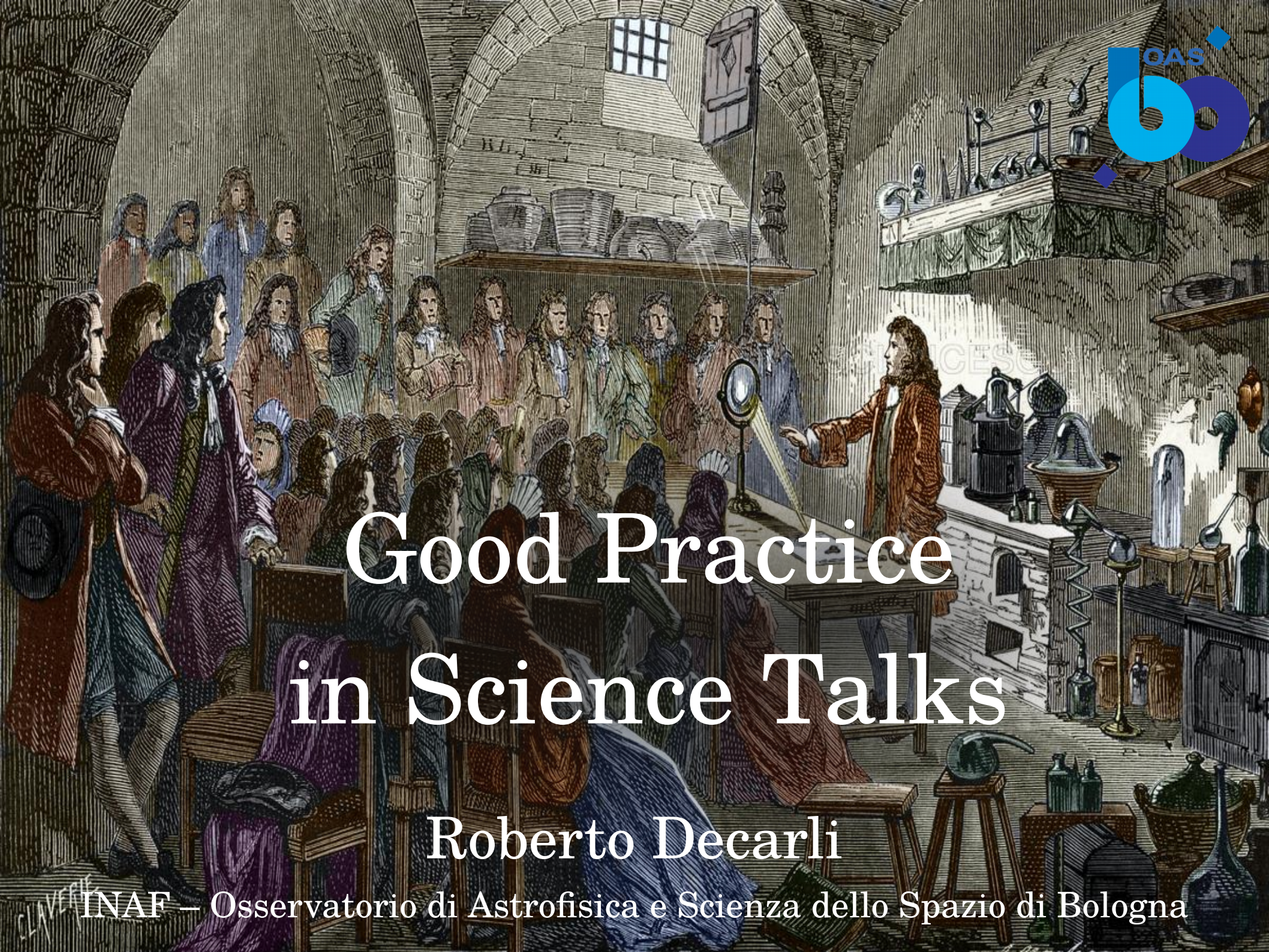


Good Practice in Science Talks

Roberto Decarli

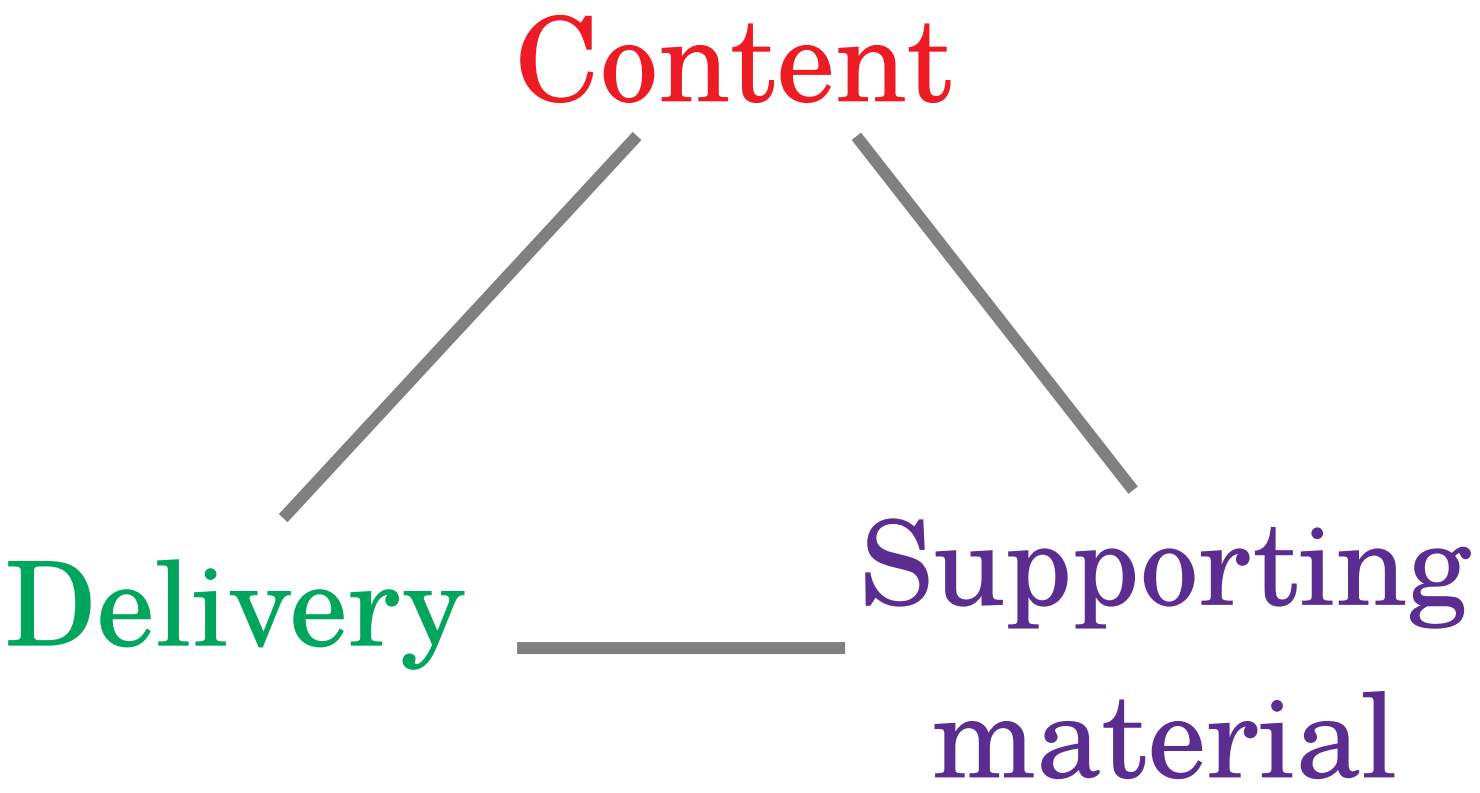
INAF – Osservatorio di Astrofisica e Scienza dello Spazio di Bologna

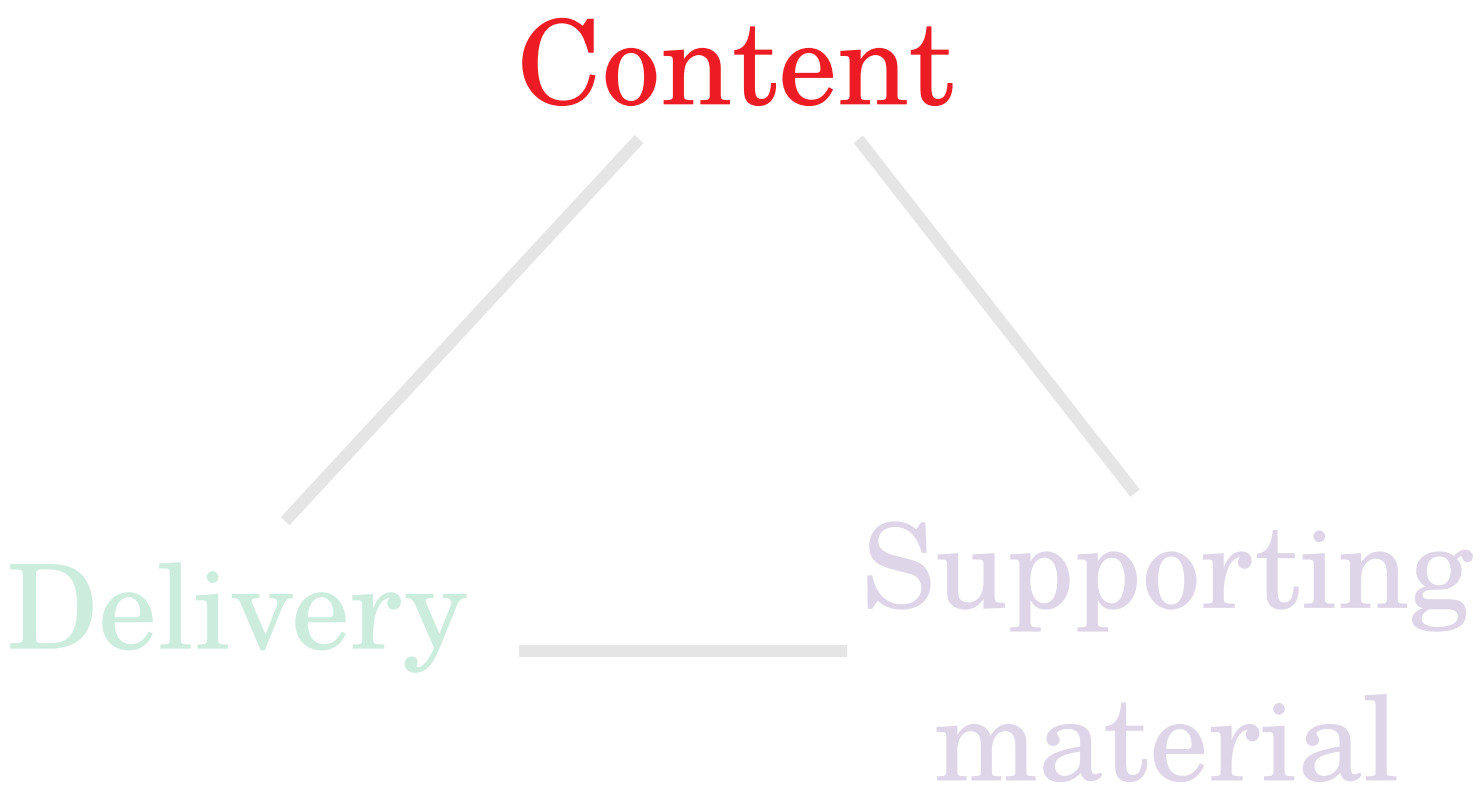
Concept & Credits

Tom Herbst

Hans-Walter Rix

+ hundreds of speakers
of thousands of talks


Content
Delivery
Supporting material


Content
Delivery
Supporting material

Why are we giving the talk?

Why are we giving the talk?

Disseminating results at a conference

Updating group members on recent work

Job hunting

Grant application

Advertising something / someone at a conference

Outreach (which level?)

Why is this important?

Why is this important?

Define your goal

Why is this important?

Define your goal

Understand the audience

Why is this important?

Define your goal

Understand the audience

Tune the level
(e.g., technical details, use of jargon)

Why is this important?

Define your goal

Understand the audience

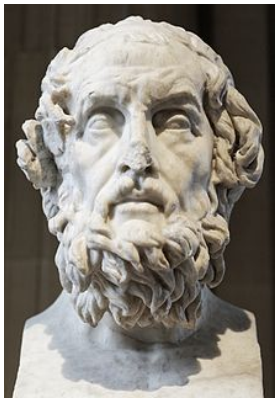
Tune the level
(e.g., technical details, use of jargon)

Set up your narrative

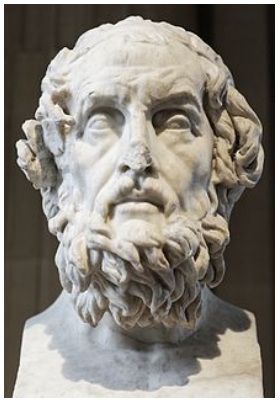
Tell a story!

Storytelling helps remembering

(see Homer)



Tell a story!



Storytelling helps remembering

(see Homer)

… but also, it enforces structure in the talk

Tell a story!

Act 1

Act 2

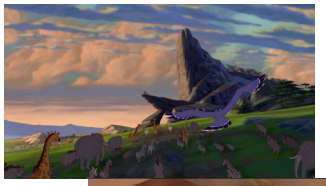
Act 3

Tell a story!

Act 1:

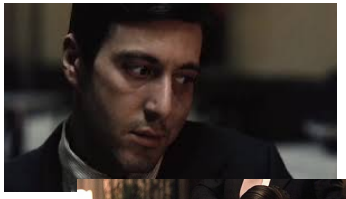
setup &

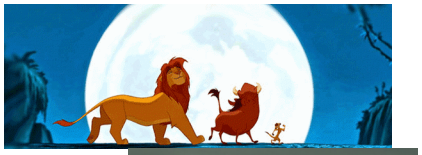
incident



Act 2:

confrontation





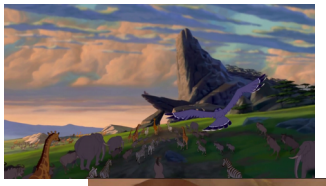
Act 3:

climax &

resolution

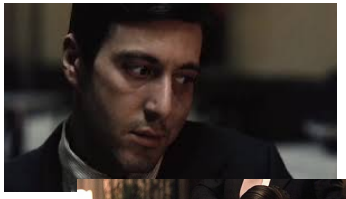
Tell a story!

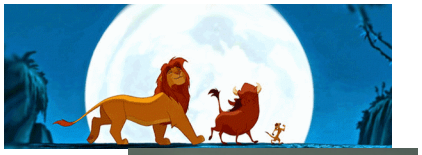
Act 1:
setup &
incident



Act 1:
setup &
key question

Act 2:
confrontation





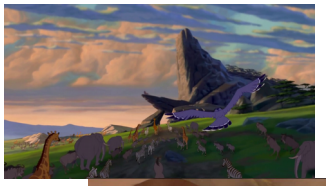
Act 2:
implementation

Act 3:
climax &
resolution

Act 3:
key plot &
conclusion

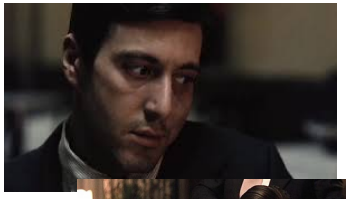
Tell a story!

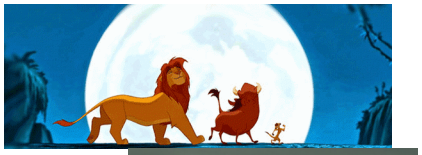
Act 1:
setup &
incident



Act 1:
setup &
key question

Act 2:
confrontation





Act 2:
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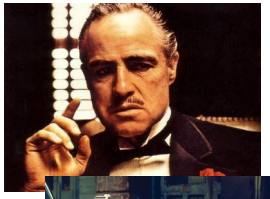
key plot &
conclusion

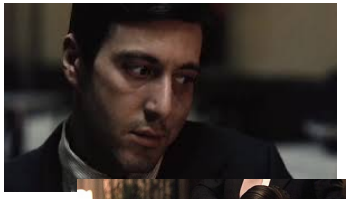
Tell a story!

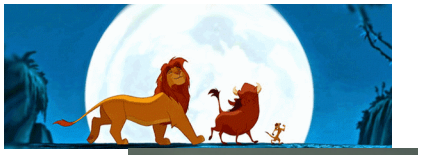
Act 1:
setup &
incident



Act 1:
setup &
key question

Act 2:
confrontation





Act 2:
implementation

Act 3:
climax &
resolution

Act 3:
key plot &
conclusion

Focus on ONE take-home message

Bad news:

People will remember at most

ONE thing

from your talk

Focus on ONE take-home message

Bad news:

People will remember at most
ONE thing
from your talk

Good news:

It's up to you to choose which one!

Corollary on time

Once you have your take-home message,

You have your key figure.

Corollary on time

Once you have your take-home message,

You have your key figure.

Everything else is ancillary.

The talk can be arbitrarily short!

Be on time!

Too long = Annoying for the audience,
the chair, ...

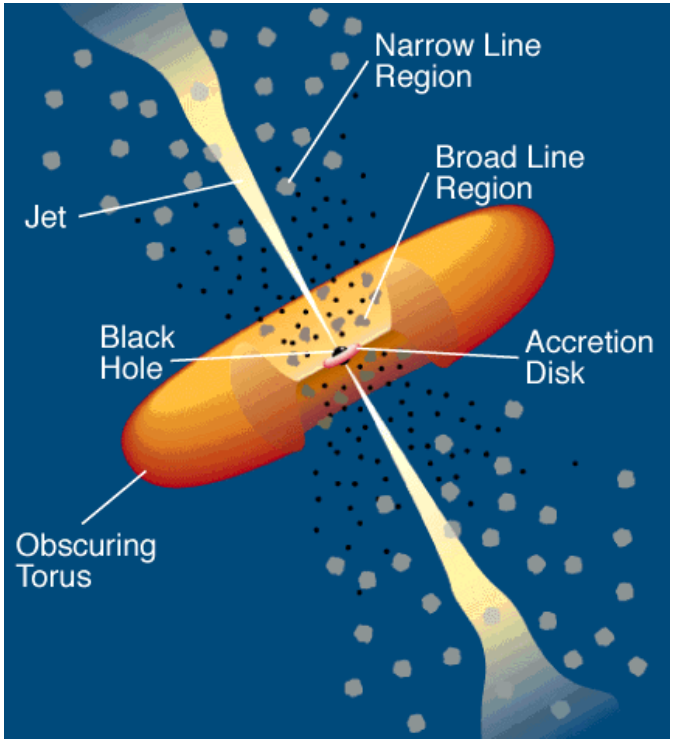
Nobody ever complains
if you're one/two mins too short ;-)

Understand your audience

The tone, style, message, level of introduction, …
all depend on the audience

Understand your audience

The tone, style, message, level of introduction, …
all depend on the audience



E.g., PLEASE do **not** use
this figure at an AGN
conference

(unless there's a *strong* reason)

Level of technicalities

Some technical details can be helpful

But narrative time

≠

time spent on doing something

Credits and (self) promotion

If you show material by others,

credit is mandatory

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If you are promoting students / postdocs,

reiterate their names, show pictures

Credits and (self) promotion

If you show material by others,

credit is mandatory

If you are promoting students / postdocs,

reiterate their names, show pictures

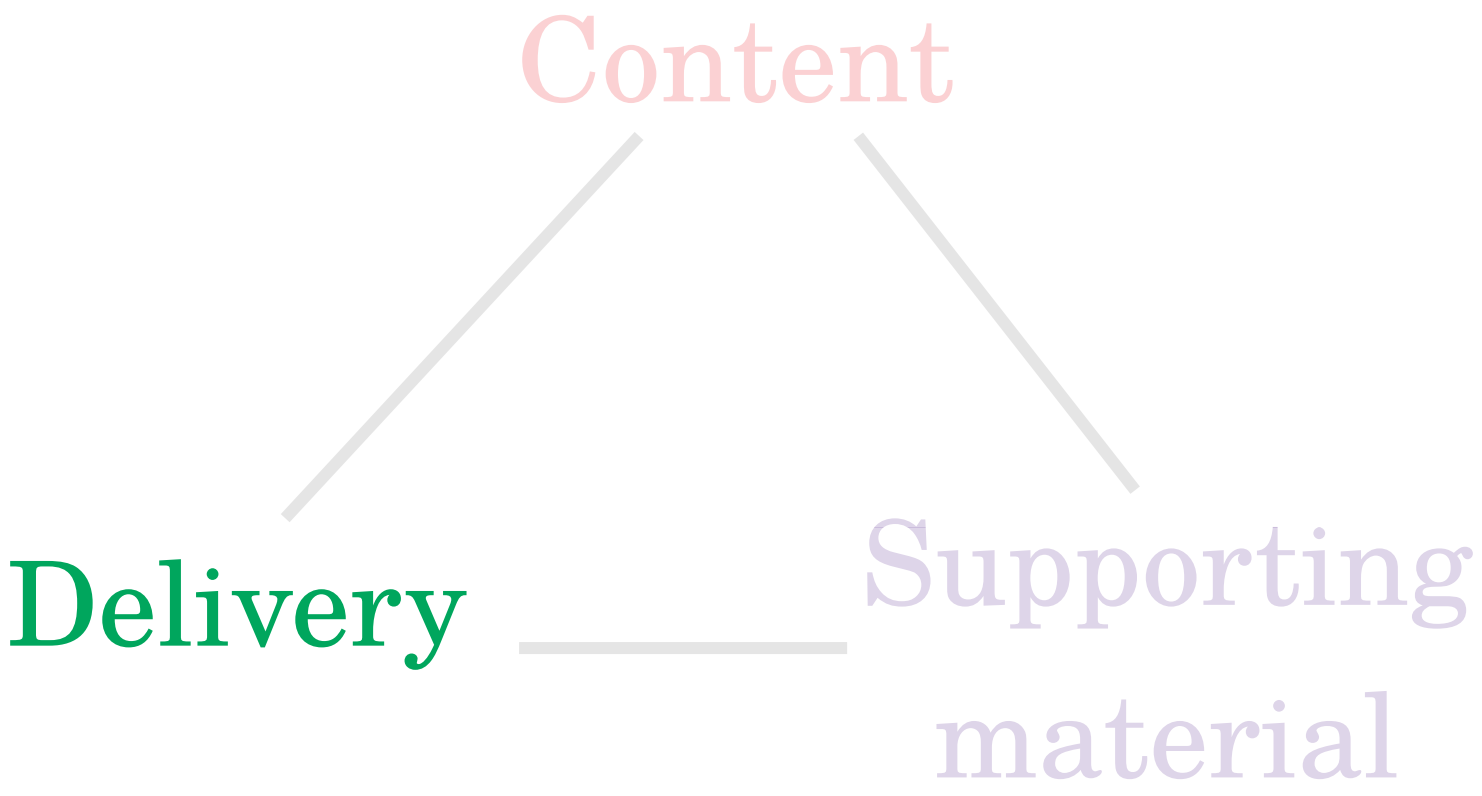
If you are applying for grants,

your contribution to projects is central!

As for reviews…

Reviews are not just longer talks

It is fine (and expected) to advertise your work,
but don't forget your assignment!


Content
Delivery
Supporting material

Delivery

The ultimate goal is *communication*

Delivery

The ultimate goal is *communication*

You are *giving a talk*

Delivery

The ultimate goal is *communication*

You are *giving a talk*

Talk to your audience!

Delivery

The ultimate goal is *communication*

You are *giving a talk*

Talk to your audience!

Corollary #1:

Slides behind, audience in front

Delivery

The ultimate goal is *communication*

You are *giving a talk*

Talk to your audience!

Corollary #1:

Slides behind, audience in front

Corollary #2:

Make eye contact!

Establishing connection

Establish *empathy*

Show excitement! You care!

“This is my first talk abroad”

“We were surprised to find ...”

Voice & Posture

Make sure that you're heard well,

Voice & Posture

Make sure that you're heard well,

But don't saturate!

Voice & Posture

Make sure that you're heard well,

But don't saturate!

Emphasize key passages with different voice tones, pauses, etc

Voice & Posture

Make sure that you're heard well,

But don't saturate!

Emphasize key passages with different voice tones, pauses, etc

Pay attention to your body language!

Jokes

Jokes help “breaking the ice” and maintaining the audience’s attention

Jokes

Jokes help “breaking the ice” and maintaining the audience’s attention

But overdoing harms your credibility

Jokes

Jokes help “breaking the ice” and maintaining the audience’s attention

But overdoing harms your credibility

The level / number of jokes depends on:

1) context

2) your audience

Jokes

Jokes help “breaking the ice” and maintaining the audience’s attention

But overdoing harms your credibility

The level / number of jokes depends on:

1) context

2) your audience

If not sure, don’t

Jokes

ALWAYS respect your audience

In particular, be sensitive to different cultural / personal backgrounds

Time and preparation

50 people x 45 min = 1 week

Time and preparation

50 people x 45 min = 1 week

~ 1000 euros in gross salaries

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~ 1000 euros in gross salaries

Tom's law:

Invest as much time in preparation!

Time and preparation

50 people x 45 min = 1 week

~ 1000 euros in gross salaries

Tom's law:

Invest as much time in preparation!

Repeat, repeat, repeat!

Time and preparation

50 people x 45 min = 1 week

~ 1000 euros in gross salaries

Tom's law:

Invest as much time in preparation!

Repeat, repeat, repeat!

No excuse for not knowing

what's in the next slide

Time and preparation

Learn the first & last sentences by heart

Time and preparation

Learn the first & last sentences by heart

Don’t read the slides!

Time and preparation

Learn the first & last sentences by heart

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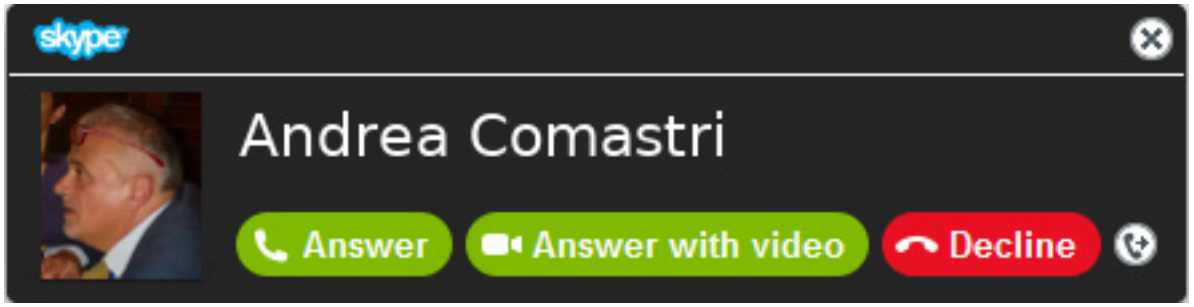

Time and preparation

Learn the first & last sentences by heart

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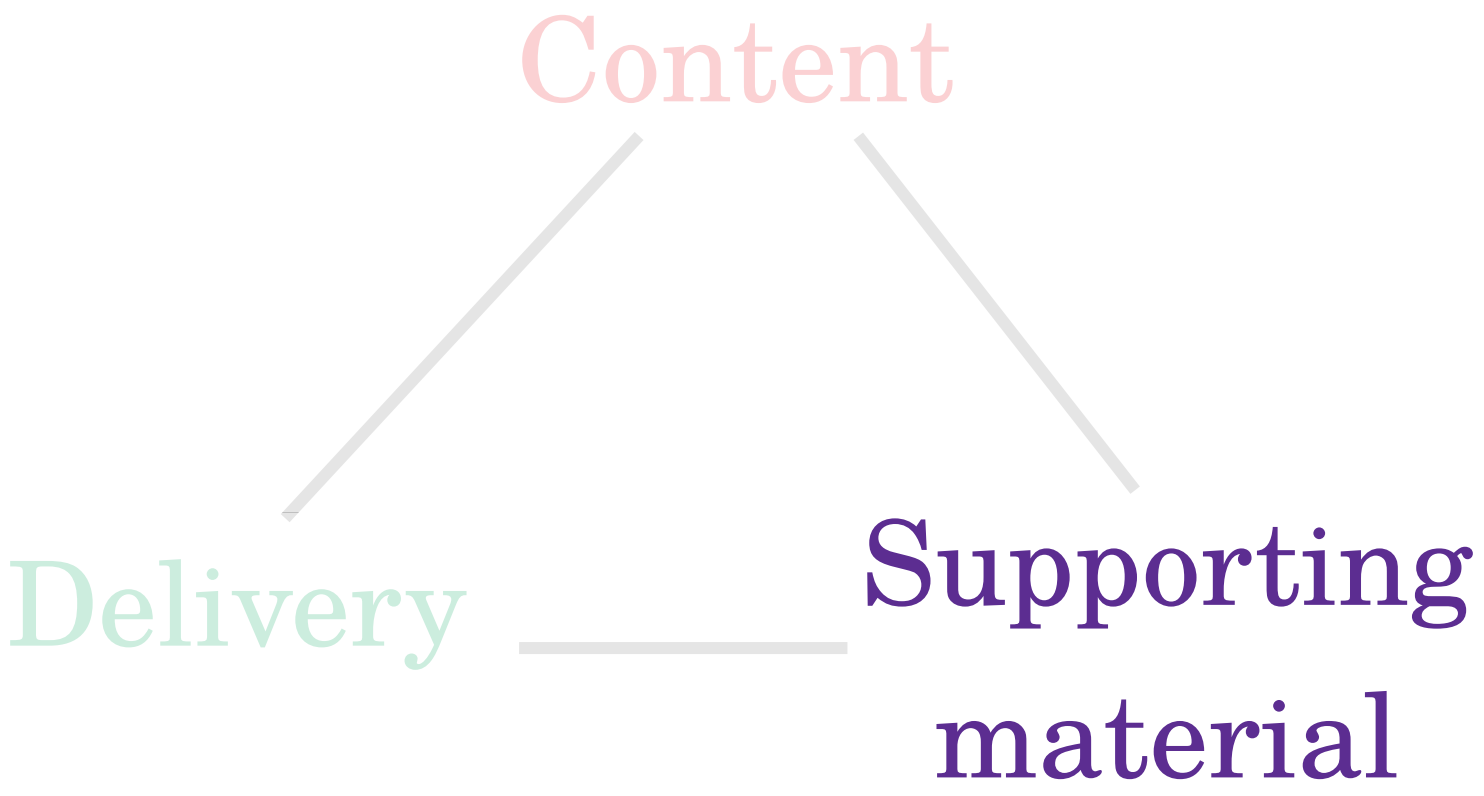
Time and preparation

Learn the first & last sentences by heart

Don’t read the slides!

Turn off the wifi ;-)


Content
Delivery
Supporting material

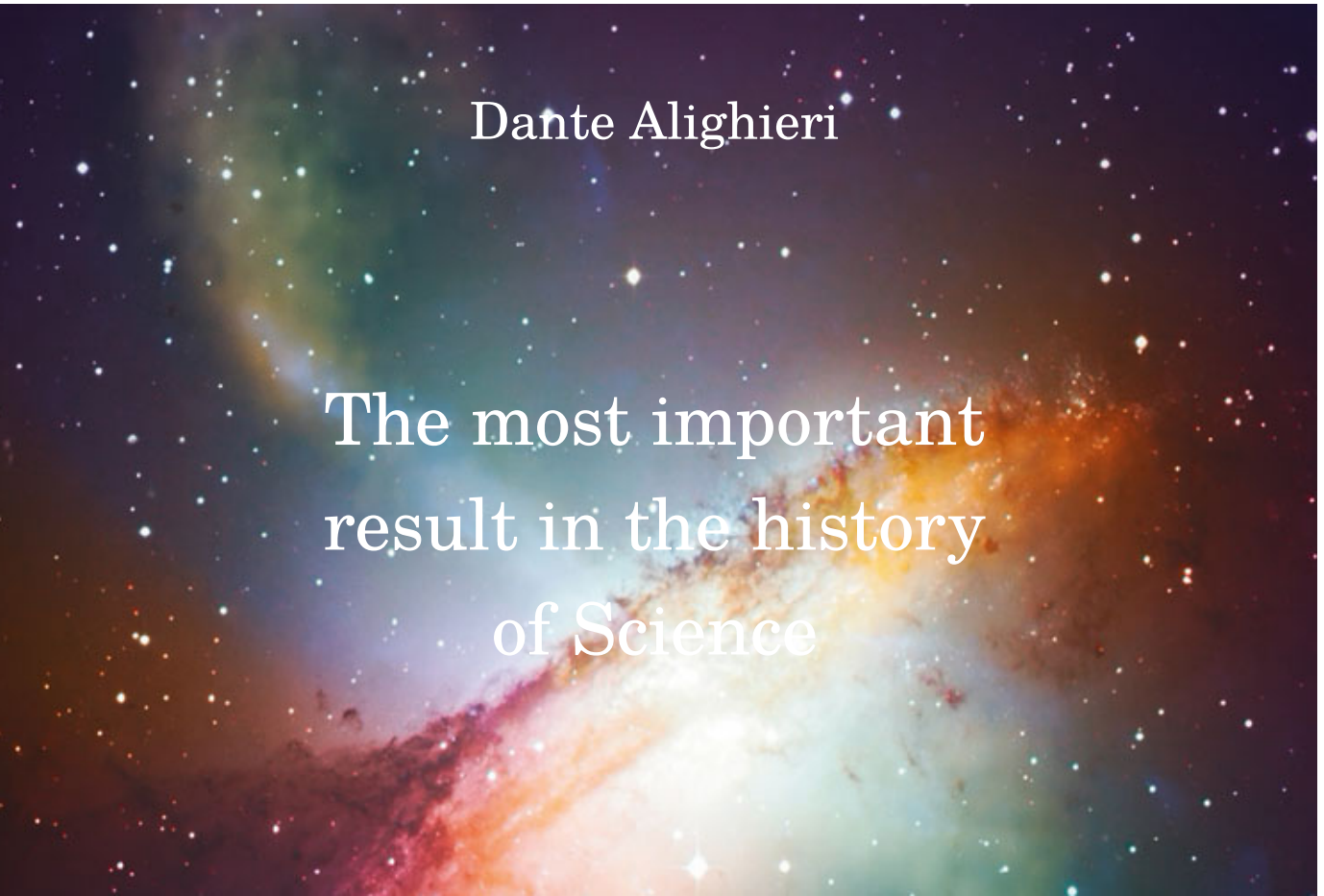
Slides are *supporting* material

Their purpose is to support your talk,
not to replace it

Minimal text, big plots

Title slide

Make it readable



Remember:

1) your institute

2) your co-Is

3) your funding agencies

Slide layout

Make it readable

Slide layout

Make it readable

More slides with less content per slide

Slide layout

Make it readable

More slides with less content per slide

If it's on the slide, you have to explain it!

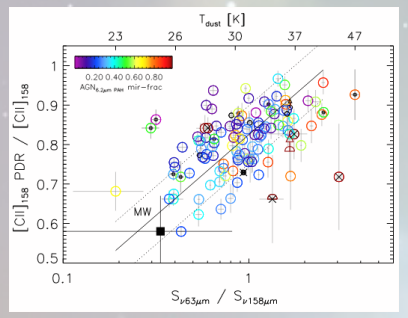
Slide layout

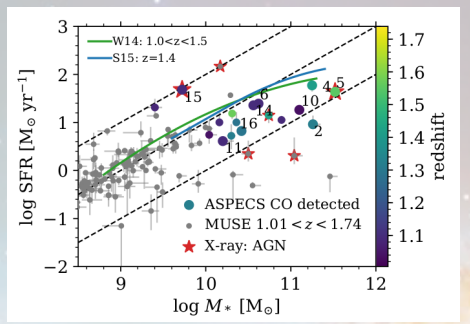
Make it readable

More slides with less content per slide

If it's on the slide, you have to explain it!

A few plots





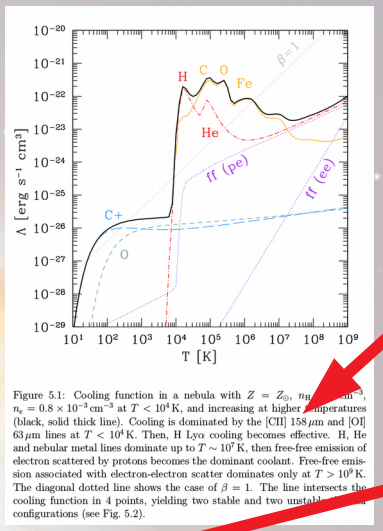


Figure 5.1: Cooling function in a nebula with $Z = Z_\odot$, n_H [illegible] cm^{-3}, $n_e = 0.8 \times 10^{-3}$ cm^{-3} at $T < 10^4$ K, and increasing at higher temperatures (black, solid thick line). Cooling is dominated by the [CII] 158 μm and [OI] 63 μm lines at $T < 10^4$ K. Then, H Lyα cooling becomes effective. H, He and nebular metal lines dominate up to $T \sim 10^7$ K, then free-free emission of electron scattered by protons becomes the dominant coolant. Free-free emission associated with electron-electron scatter dominates only at $T > 10^9$ K. The diagonal dotted line shows the case of $\beta = 1$. The line intersects the cooling function in 4 points, yielding two stable and two unstable [illegible] configurations (see Fig. 5.2).

This is an example of text that fills a gap. It might be unclear why there is all this text here, but I'm sure I had a great idea when I first started to write it. Too bad that now I can't remember what was it about.

Dante Alighieri – Same conference you are attending – today

Use descriptive titles!

Remove captions

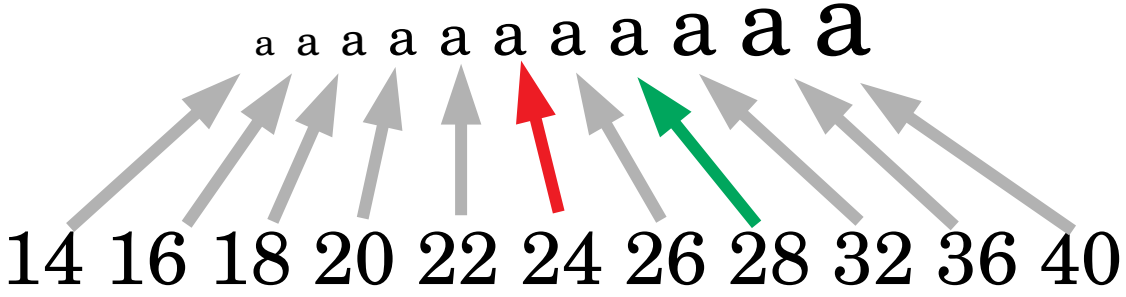
Too much text

Needed?

Text

Use readable fonts

Minimum size: 24 (20 in plots)



Text

This is an example of how a long section of verbose text can distract the audience from the speaker, unless of course the audience is actually paying attention to the speaker, in which case they won't be reading this text, so I guess that there's not so much point in showing the text in the first place. That said, I will reiterate for a few extra lines that this text is far too long for a slide, really, please don't make this kind of mistake, really. I hope that the message came across sufficiently close, but well, I guess that I can reiterate it once again: don't use such a long text. Also, please raise your hand if you made it to the end of this text.

Text

Slides are supporting material:

use MINIMAL text!

Text

Slides are supporting material:
use MINIMAL text!

Reference:
up to 6 items per slide,
up to 6 words per item

Use colors and *typeface* to draw attention

Equations and tables

Are they REALLY needed?

Equations and tables

Are they REALLY needed?

If so, help the audience through:

$$I(\omega) = \frac{Z^2 e^6}{48\pi^3 \varepsilon_0^3 c^3 m_e^2 \gamma v^3} \left[\frac{1}{\gamma^2} + 1\right] \exp\left(-\frac{2\omega b}{\gamma v}\right)$$

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Lorentz factor

Equations and tables

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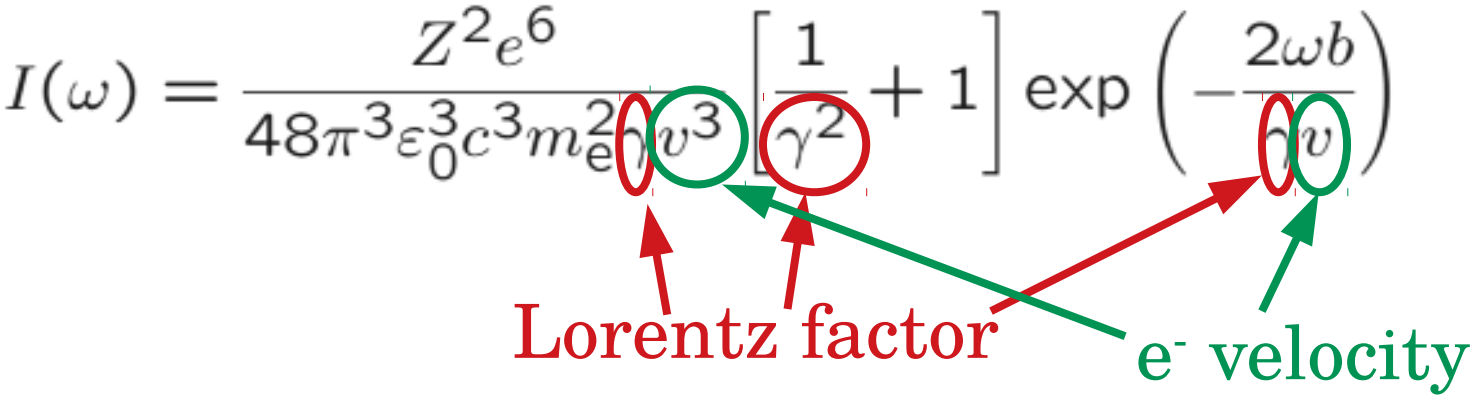

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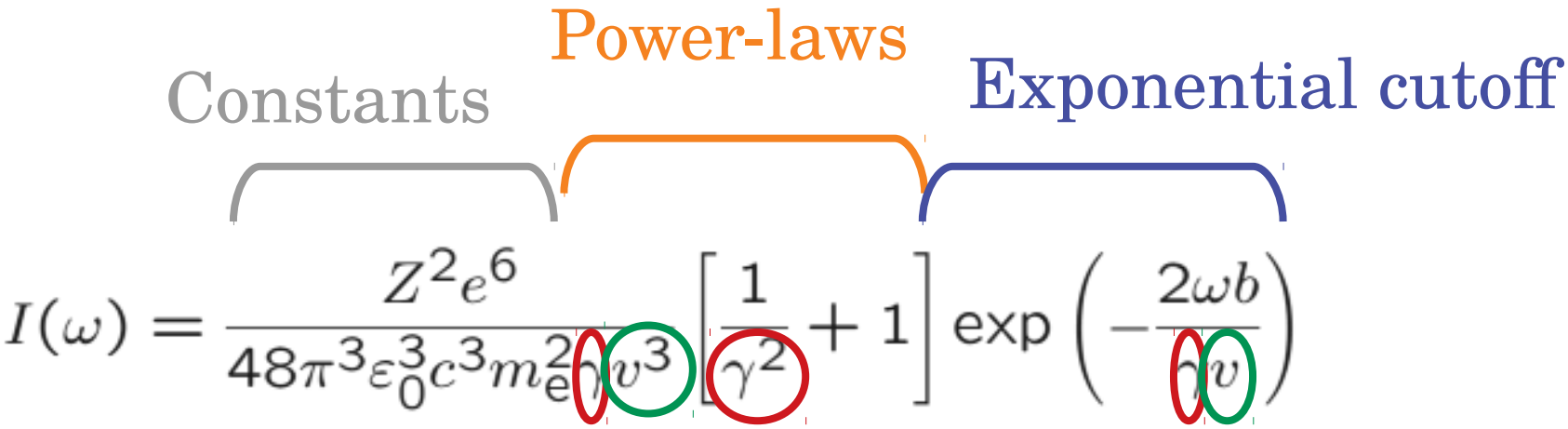
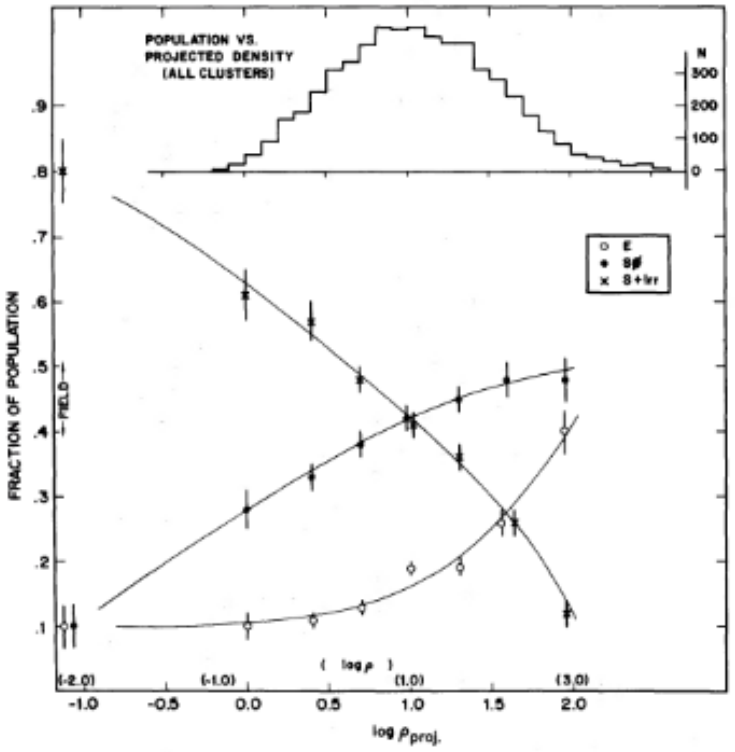


Plots

Dressler (1980)



Plots

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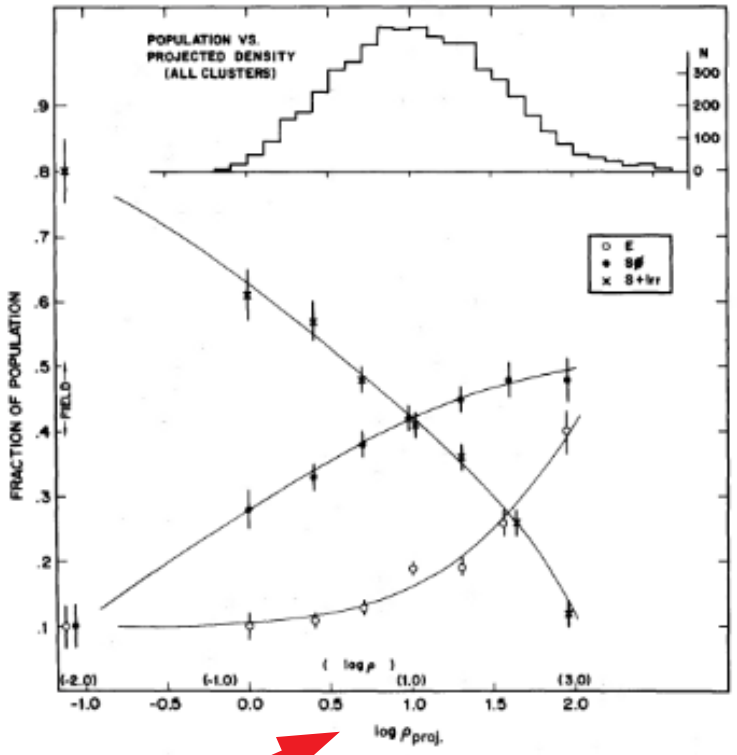
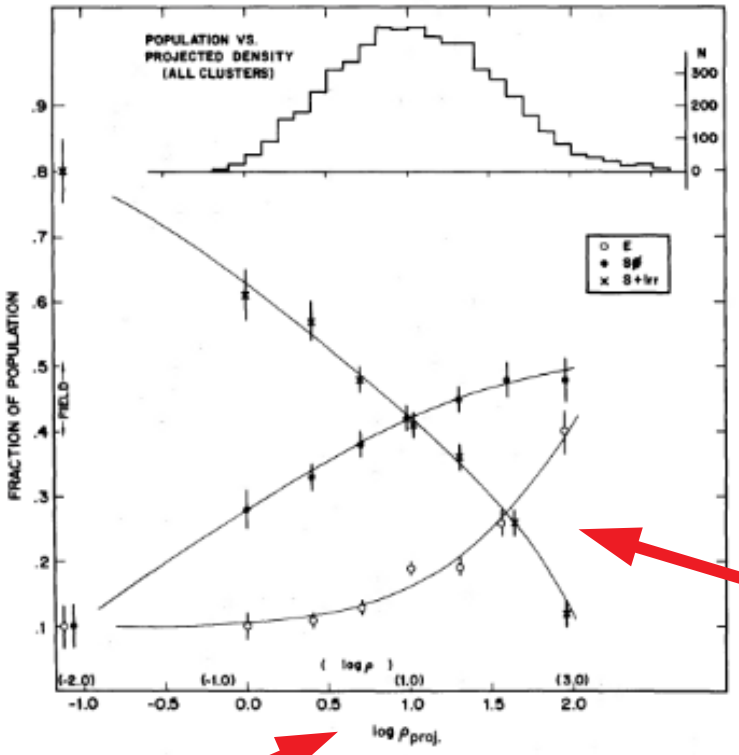


Axis labels are far too small!

Plots

Dressler (1980)

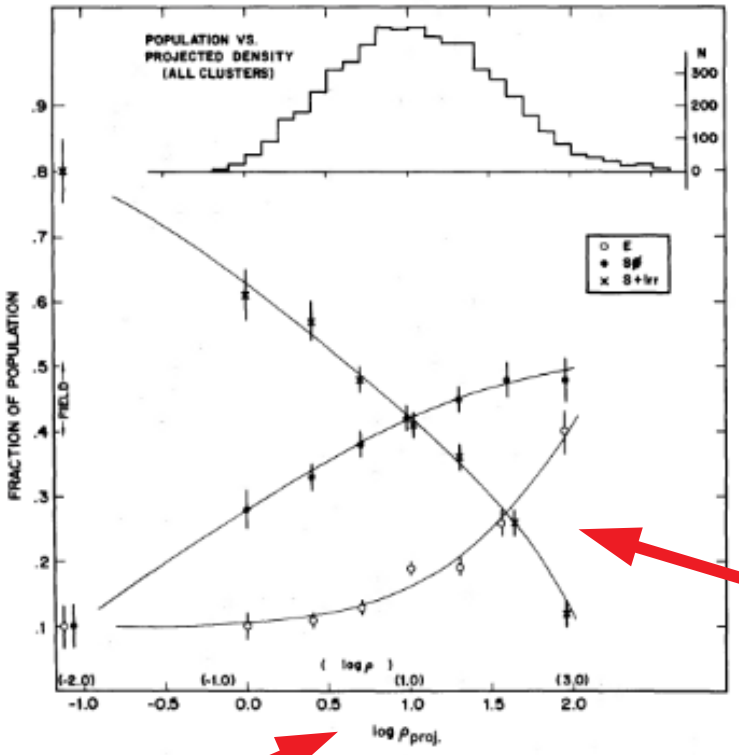


Axis labels are far too small!

Hard to distinguish symbols

Plots

Dressler (1980)



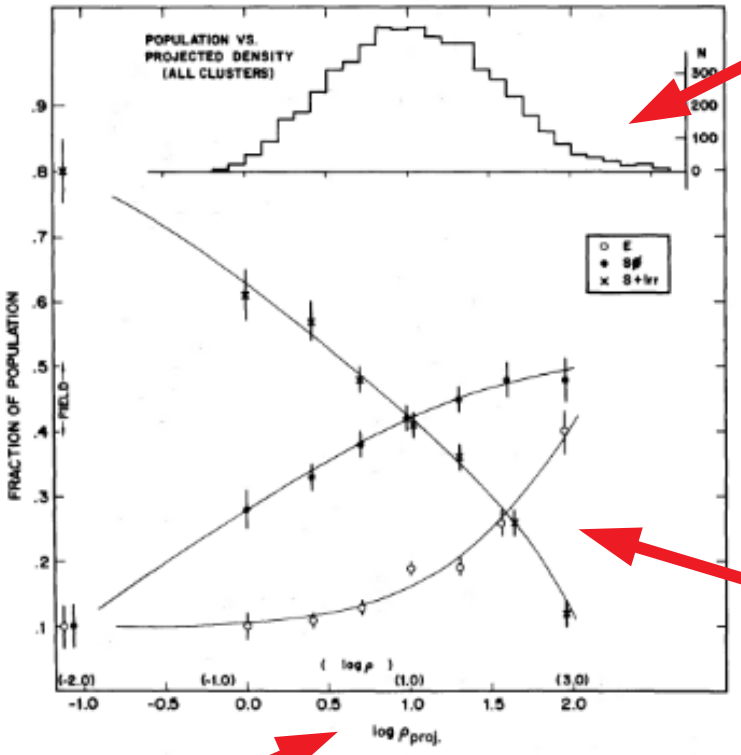
Axis labels are far too small!

Hard to distinguish symbols

Small plot, lots of empty space in slide

Plots

Dressler (1980)



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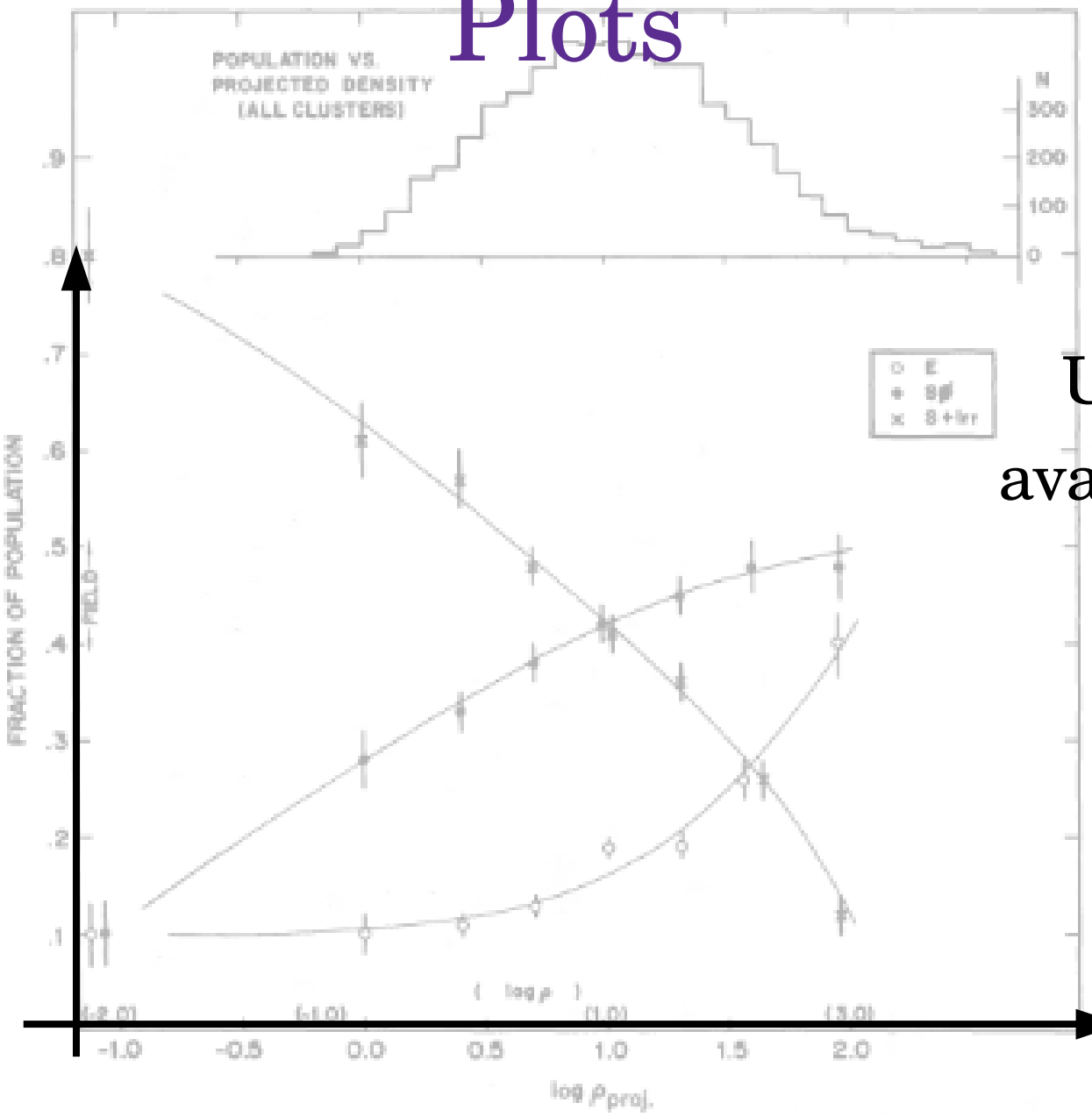
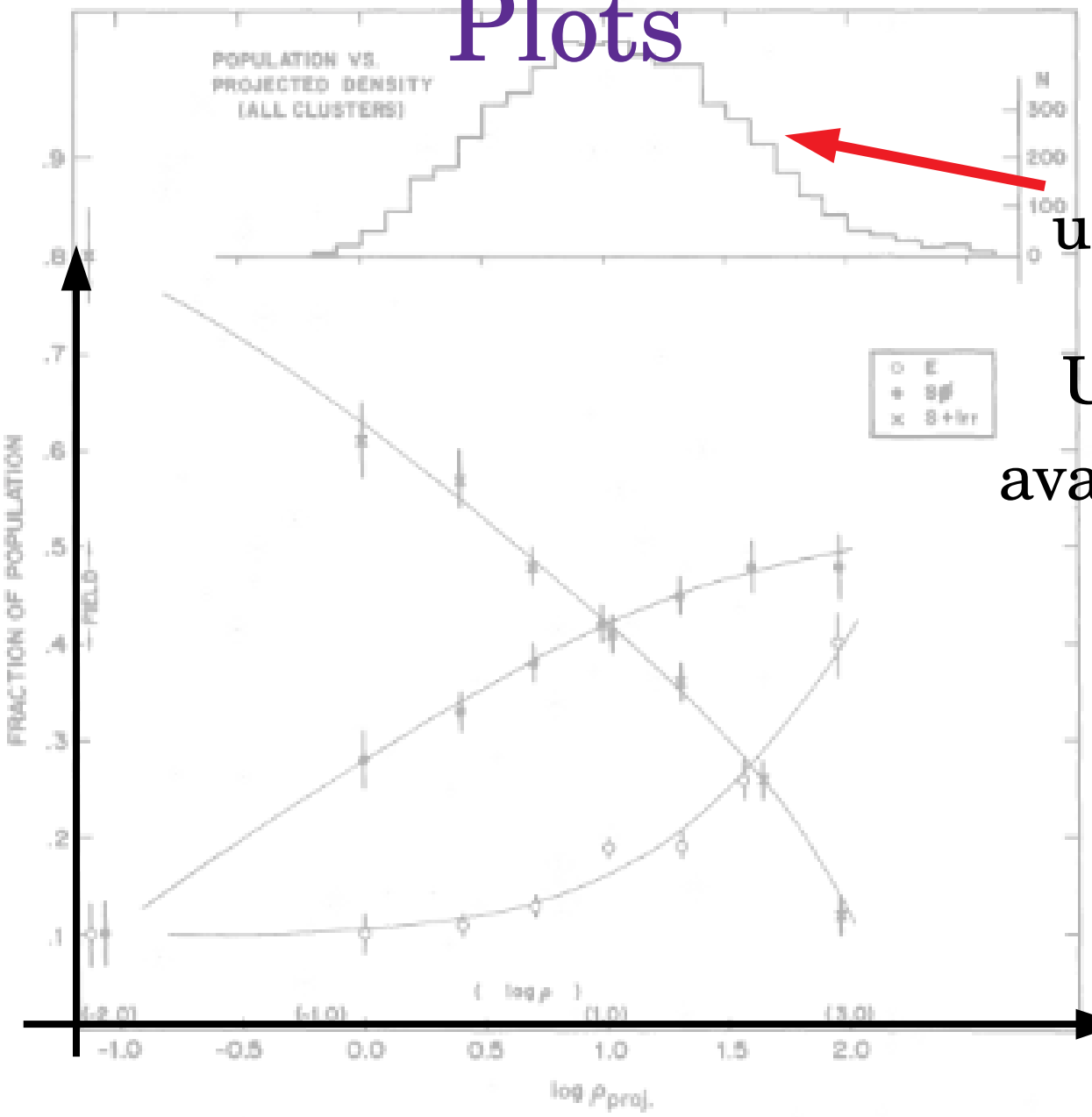
Plots



Use all the available space

Dressler (1980)

Plots

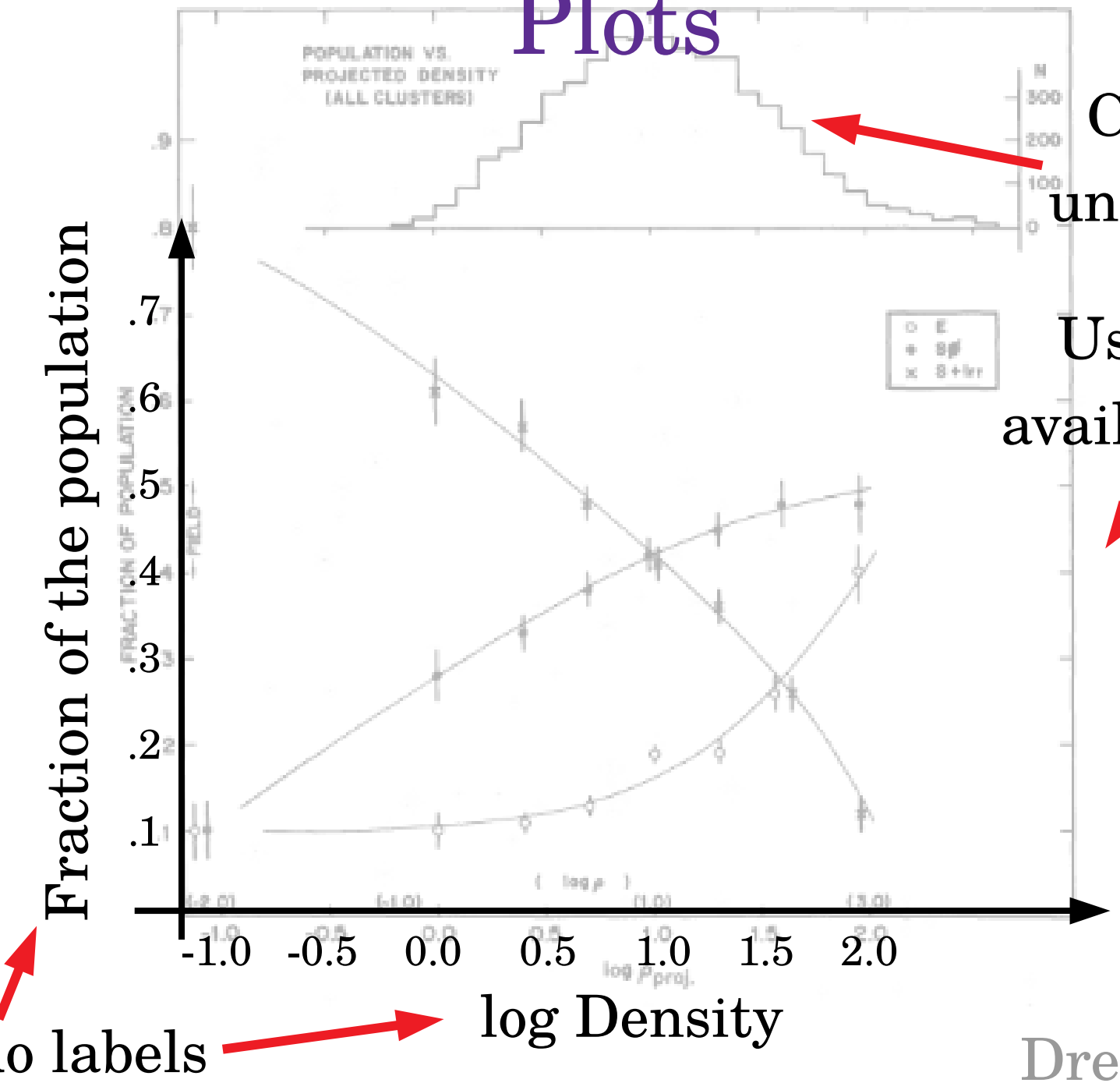


Crop the unessential

Use all the available space

Dressler (1980)

Plots



Crop the unessential

Use all the available space

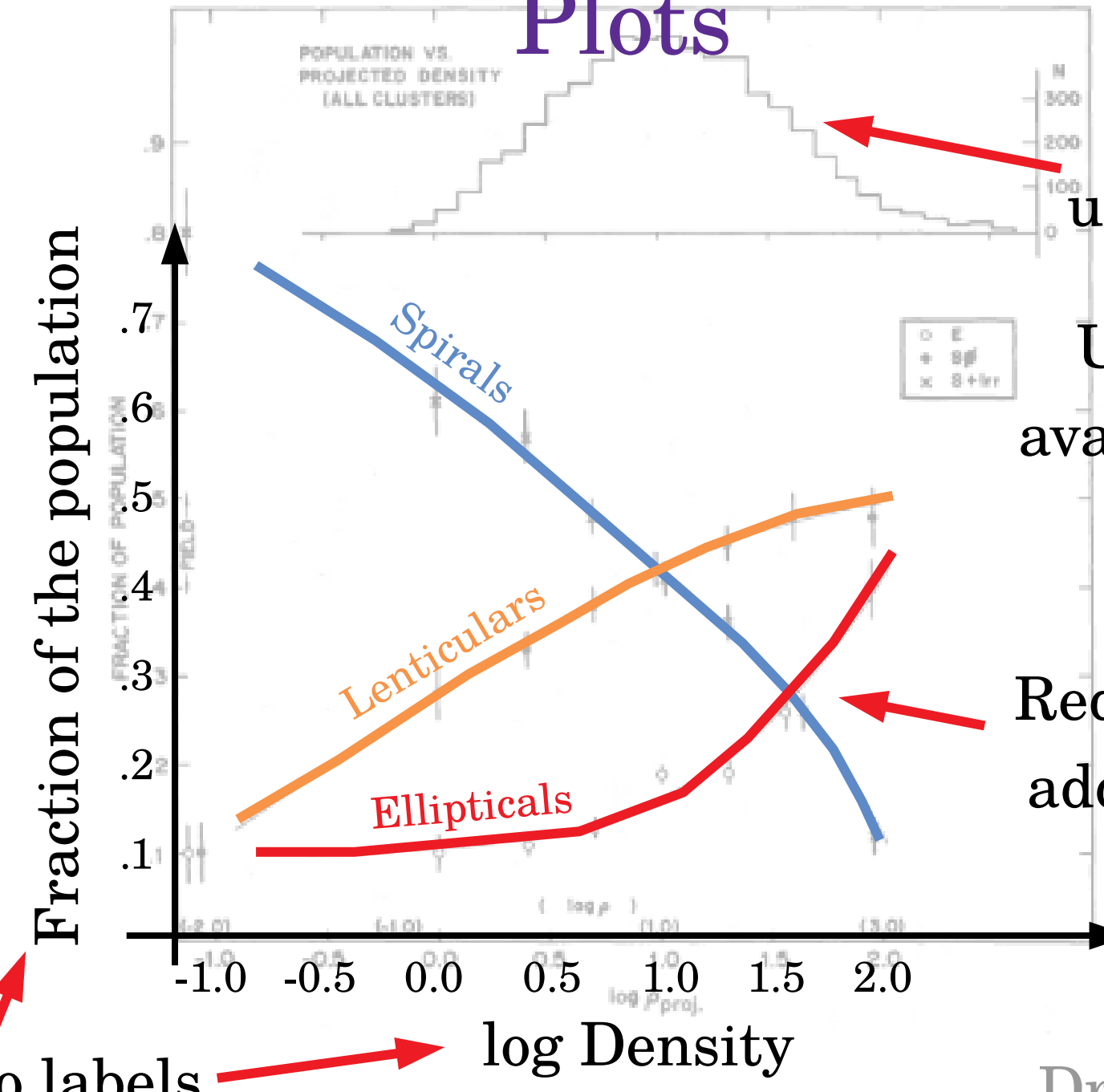
Fraction of the population

log Density

Redo labels

Dressler (1980)

Plots



Crop the unessential

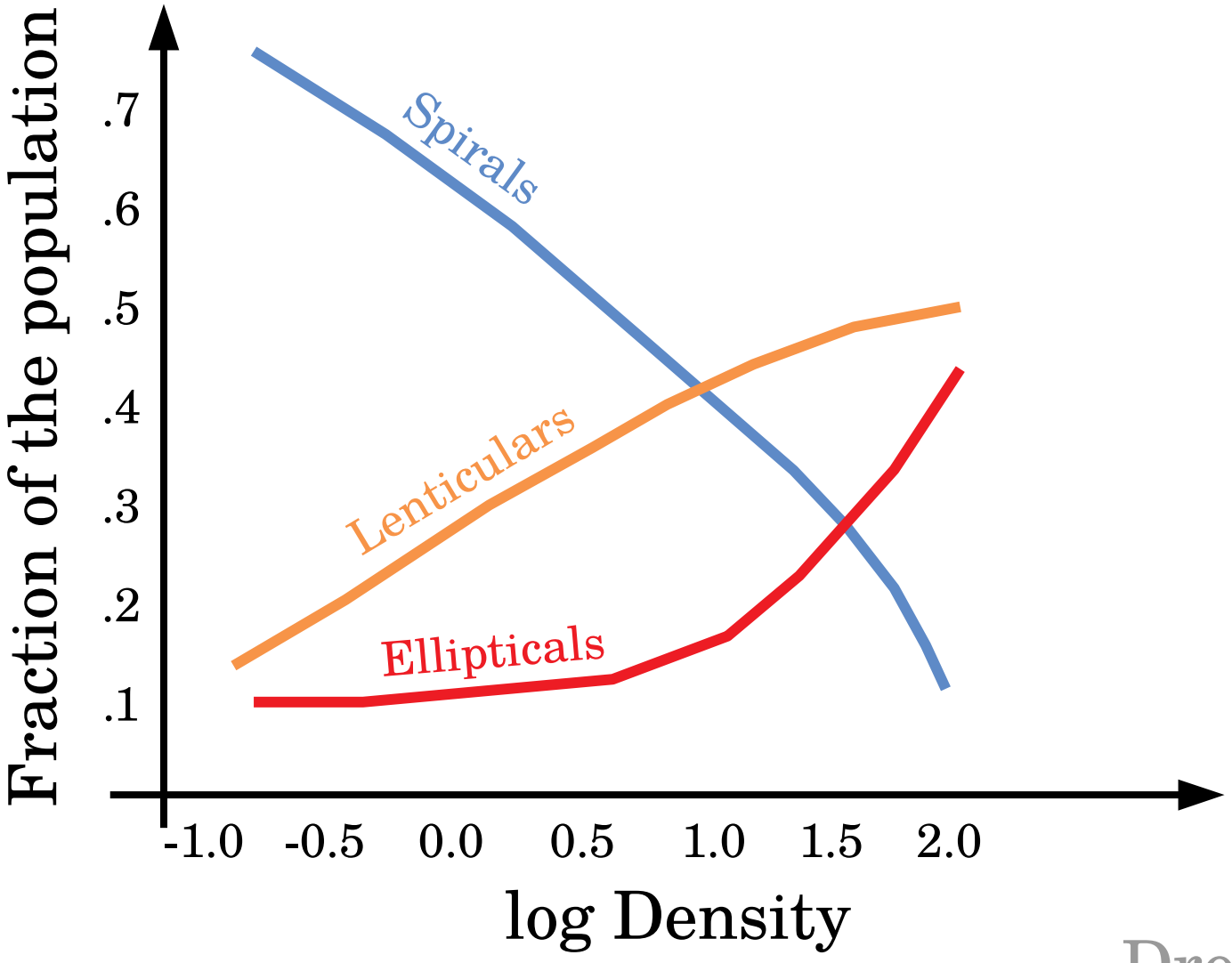
Use all the available space

Redo lines, add colors

Redo labels

Dressler (1980)

Plots



Dressler (1980)

Plots

A talk is not a paper:

A cartooned, but understandable plot

wins

over an accurate but unreadable plot

Plots

A talk is not a paper:

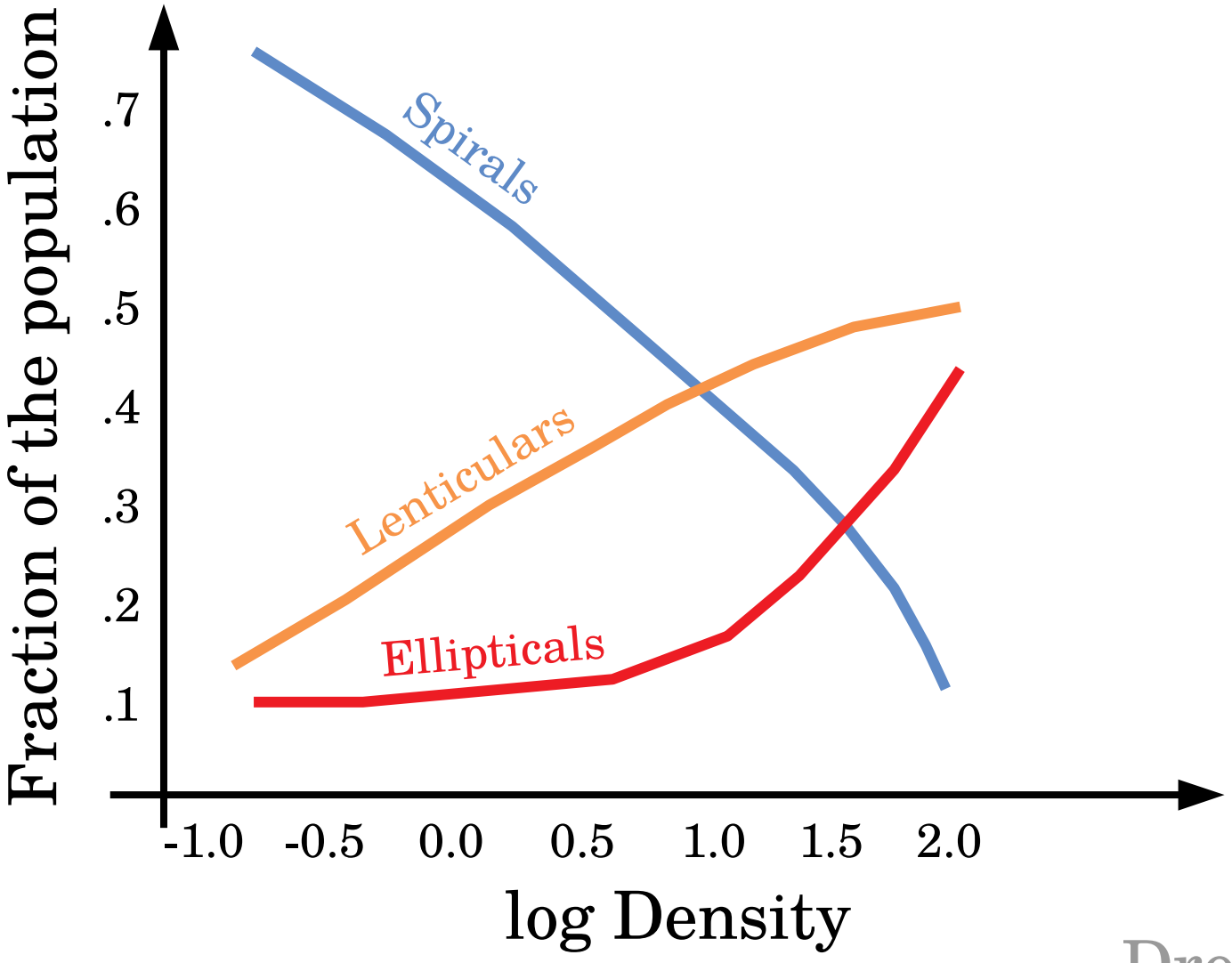
A cartooned, but understandable plot

wins

over an accurate but unreadable plot

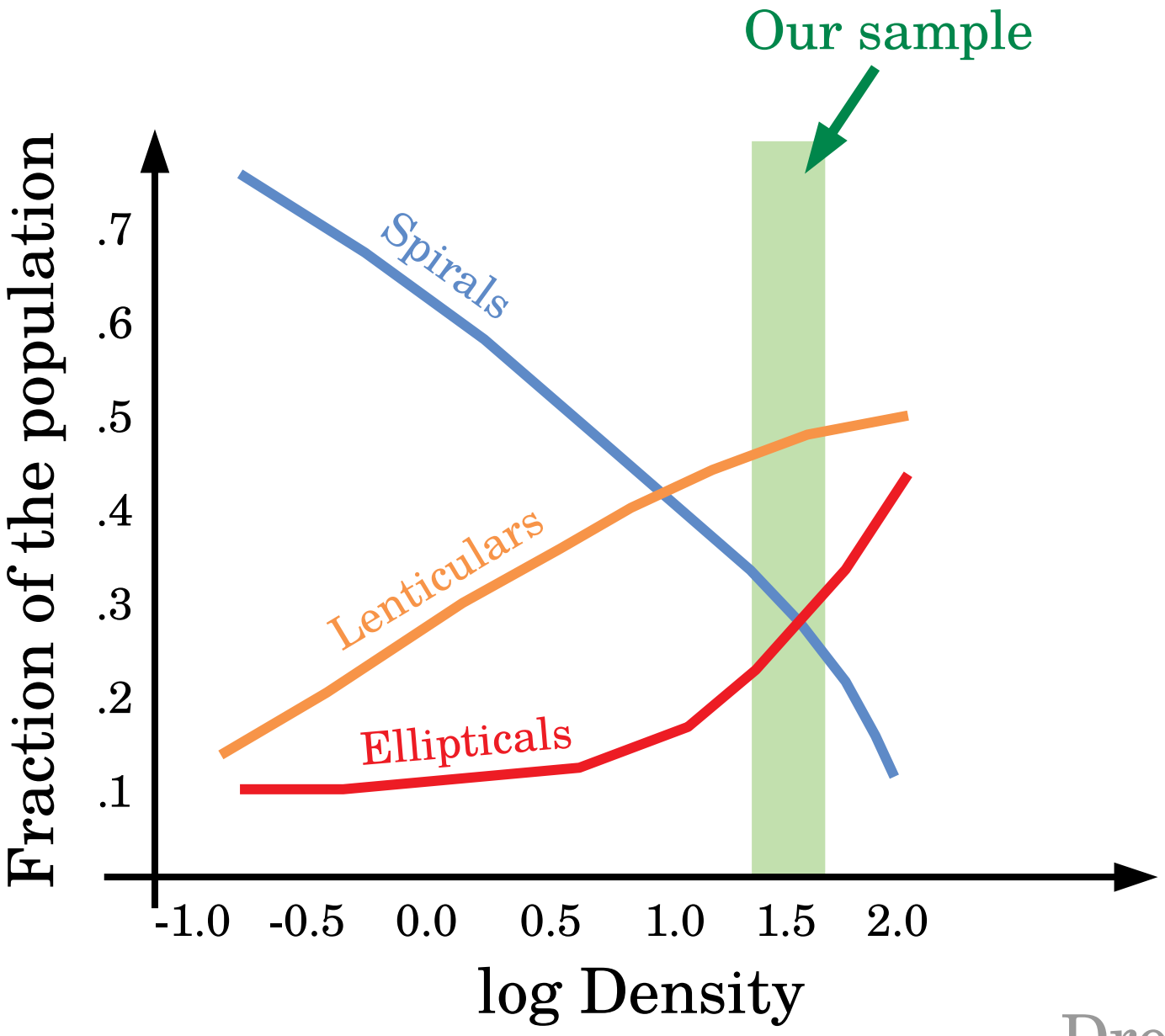
If the plot is complex, build it slowly

Plots



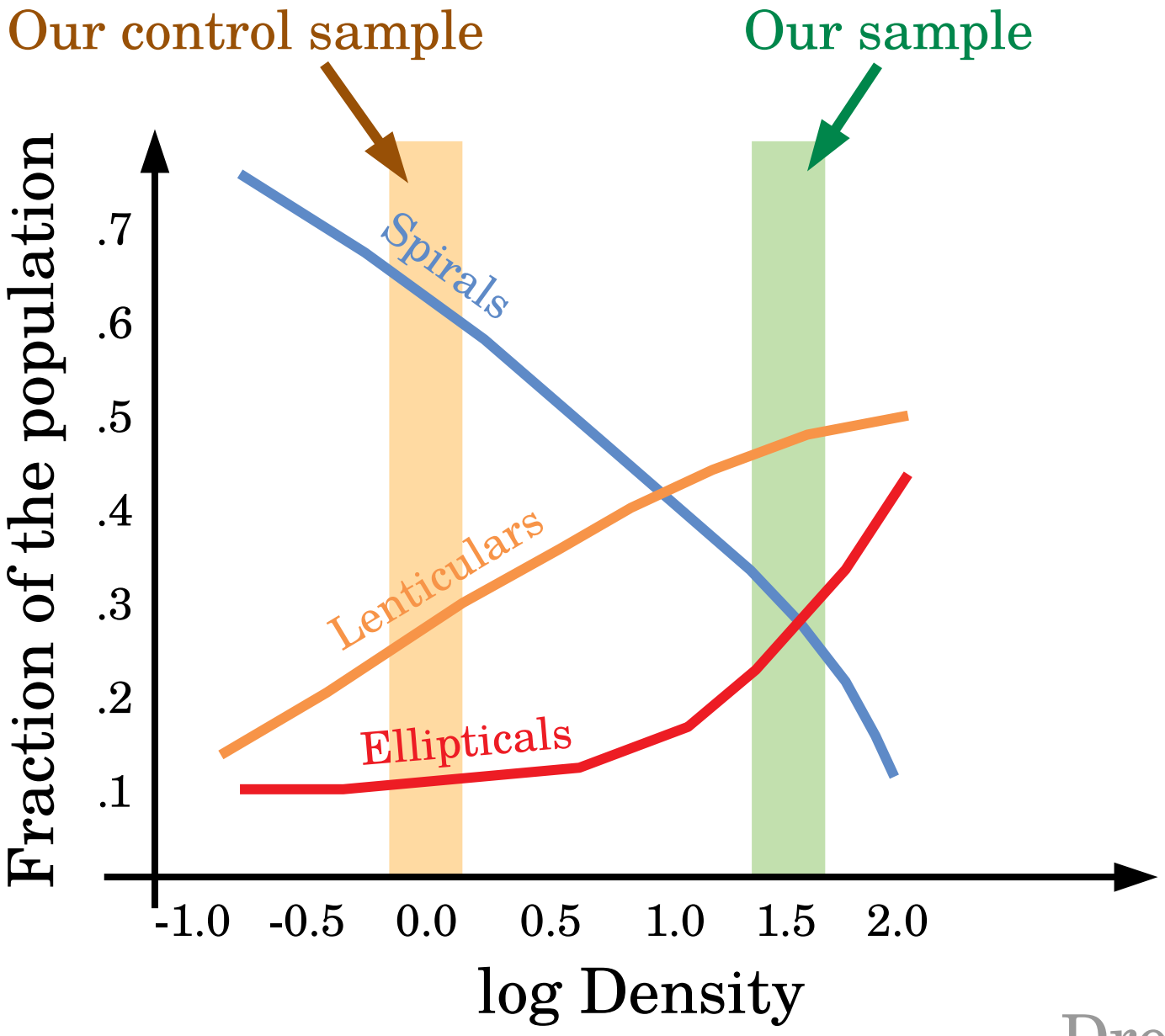
Dressler (1980)

Plots



Dressler (1980)

Plots



Dressler (1980)

Plots

Be consistent (e.g., same symbol colors)

Plots

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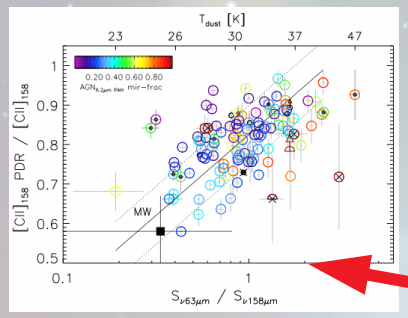
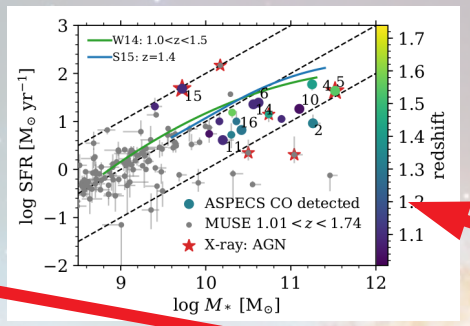
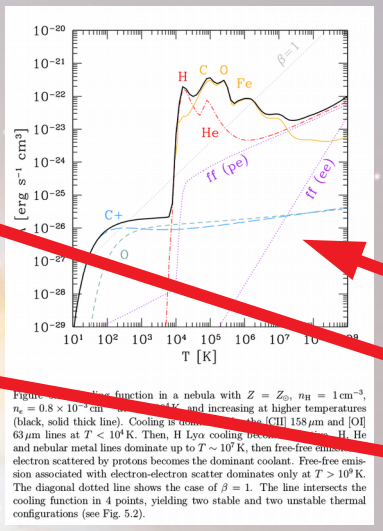






This is an example of text that fills a gap. It might be unclear why there is all this text here, but I'm sure I had a great idea when I first started to write it. Too bad that now I can't remember what was it about.

Dante Alighieri – Same conference you are attending – today

Three different plot styles, symbols, color codes

Plots

Be consistent (e.g., same symbol colors)

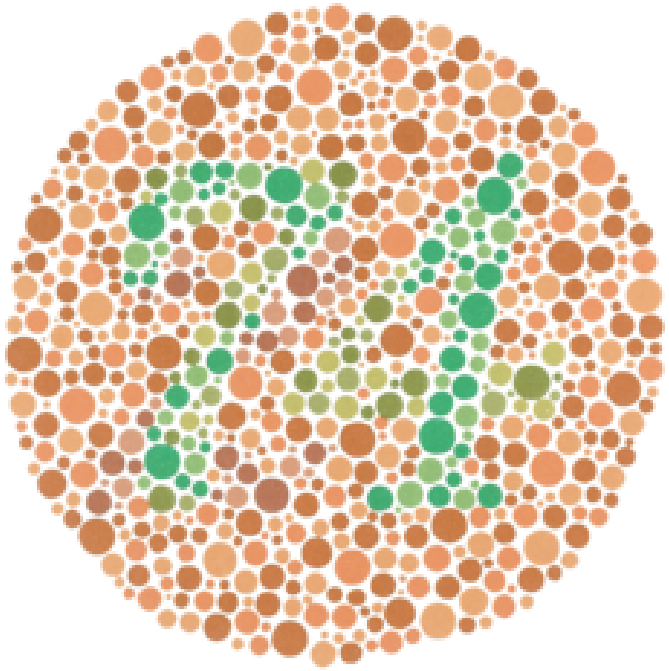
Be pessimistic about the projector's performance (e.g., no yellow vs green)

Colors

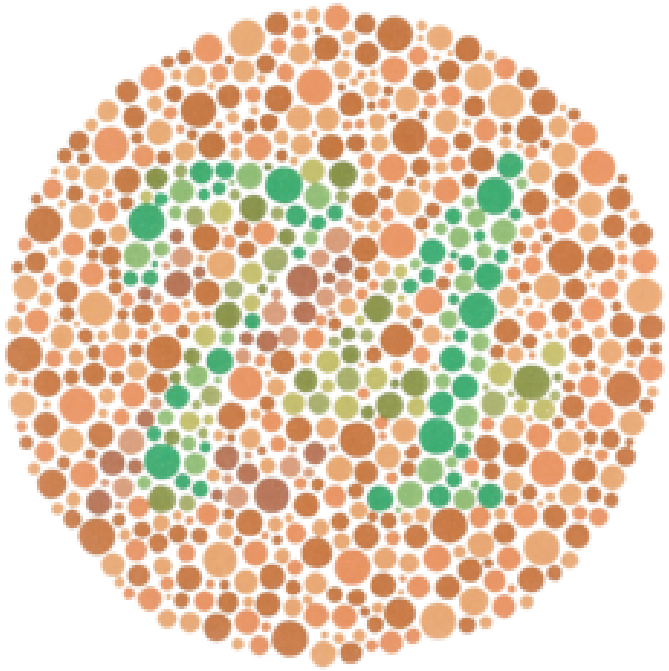
You can use colors to emphasize,
but also to *support the narration*

But do not overdo it!
(less is better)

Colors

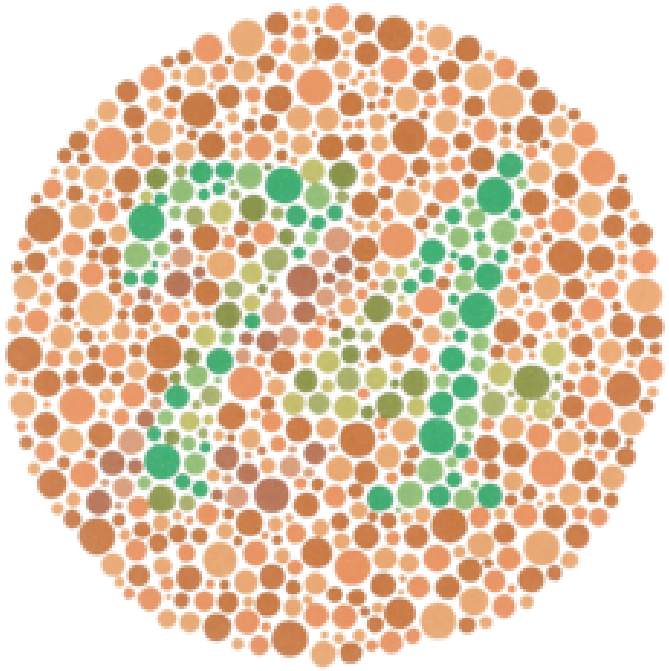


Colors



5-10% of the Caucasian male audience is color blind

Colors

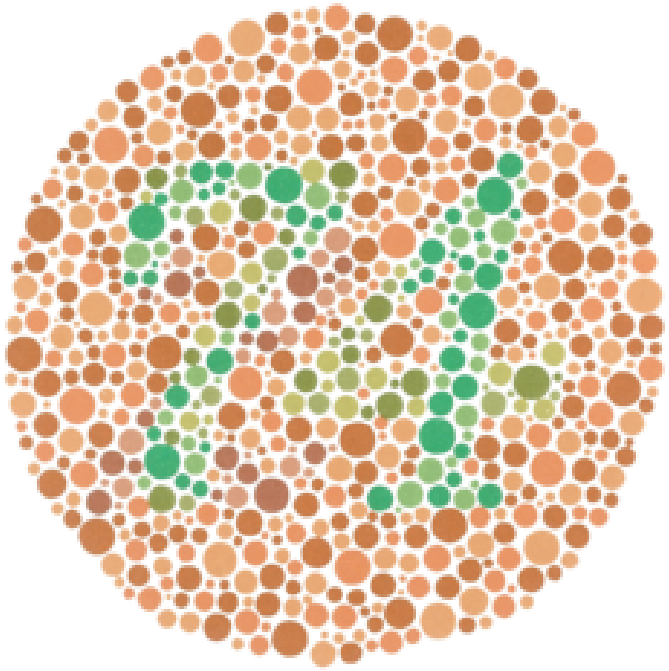


5-10% of the Caucasian male audience is color blind

Choose the color scheme wisely

Online tools to test the results

Colors



5-10% of the Caucasian male audience is color blind

Choose the color scheme wisely

Online tools to test the results

(this applies to laser pointers as well)

Backgrounds

Light backgrounds work best:

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1) easy to read

2) fine for published plots

3) easy to exchange with co-Is

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White / pastel colors are preferable

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Note on style:

If you want to convey optimism,

Backgrounds

Light backgrounds work best:

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2) fine for published plots

3) easy to exchange with co-Is

White / pastel colors are preferable

Note on style:

If you want to convey optimism,

don't go full Halloween

Backgrounds

Also,

This is not a background,

it's a *crime*.

Windows
A fatal exception 0E has occurred at 0028:C562F1B7 in VXD ctpci9x(05)
+ 00001853. The current application will be terminated.
* Press any key to terminate the current application.
* Press CTRL+ALT+DEL again to restart your computer. You will
lose any unsaved information in all applications.
Press any key to continue _

Animations

Helpful to build plots,

draw attention,

entertain

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Helpful to build plots,
draw attention,
entertain

But:

1) general lack of versatility

2) don’t take away focus!

General comments on slides

Rule-of-thumb:

1 slide per minute

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Outline: Not critical (spoilers?)

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“I will talk about…” / “I think I will stop here...”

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Define “escape points” if things go wrong

General comments on slides

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1 slide per minute

Outline: Not critical (spoilers?)

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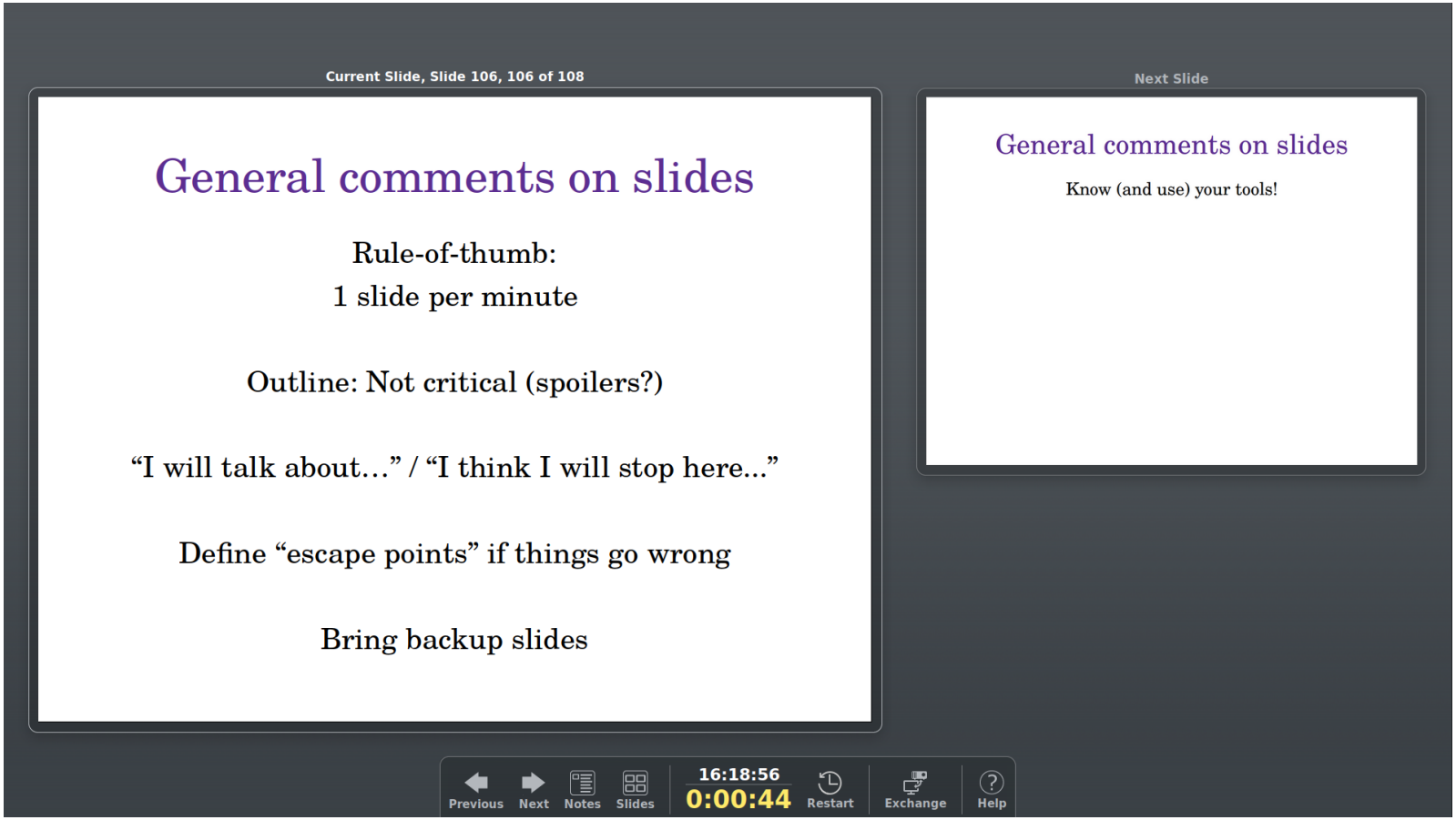
Define “escape points” if things go wrong

Bring backup slides

General comments on slides

Know (and use) your tools!



General comments on slides

And of course,

Rules can be broken.

Take-home message

Take your time to prepare a talk,

and *practice*, *practice*, *practice*!