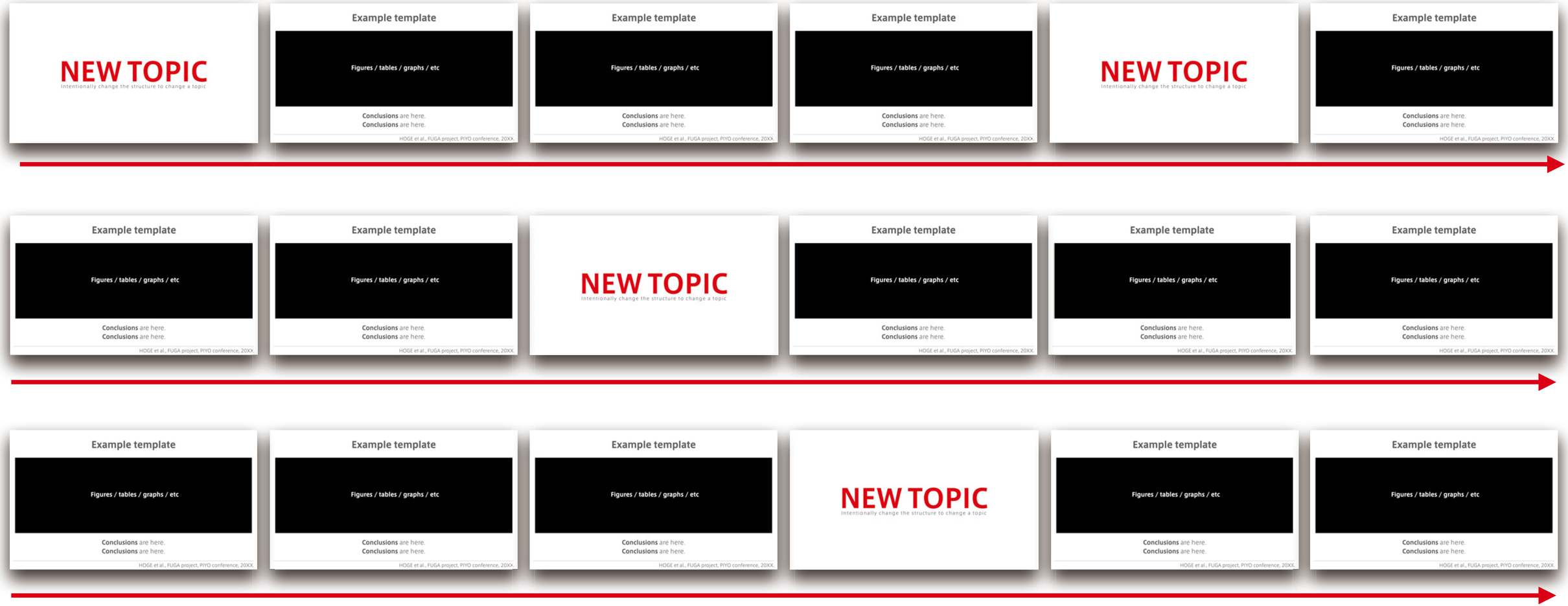
Designers use **small fonts** or **white space** as well to better contrast.

Change the **Structure** to Start a **New Topic**



Change the **Structure** to Start a **New Topic**

Example template

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HOGE et al., FUGA project, PIYO conference, 20XX.

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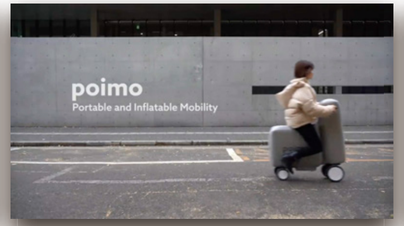

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Basic

守

Advanced

展

Four Ideas as **Advances**

Animation

Audience **cannot help** watching animation.

Backgrounds

Effectively use the **meaning of backgrounds.**

Eye Motion

Grasp the **instant eye motion** of audience.

Aspect Ratio

We can actually select **any aspect ratio as curiosity allows**.

ANIMATION

Audience cannot help watching animation

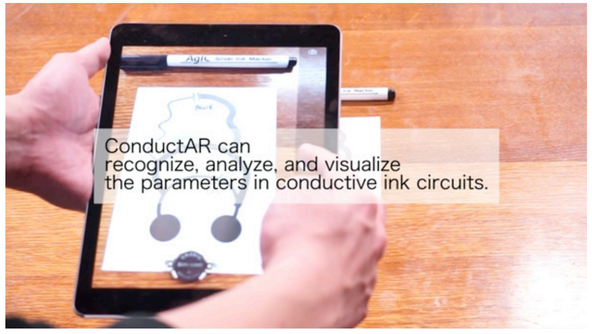
Animation is Powerful for Eye Motion Control

After all, we are **mantes** following animation.

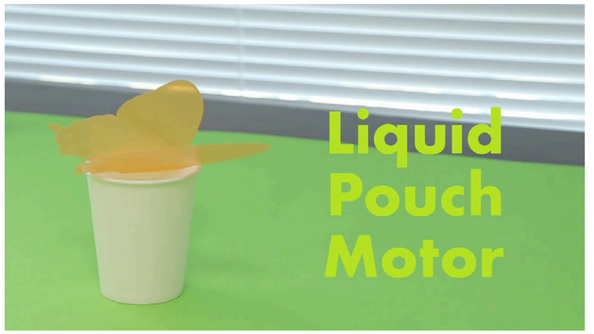
---

https://commons.wikimedia.org/wiki/File:Rhombodera_basalis_1_Luc_Viatour.jpg#/media/%E3%83%95%E3%82%A1%E3%82%A4%E3%83%AB:Rhombodera_basalis_1_Luc_Viatour.jpg

Circuit Eraser
ACM CHI EA 2015, Kickstarter

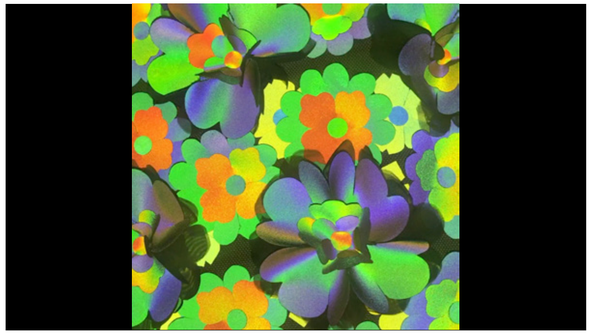


ConductAR
ACM UbiComp 2016

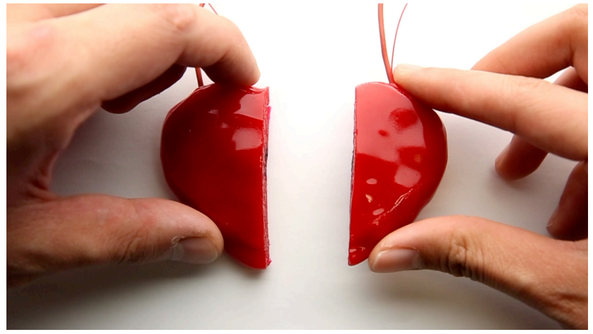


Liquid Pouch motors
IEEE ICRA 2017, IEEE RA-L 2020

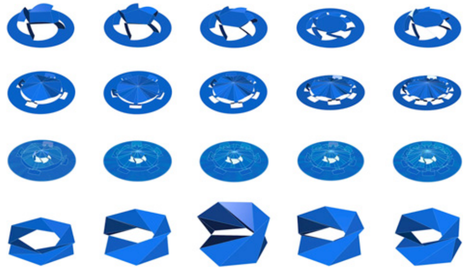
Papilion
Ars Electronica 2017



A LIVE UN LIVE
六本木クロッシング 2018



Self-healing UI
ACM UIST 2019

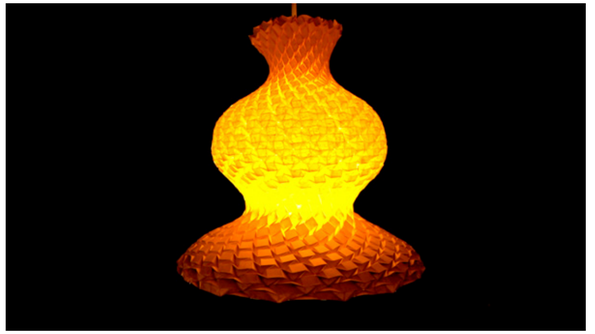


Kirigami Haptic Swatches
ACM CHI 2020

Pop-up Print
ACM UIST 2020

poimo
ACM UIST 2020

Flower Jelly Printer
ACM CHI 2021



Crane
ACM TOCHI (CHI) 2023

Inkjet 4D Print
ACM TOG (SIGGRAPH) 2023

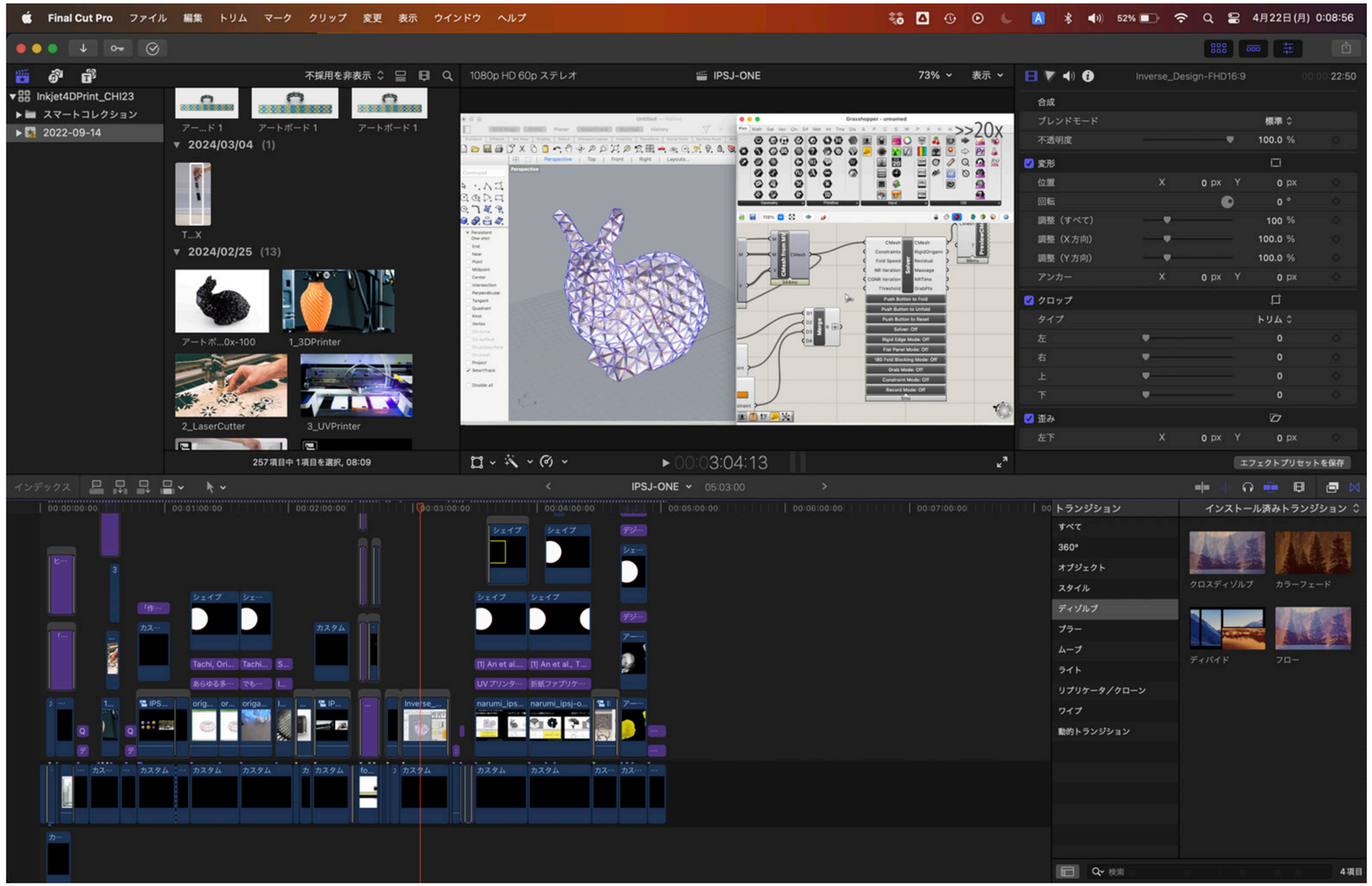
「作り方を作る」デジタルファブリケーション

Making “how to make” by Digital Fabrication

Language = Japanese, duration = 5 min
IPSJ-ONE2024
https://youtu.be/Nhkpcyvwbw0?t=5106

2024.3.16 [Sat]
情報処理学会 第86回全国大会
神奈川大学横浜キャンパス

Video Presentation is **not** Practical



But Two Tricks are Cost-effective

Translucent transition

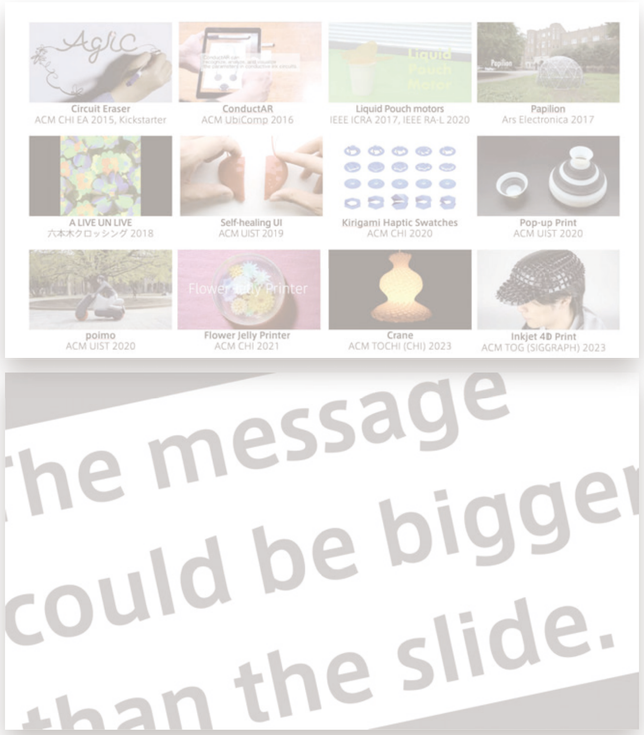
Opening animation

follow

守

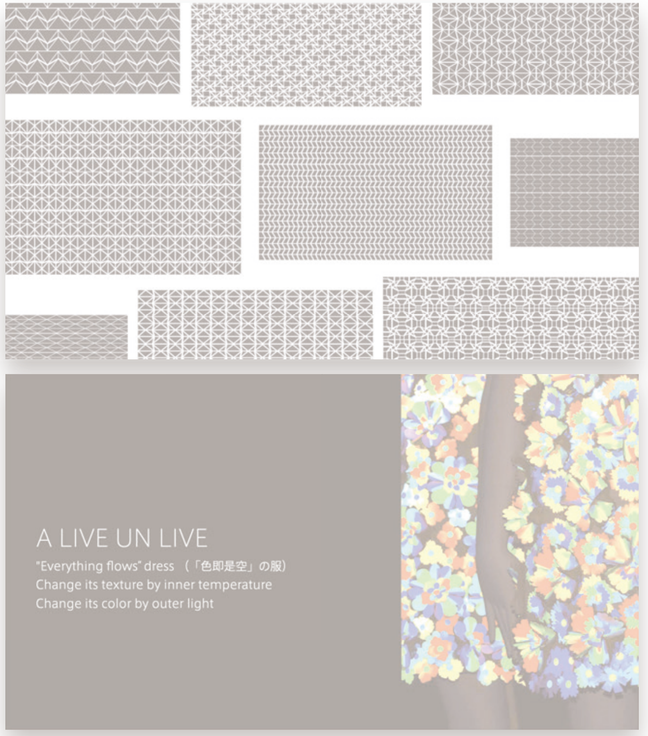
Break

破



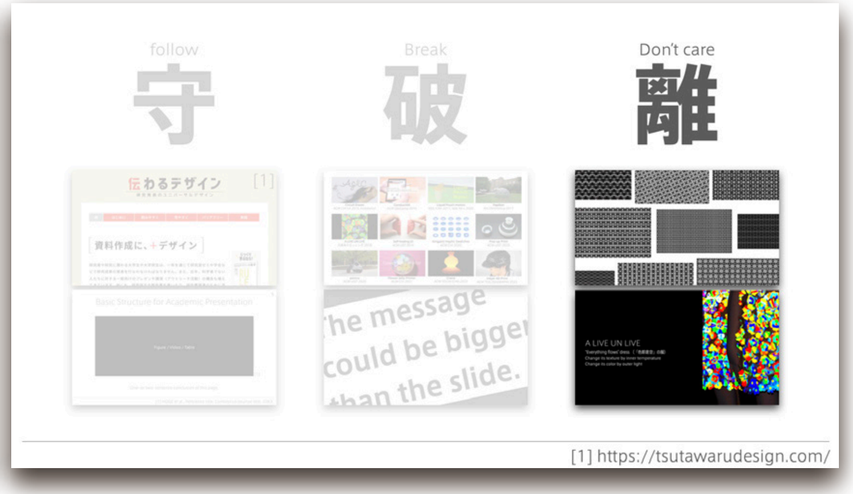
Don't care

離



[1] https://tsutawarudesign.com/

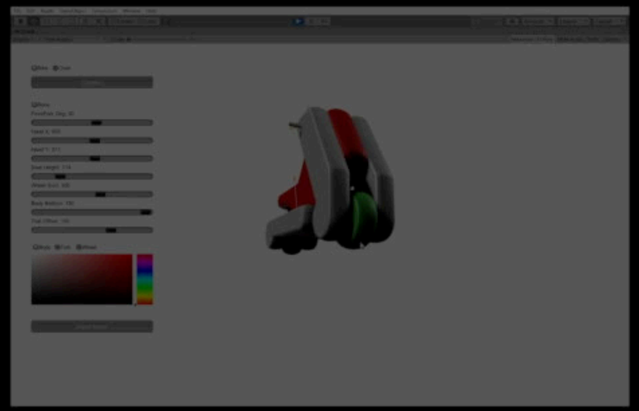
Translucent Transition



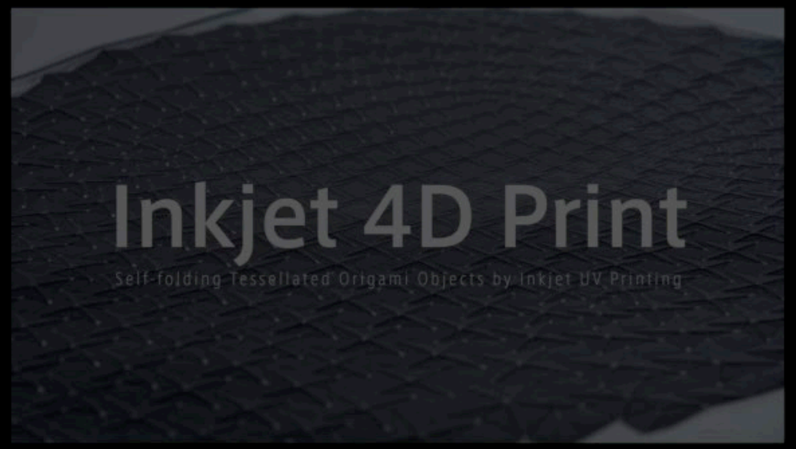
Transition effect helps audience **follow the topic**.
Transparency helps audience **predict the story**.

「作り方」を作る

ゼリーの中に**ゼリー**を
3Dプリントする方法



自分だけの**モビリティ**を
作る方法



どんな形の**折紙**でも
自動で折る方法

But Two Tricks are Cost-effective

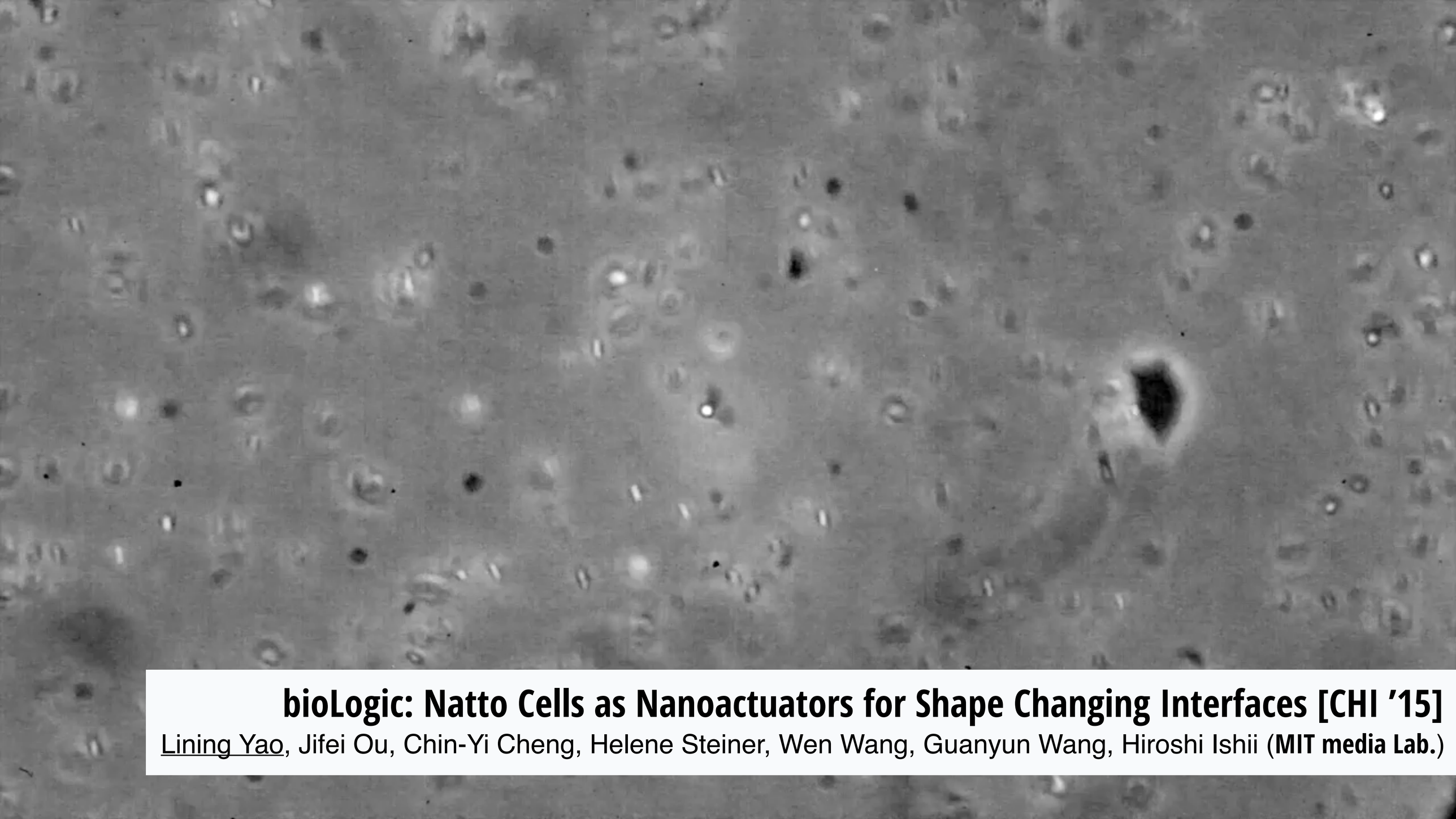
Translucent transition

Opening animation

Opening Animation

Audience lose their interests in the first 30 sec of the talk.

Opening animation communicates **even before the presentation**.



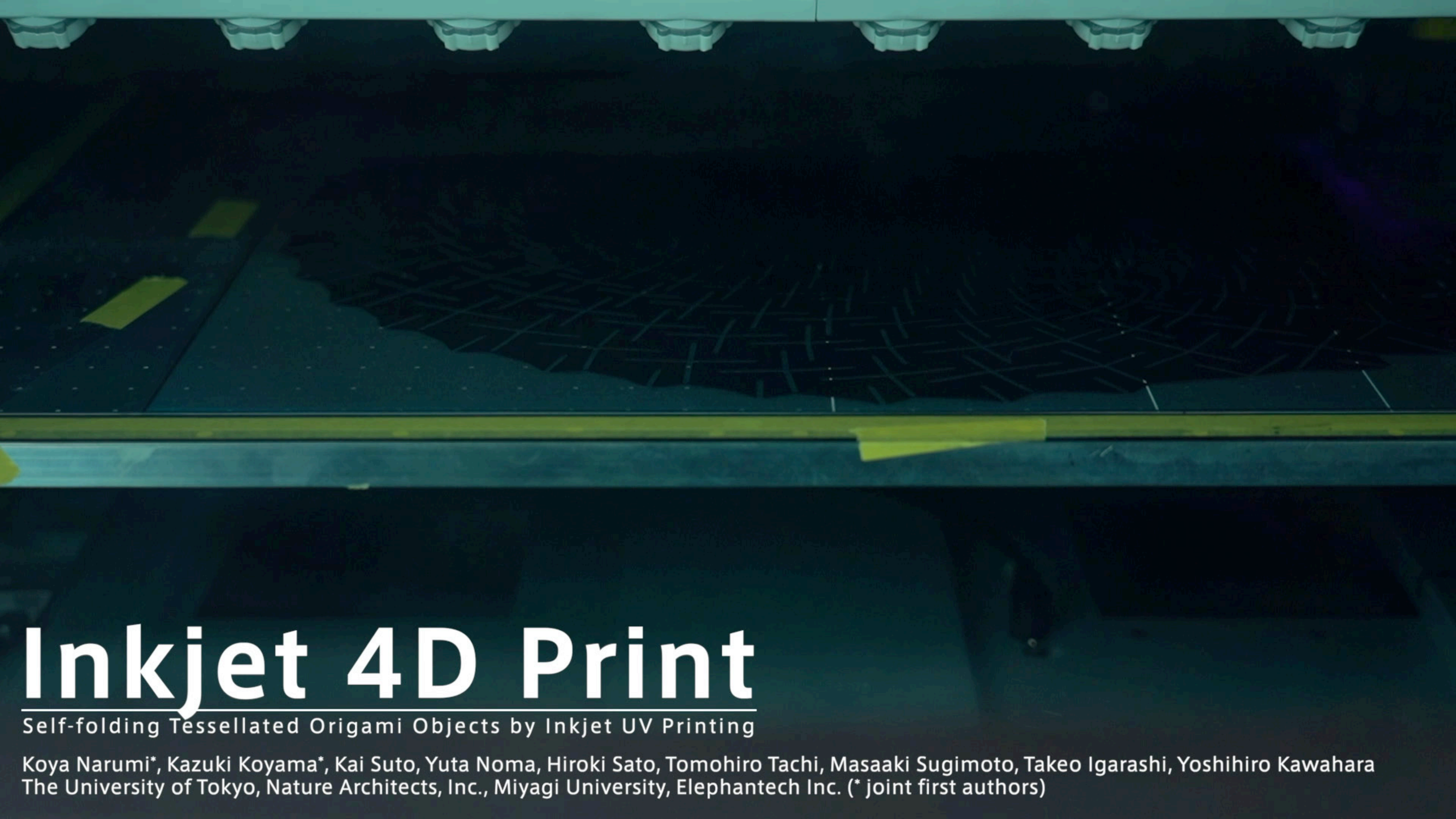
bioLogic: Natto Cells as Nanoactuators for Shape Changing Interfaces [CHI '15]

Lining Yao, Jifei Ou, Chin-Yi Cheng, Helene Steiner, Wen Wang, Guanyun Wang, Hiroshi Ishii (**MIT media Lab.**)

Self-healing UI:

Mechanically and Electrically Self-healing Materials for Sensing and Actuation Interfaces

Koya Narumi*, Fang Qin*, Siyuan Liu, Huai-Yu Cheng, Jianzhe Gu, Yoshihiro Kawahara, Mohammad Islam, Lining Yao
Carnegie Mellon University & The University of Tokyo



Inkjet 4D Print

Self-folding Tessellated Origami Objects by Inkjet UV Printing

Koya Narumi*, Kazuki Koyama*, Kai Suto, Yuta Noma, Hiroki Sato, Tomohiro Tachi, Masaaki Sugimoto, Takeo Igarashi, Yoshihiro Kawahara
The University of Tokyo, Nature Architects, Inc., Miyagi University, Elephantech Inc. (* joint first authors)

Opening Animation

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Four Ideas as **Advances**

Animation

Audience **cannot help** watching animation.

Backgrounds

Effectively use the **meaning of backgrounds.**

Eye Motion

Grasp the **instant eye motion** of audience.

Aspect Ratio

We can actually select **any aspect ratio as curiosity allows**.

BACKGROUNDS

Effectively use the meaning of backgrounds

In short,

I recommend novices using white backgrounds

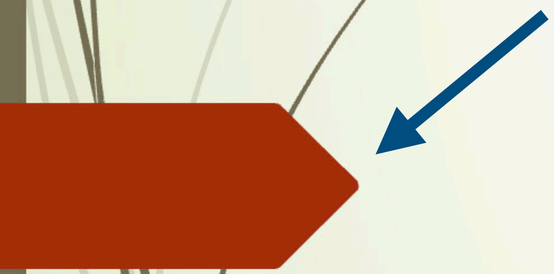
Concepts are cited from “The Non-Designer’s Design Book”

Do not rely on **meaningless and run-of-the-mill decoration.**

If you hope to use it, choose a meaningful one

Do not rely on **meaningless and run-of-the-mill decoration.**

If you hope to use it, choose a meaningful one



Do not rely on **meaningless and run-of-the-mill decoration.**

If you hope to use it, choose a meaningful one

White Background

Pros

Many type of figures are available
Clean and easy

Cons

Black Background

Pros

Serious atmosphere.
High-contrast images.

Cons

Photos with colored backgrounds are typically not suitable.

Reconfigurable Actuator

“C” curve

“S” curve

Short “C” curve

形状と動きを**再構成可能**なアクチュエータ

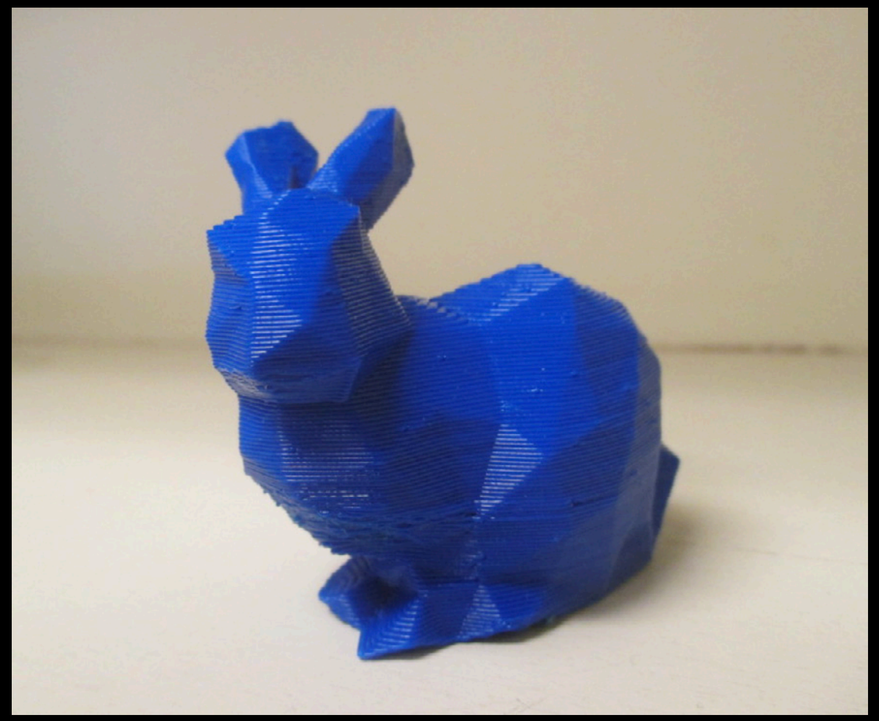
A LIVE UN LIVE

"Everything flows" dress （「色即是空」の服）

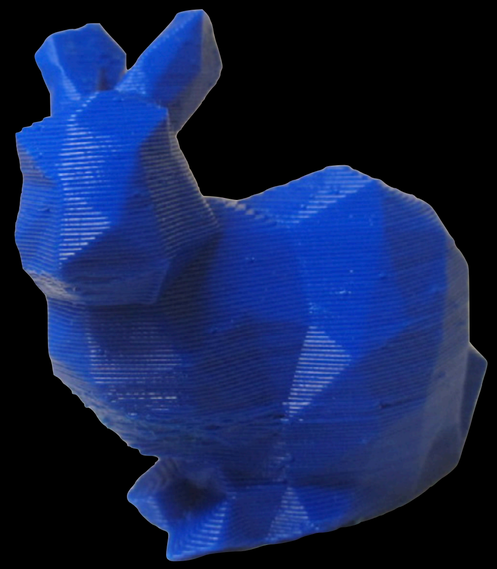
Change its texture by inner temperature

Change its color by outer light

Black Background



OK



Better, but time-consuming

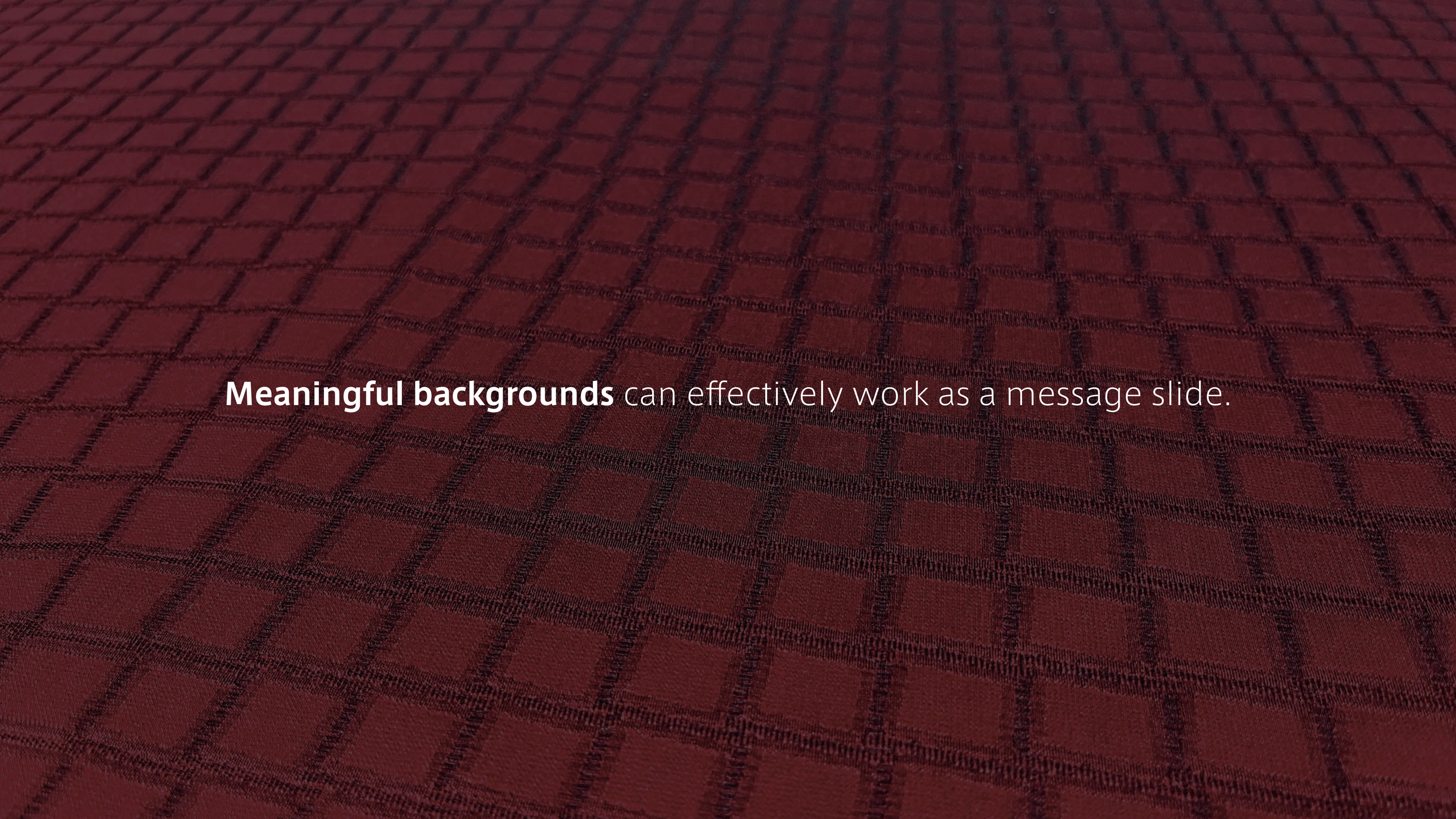
Textured Background

Pros

Easier to communicate the story.

Cons

Noisy and less useful for informative slides.


Meaningful backgrounds can effectively work as a message slide.

There are many fabrication papers published in CHI every year,

but we are proud of our paper **applied to the REAL design and industry.**

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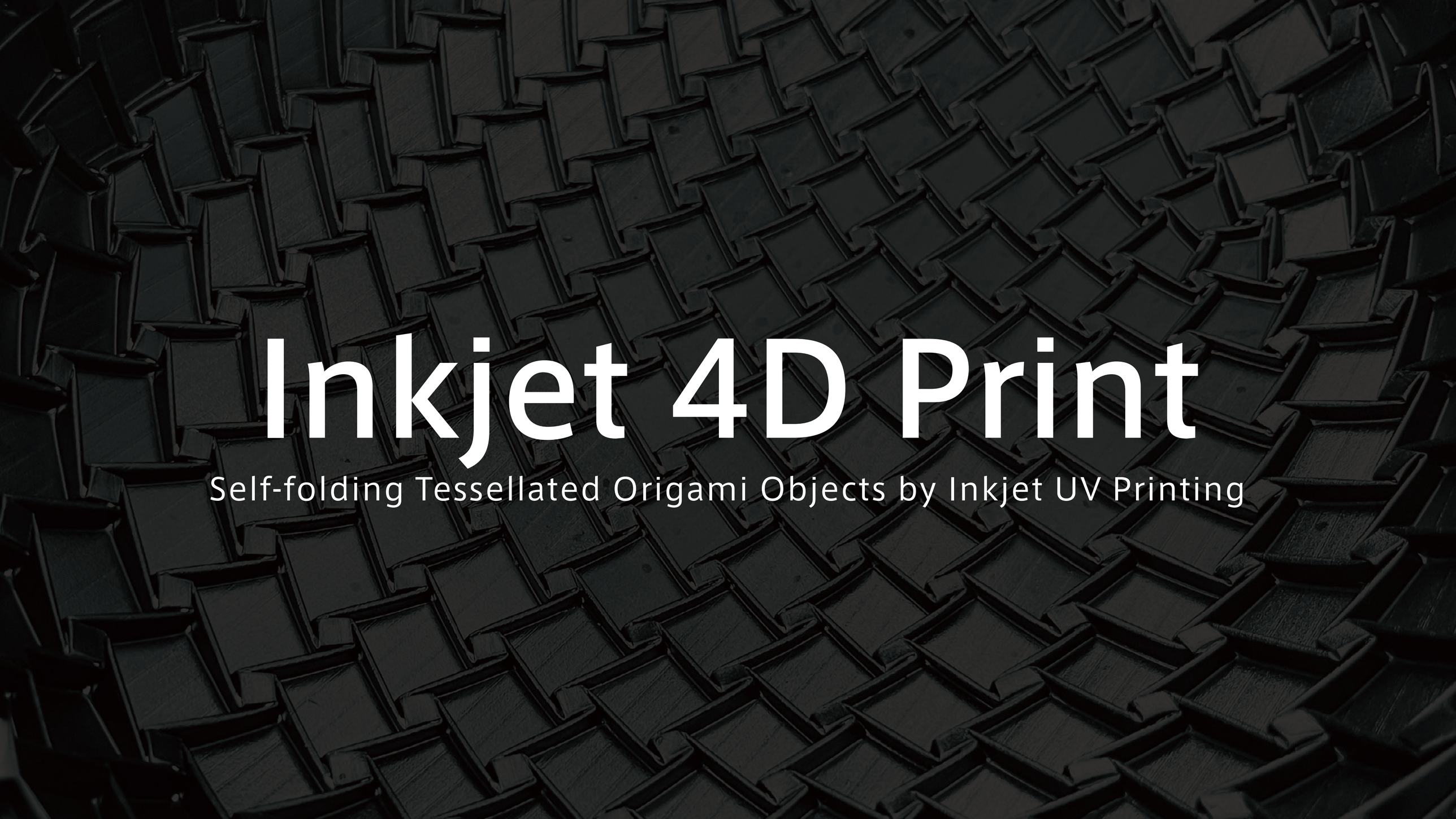
but we are proud of our paper **applied to the REAL design and industry.**



Inkjet 4D Print

Self-folding Tessellated Origami Objects by Inkjet UV Printing

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Four Ideas as **Advances**

Animation

Audience **cannot help** watching animation.

Backgrounds

Effectively use the **meaning of backgrounds.**

Eye Motion

Grasp the **instant eye motion** of audience.

Aspect Ratio

We can actually select **any aspect ratio as curiosity allows**.

EYE MOTION

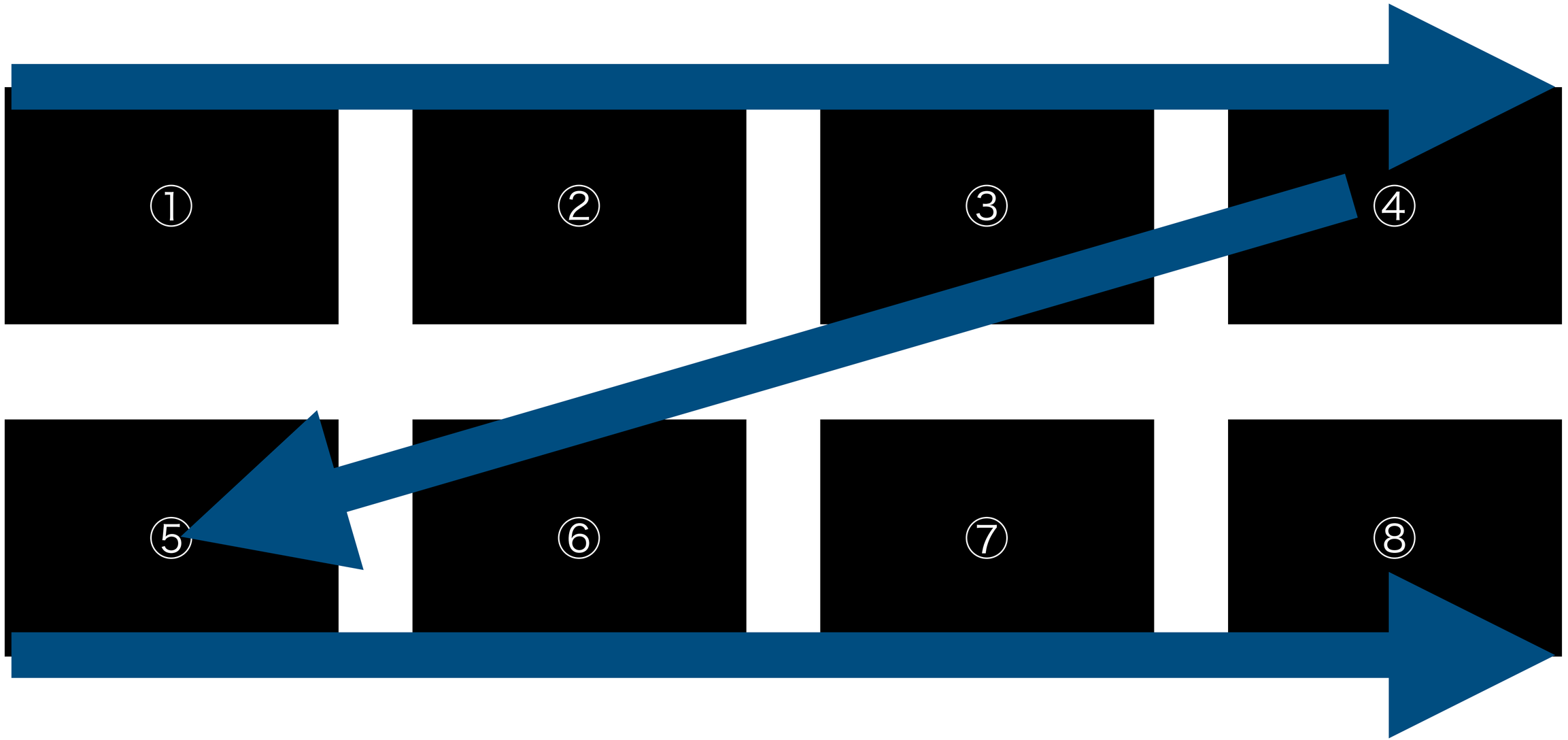
Grasp the instant eye motion of audience

In short,

Be conscious of the natural eye motion of audience.

In which order do you gaze at them?

“Z” shape is known to be natural



Don’t Use “コ” shape

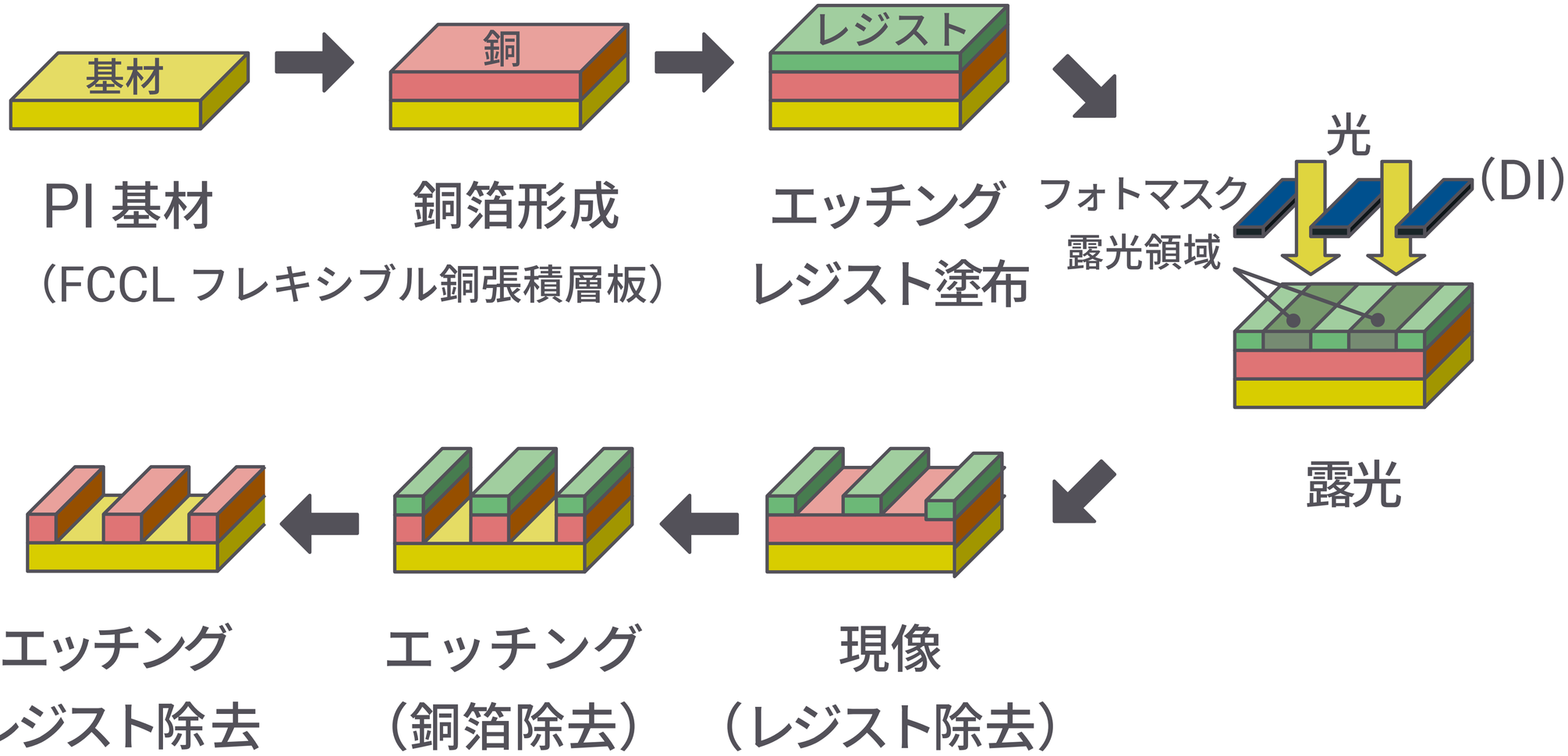


Figure was cited from Elephantech and intentionally modified worse from a beautiful version.

Don’t Use “コ” shape

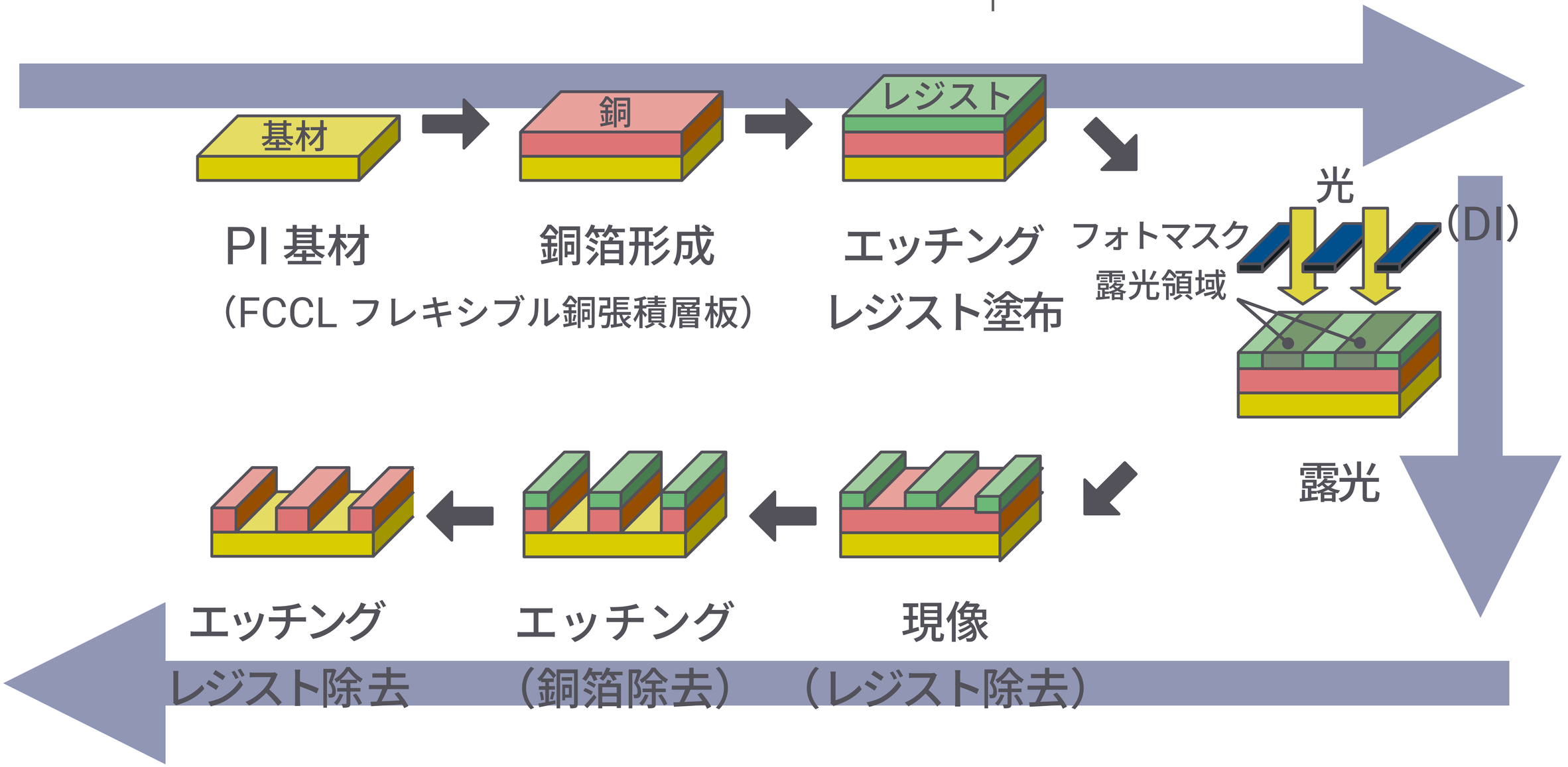


Figure was cited from Elephantech and intentionally modified worse.

Otherwise, animation could be useful

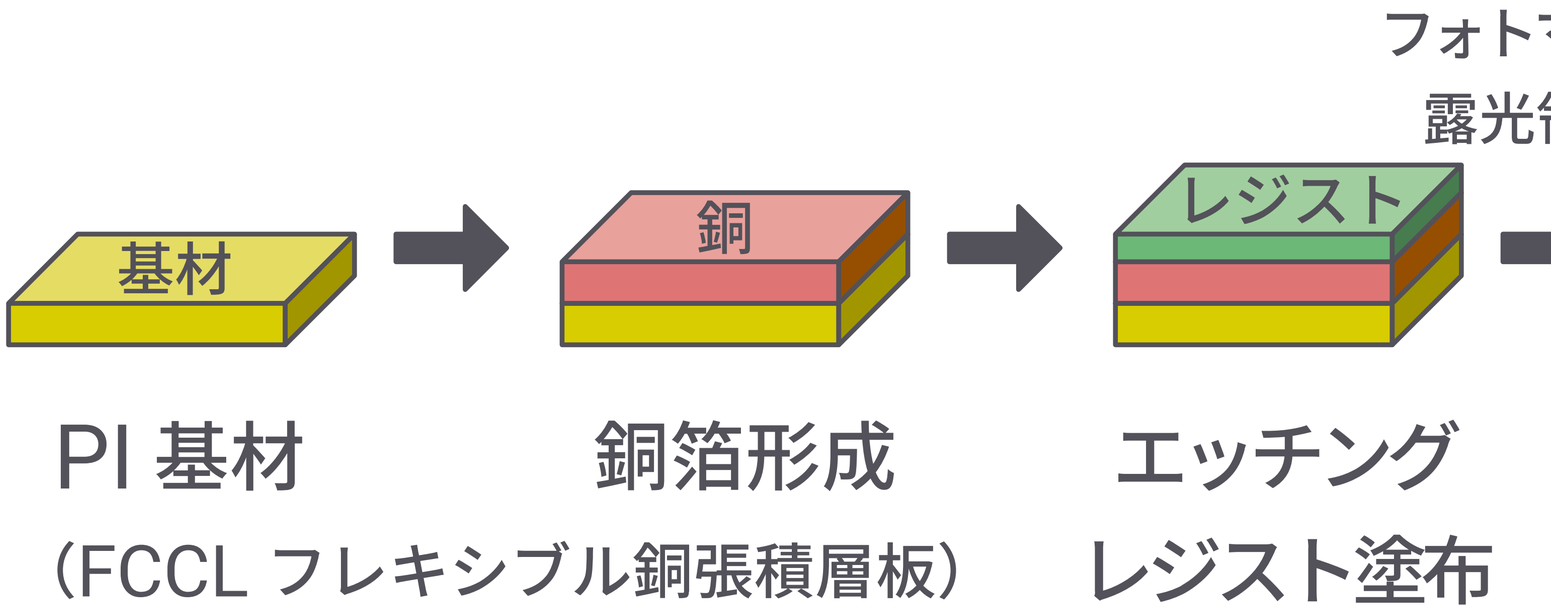
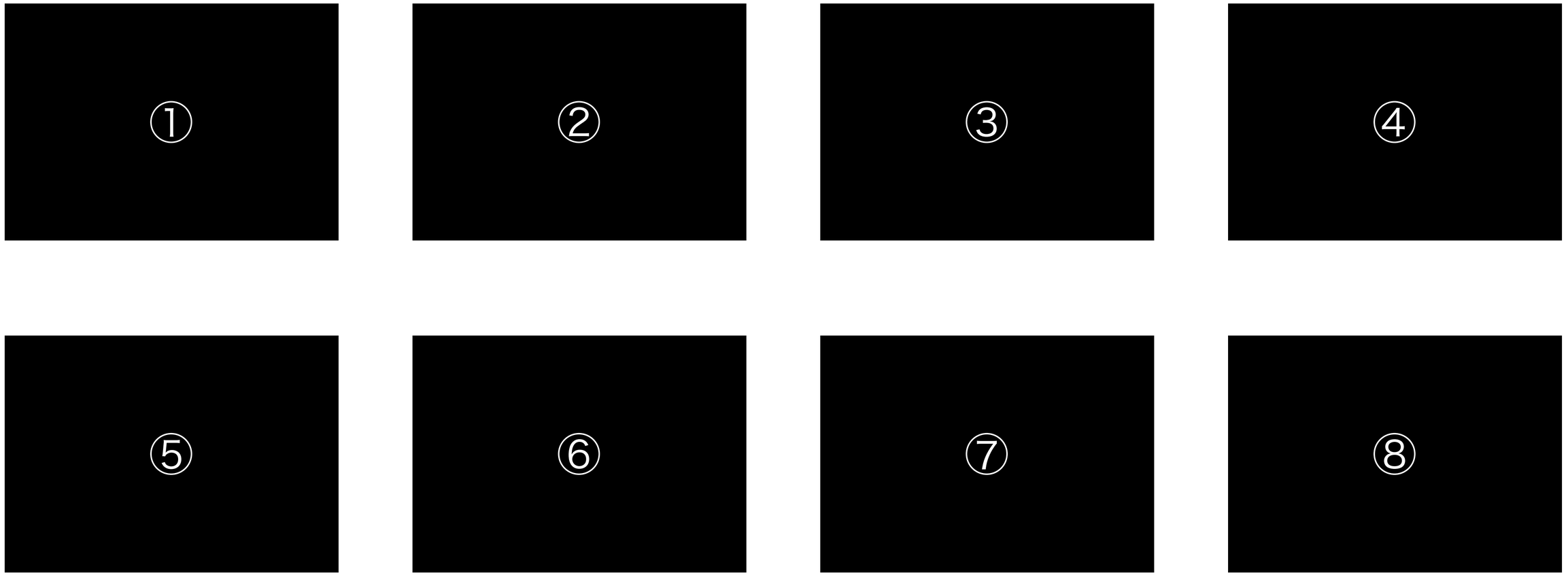


Figure was cited from Elephantech.

NOTE: Consider Proximity as Well



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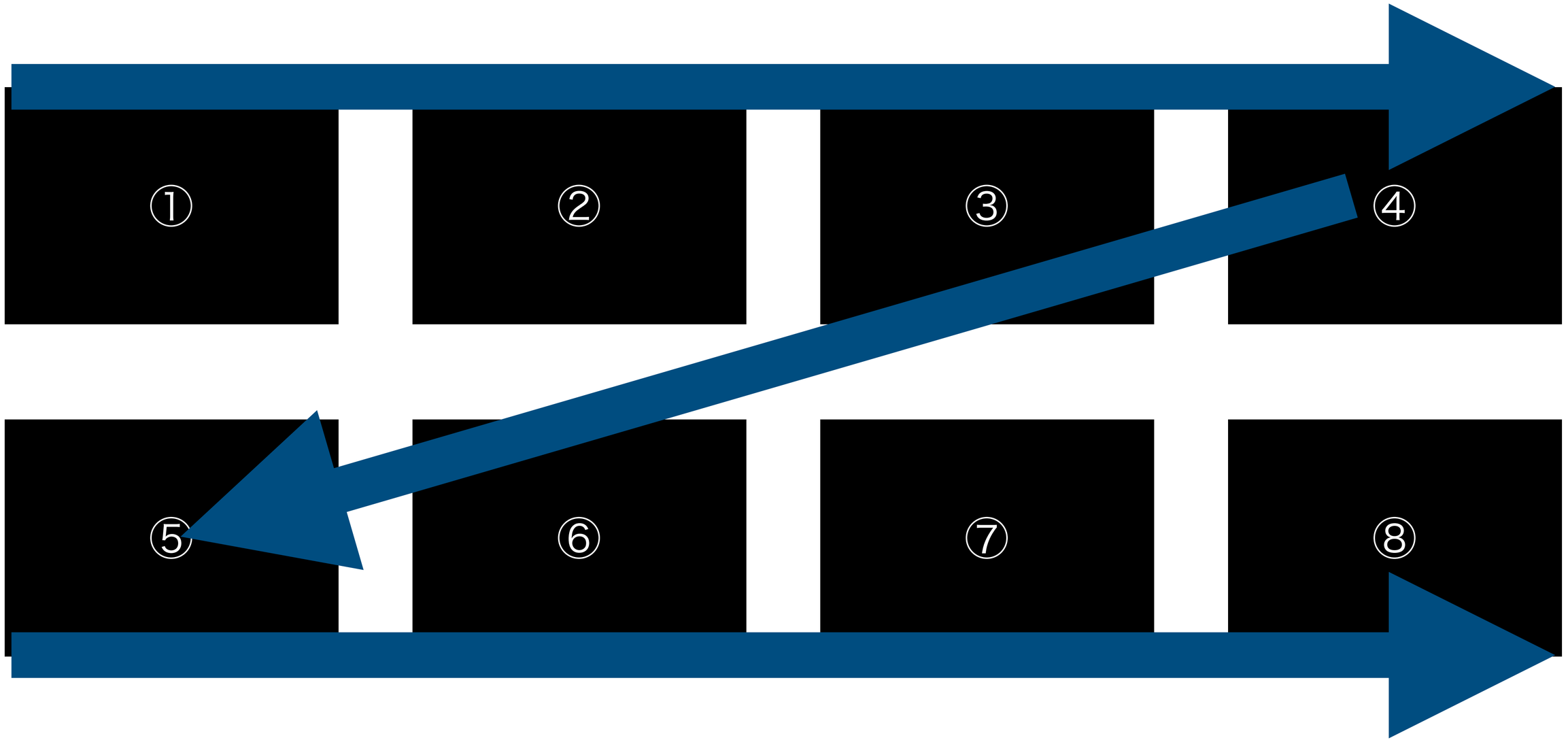

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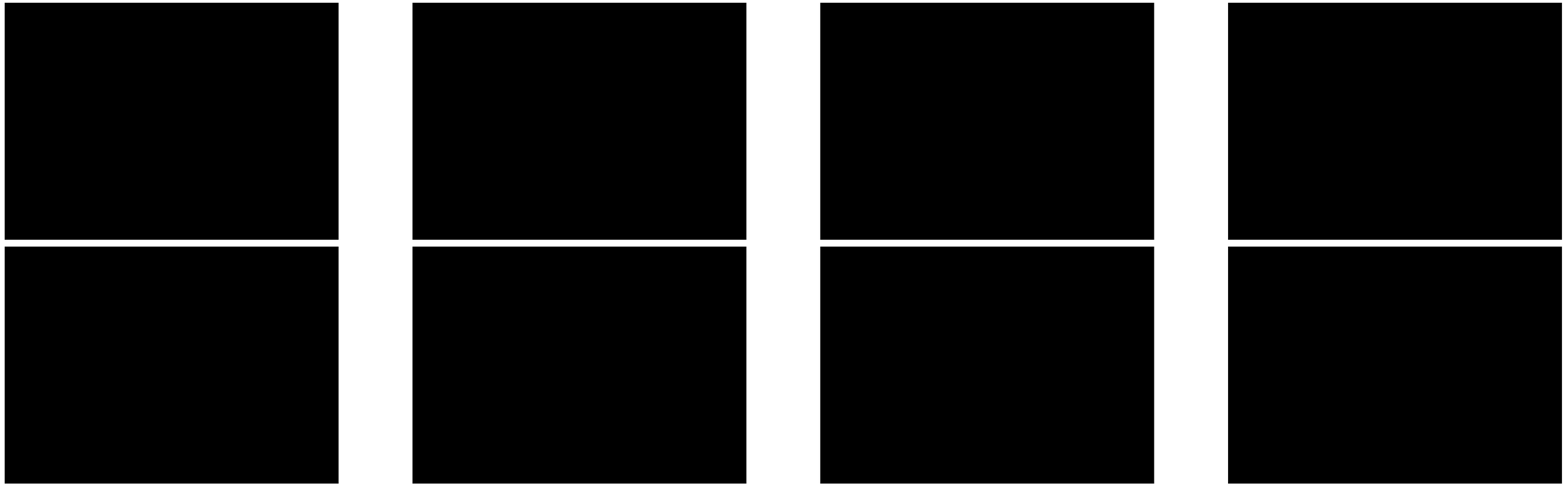

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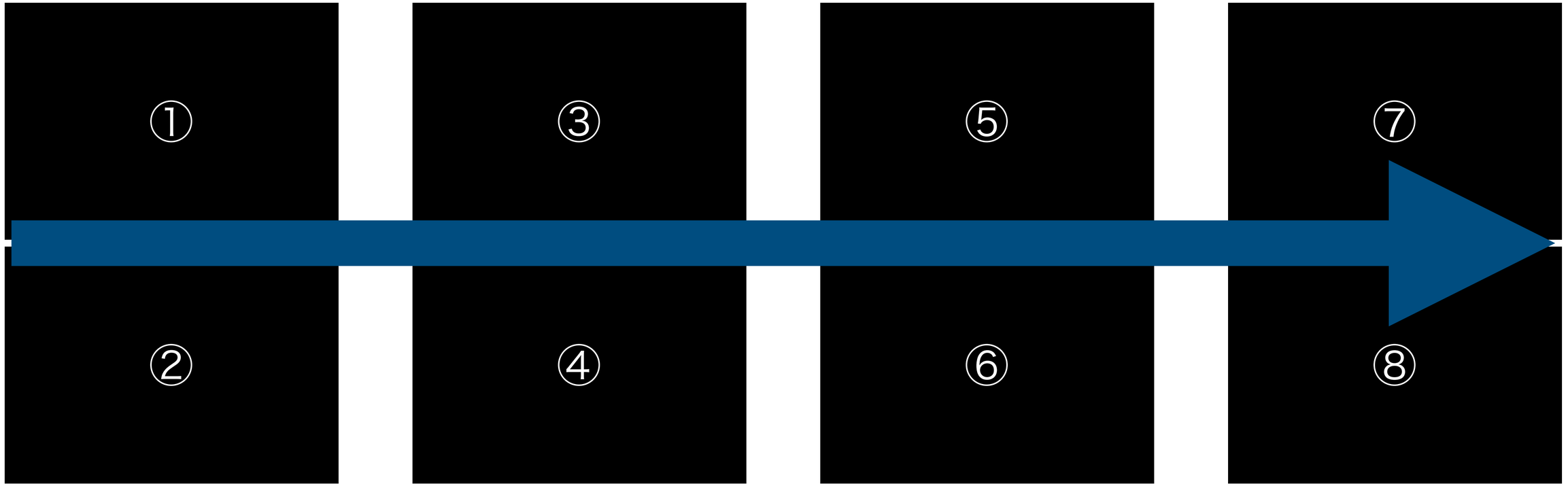

No One Reads Too Many Items

- **Related contents** must be **close**. **Unrelated contents** must be **far.**
- **Invisible lines** should be as **clear and few** as possible.
- **Repeated concepts** improves **consistency.**
- **Meaningful contrasts** are **strong rather than subtle.**
- **Related contents** must be **close**. **Unrelated contents** must be **far.**
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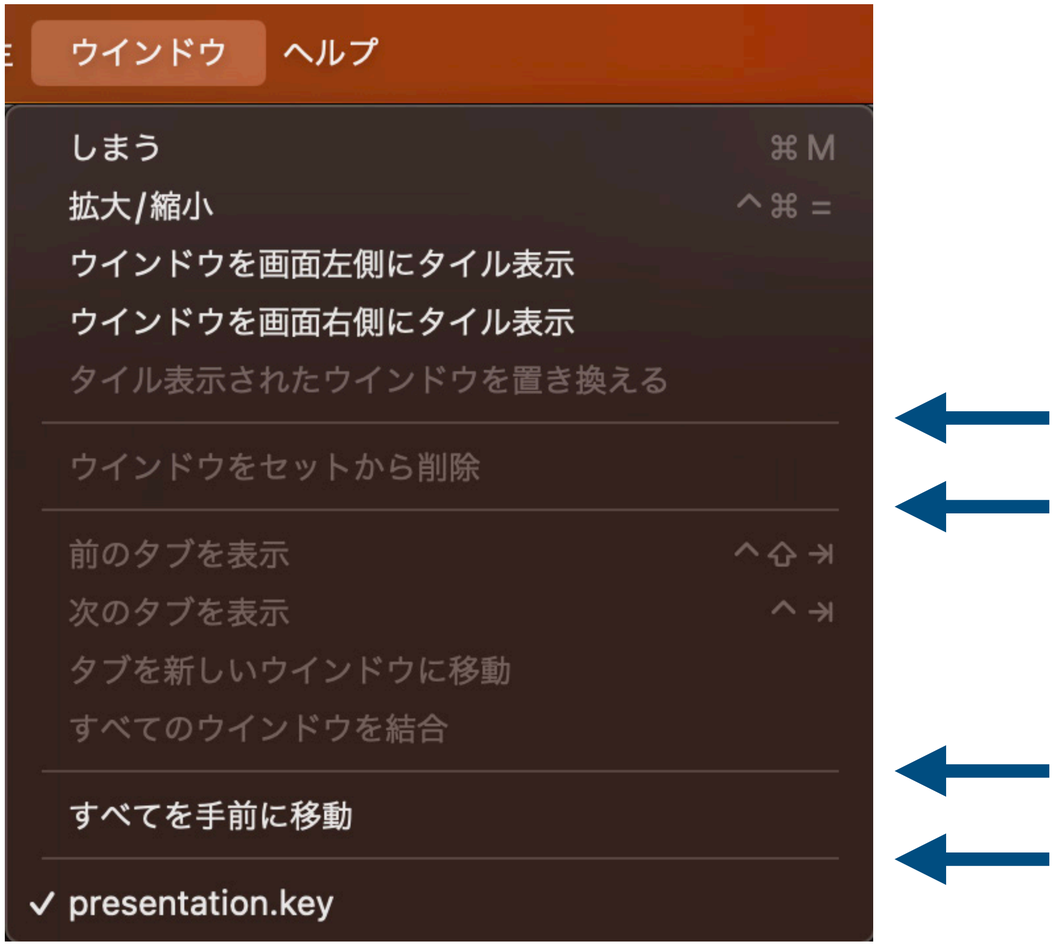
Group them in a small batch for better readability.

Magical Number 7 (or 3 or others)



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Four Ideas as **Advances**

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Audience **cannot help** watching animation.

Backgrounds

Effectively use the **meaning of backgrounds.**

Eye Motion

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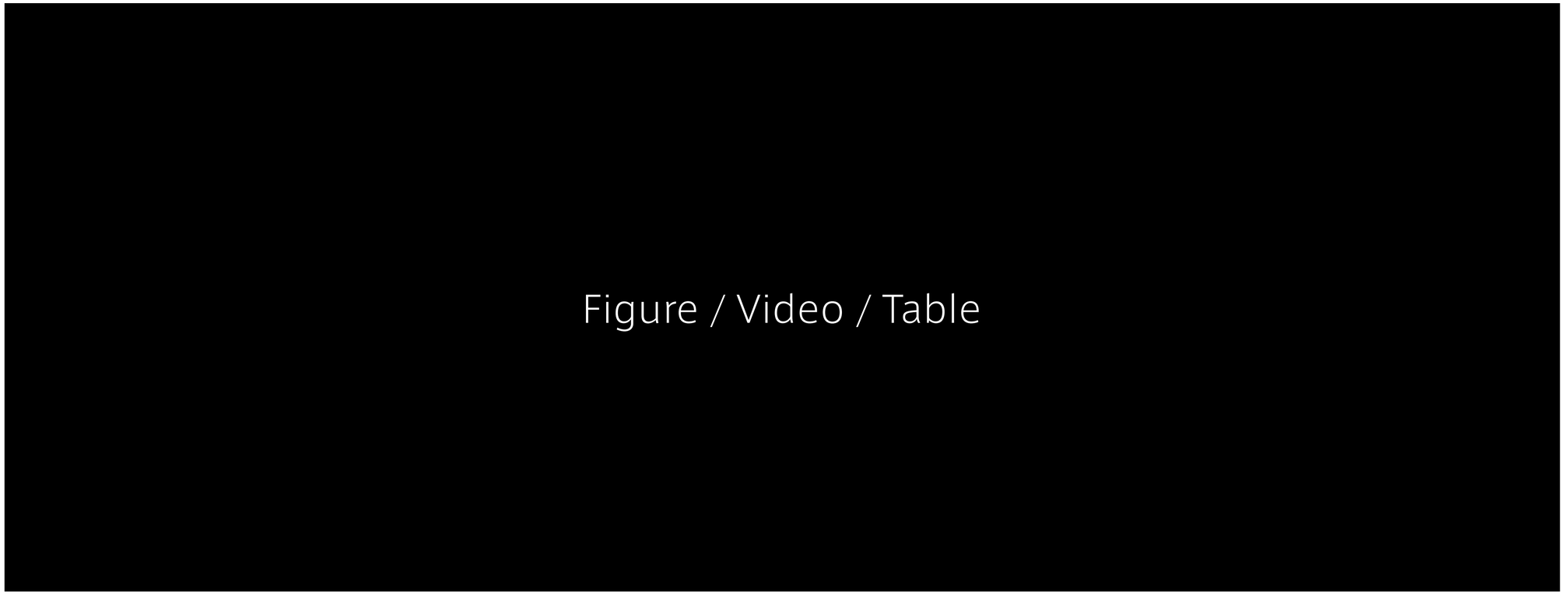
Aspect Ratio

We can actually select **any aspect ratio as curiosity allows**.

ASPECT RATIO

We can actually select any aspect ratio as curiosity allows

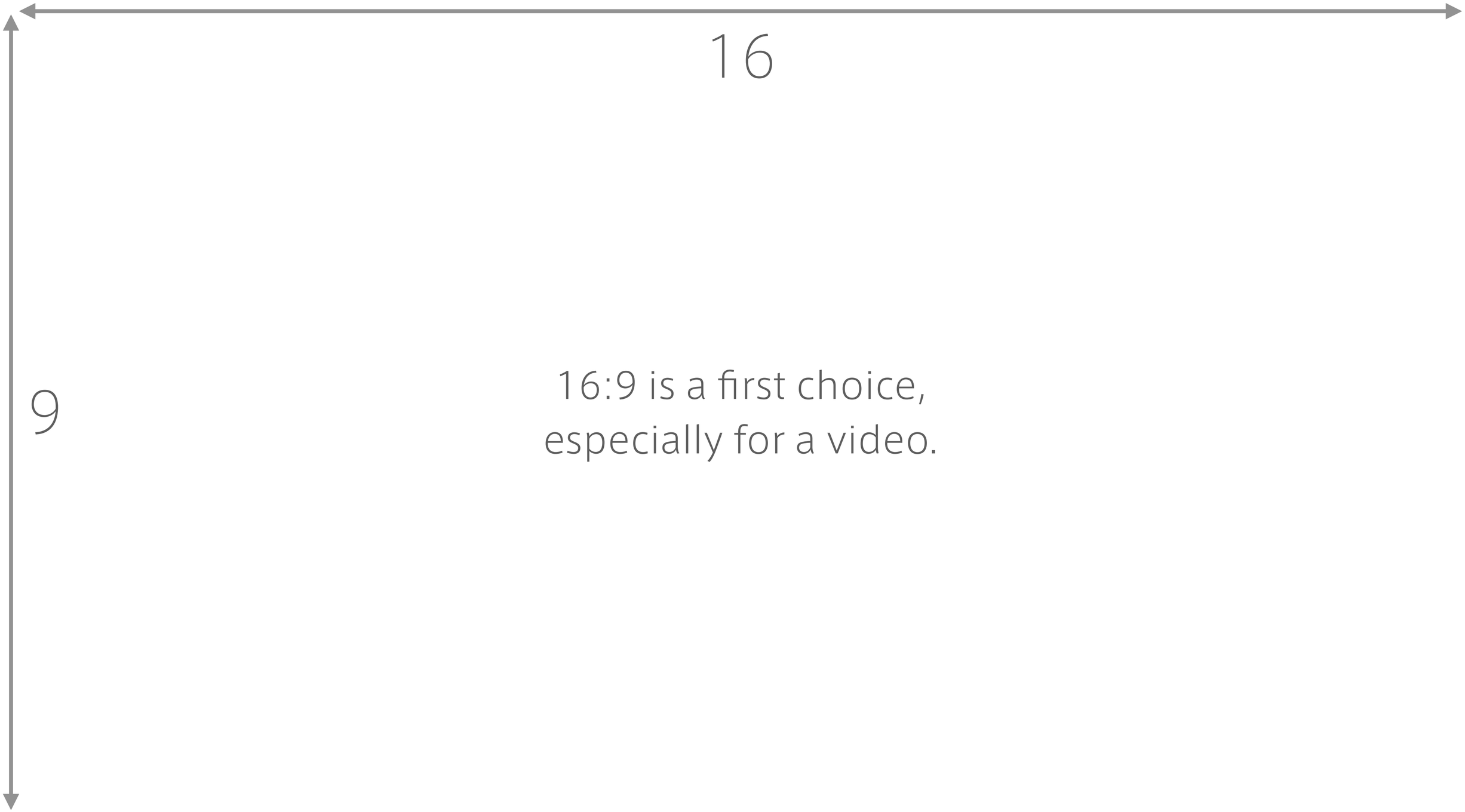
16:9 or 4:3 is the basic aspect ratio



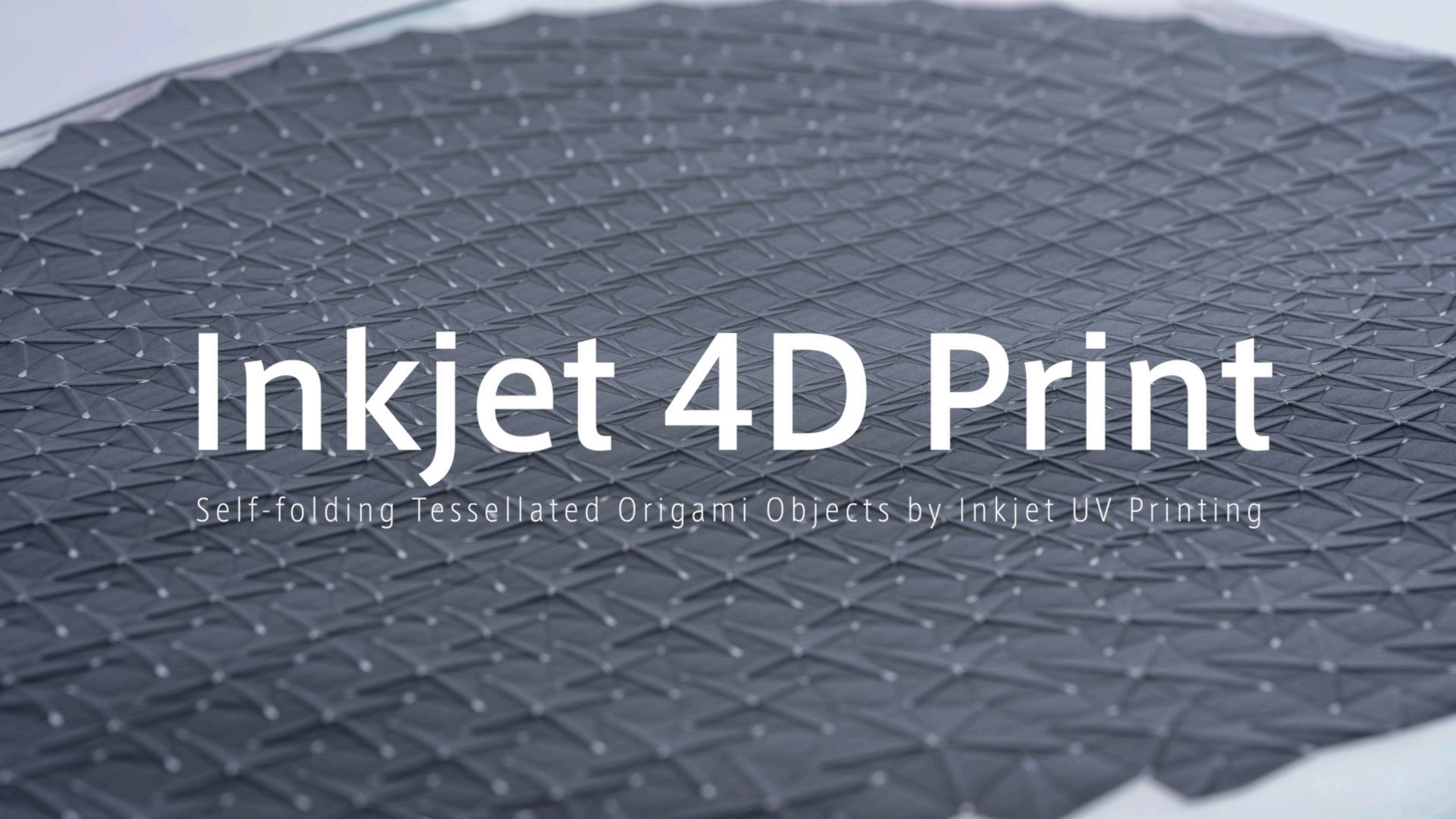
[1]

This slide is made with a 16:9 aspect ratio.

[1] HOGE et al., Reference title, Conference/journal title, 20XX.



16:9 is a first choice,
especially for a video.



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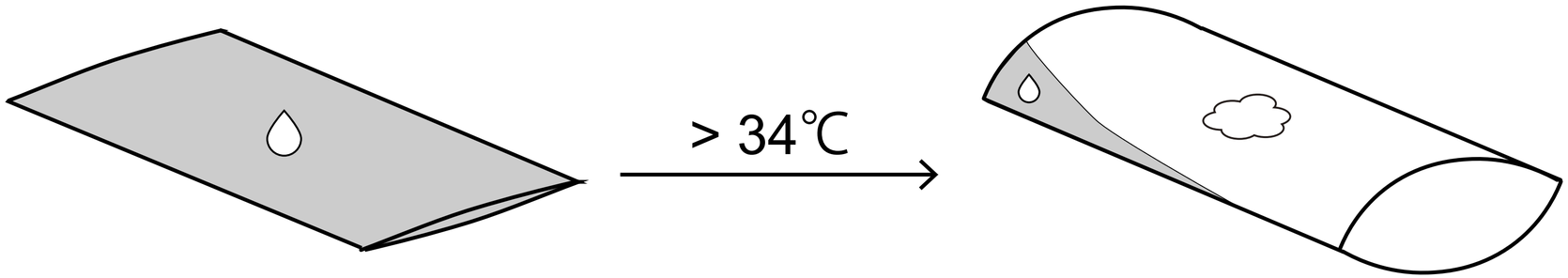
4:3 is also good,
but mainly for an old projector.

A 4:3 slide is like this



Low-boiling-point liquid **NOVEC 7000** evaporates at 34 ℃.
Evaporation makes the pouch inflate and **change its shape.**

Narumi et al., Liquid Pouch Motors, IEEE RA-L 2020.

Intentionally limiting the aspect ratio to 2.35:1 (cinema scope)

Limiting the aspect ratio could lead to **readability**

- **Itemizing ~3 sentences** is sometimes too simple and too “white”
- **Limiting the aspect ratio** could make audience focus on the message
- Extremely speaking, **making them feel comfortable** is enough

Limiting the aspect ratio could lead to **readability**

- **Itemizing ~3 sentences** is sometimes too simple and too “white”
- **Limiting the aspect ratio** could make audience focus on the message
- Extremely speaking, **making them feel comfortable** is enough

The title for the narrow ratio is like this.

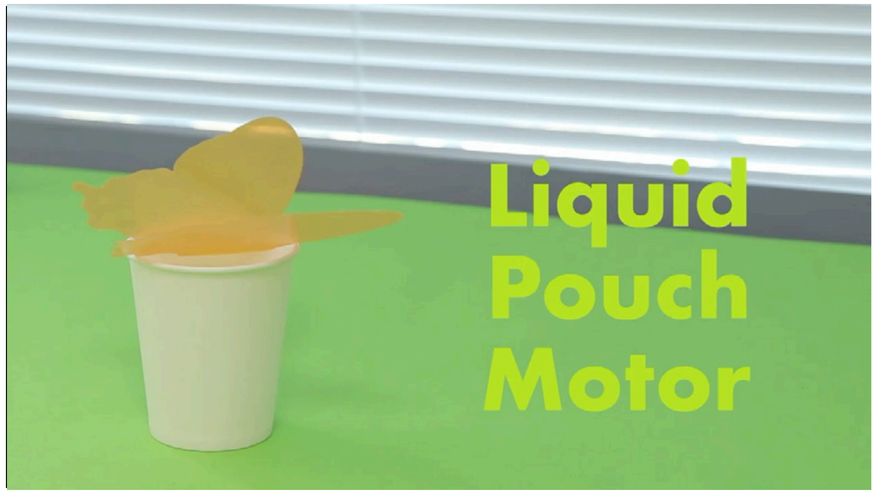
You can continue the long explanation in this place. I saw this presentation format when I was a master course student.

You may think this format is quite useless for academic presentation. But it is useful for, e.g., self-introduction.

Koya Narumi, Ph.D.
Associate Professor,
Keio University

2014 B.Eng. from UTokyo
2017 M.Eng from UTokyo
2020 Ph.D. from UTokyo

Topic: HCI, Digital Fabrication
Hobby: motorcycle riding
Like: wasting money
Goal: saving money



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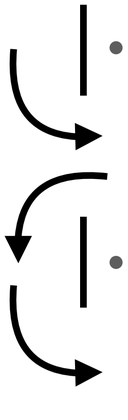
OTHERS

Small topics related to slide design

Regard Audience as **primary school children**

- Even genius professors understand **~30%** of what you mean to say
- **Do NOT tell everything** you know
- Always try to tell just **one message** in one slide

Don’t indent. Find another way



- Indentation seems useful. But it could be harmful.
  - Indentation makes **too many invisible lines**, which is hard to follow.
- Actually, **we do not need to indent at all**.
  - If you think you need indentation, first reduce the amount of messages.

Tradeoff: creativity vs workload

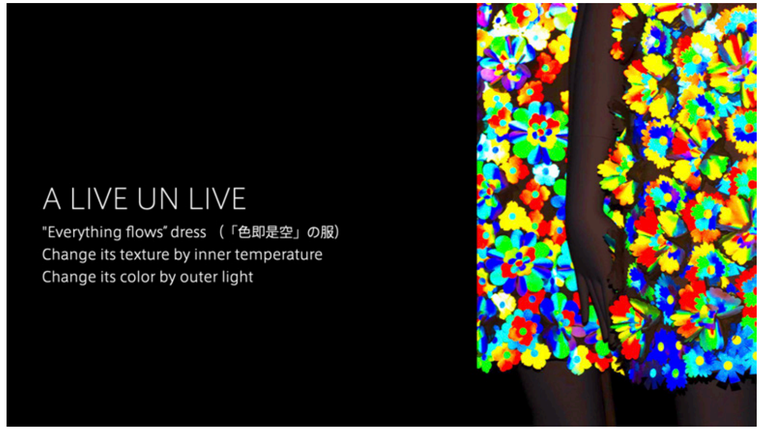
Designing beautiful slides is **NOT** always the answer

Don’t waste time just for lab meetings

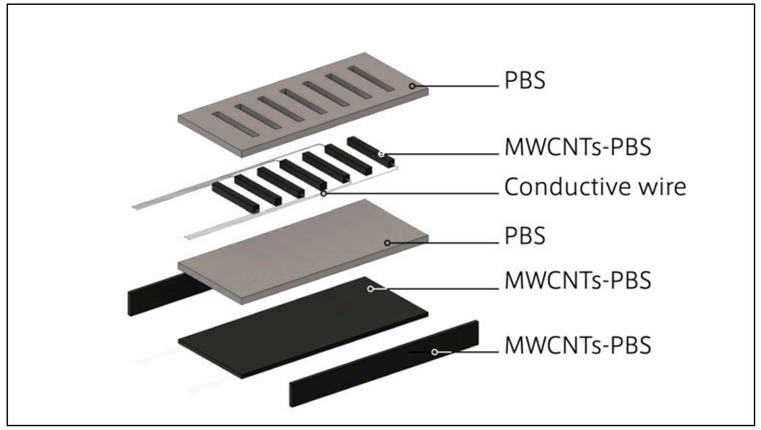
Perhaps **slides are not required** (i.e., use Google Docs or Notion instead)

Conclusion

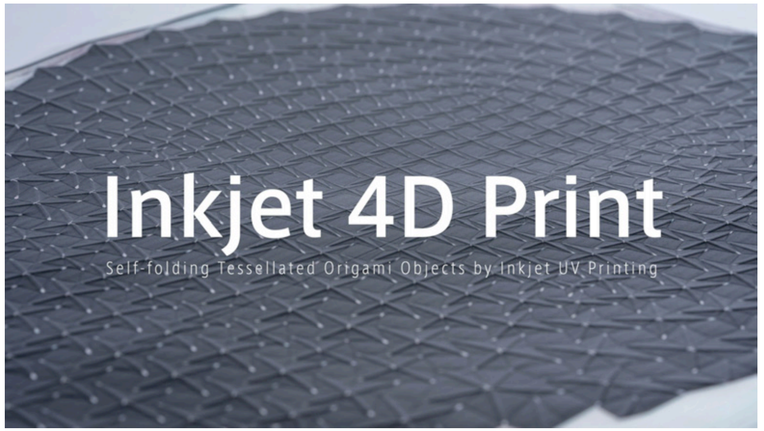
Lets study three presentation methods



Week 3: **Slides**



Week5: **Figures**



Week6: **Videos**

Four Design Principles as **Basics**

Proximity

Related contents must be **close**. **Unrelated contents** must be **far.**

Alignment

Invisible lines should be as **clear and few** as possible.

Repetition

Repeated concepts improves **consistency.**

Contrast

Meaningful contrasts are **strong rather than subtle.**

Concepts are cited from "The Non-Designer's Design Book"

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