



What is unconscious bias? Recruitment and assessment - how biases can creep in

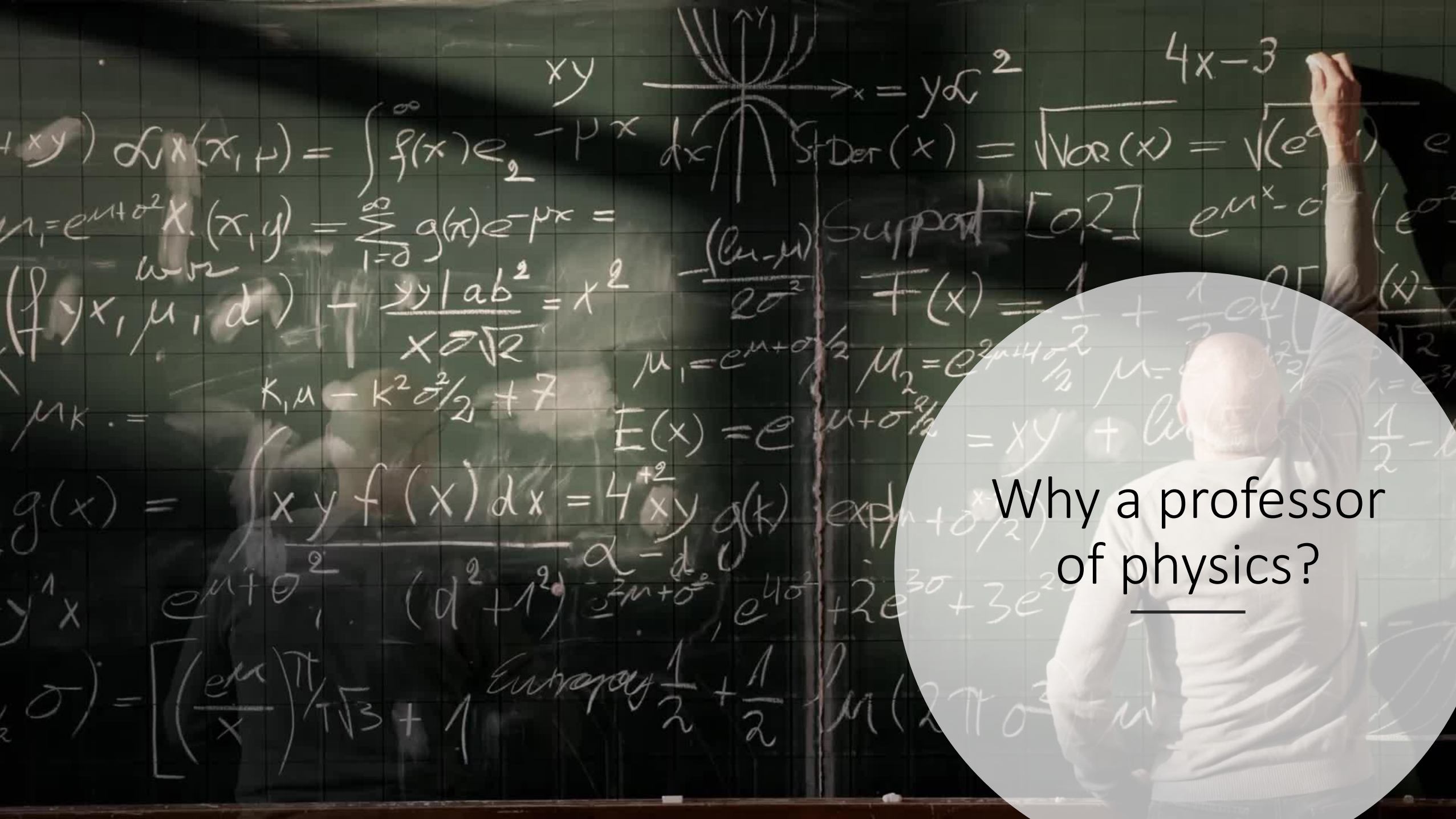
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RESEARCH



$$f(x, y) \mathcal{L}X(x, \mu) = \int_{-\infty}^{\infty} f(x) e^{-\mu x} dx$$

$$\mu_1 = e^{\mu + \sigma^2} X(x, y) = \sum_{i=0}^{\infty} g(x) e^{-\mu x} =$$

$$\left(\frac{y}{x}, \mu, d \right) = \frac{y y | a b^2}{x \sigma \sqrt{2}} = x^2$$

$$\mu_k = \dots \quad \mu_1 = e^{\mu + \sigma^2/2} \quad \mu_2 = e^{2\mu + 4\sigma^2/2}$$

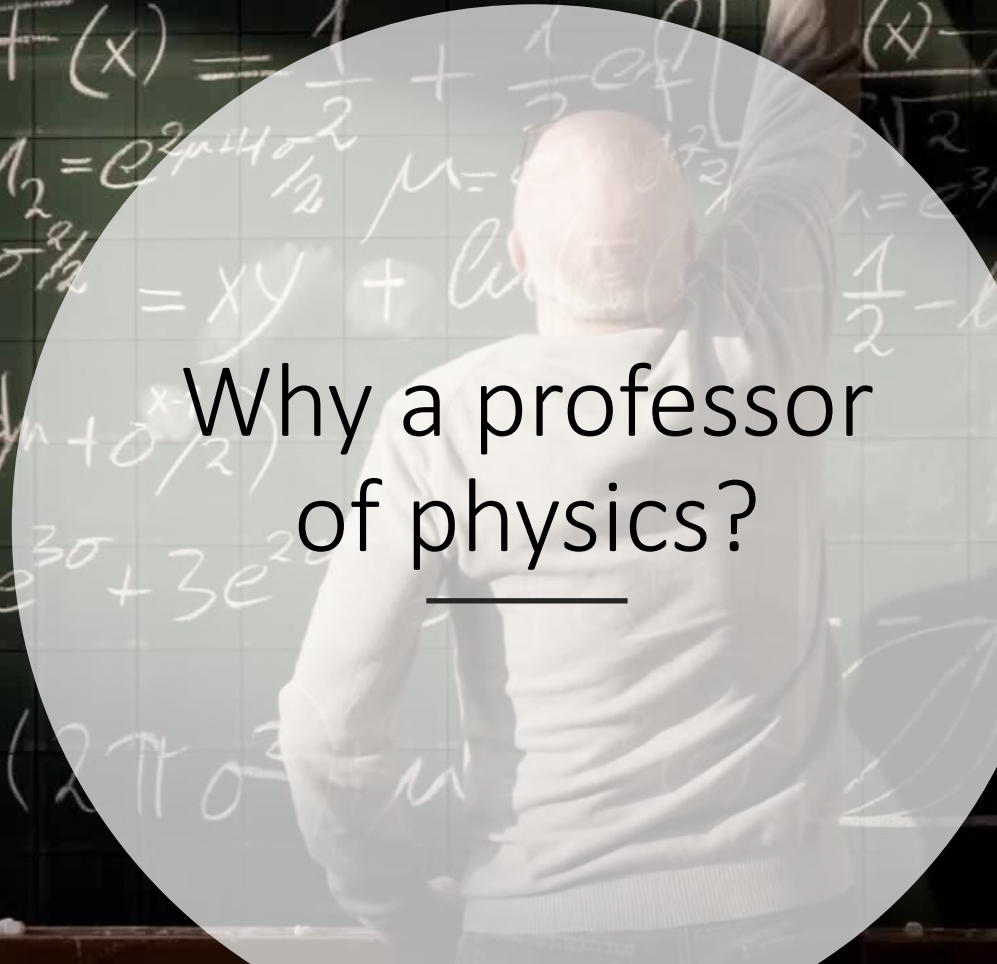
$$g(x) = \int x y f(x) dx = 4^{x/2} x y g(x)$$

$$y' x \quad e^{\mu + \sigma^2} \quad (d^2 + 1^2) \quad e^{2\mu + \sigma^2} \quad e^{4\sigma^2} + 2e^{3\sigma^2} + 3e^{2\sigma^2}$$

$$\sigma) = \left[\left(\frac{e^{\mu}}{x} \right)^{\frac{1}{\sqrt{3}}} + 1 \right] \text{Entropy} \frac{1}{2} + \frac{1}{2} \ln(2\pi\sigma^2 - \mu)$$

$$\text{StDev}(x) = \sqrt{\text{Var}(x)} = \sqrt{(e^{\sigma^2})}$$

$$\text{Support } [0, 2] \quad F(x) = \frac{1}{2} + \frac{1}{2} e^{-x}$$



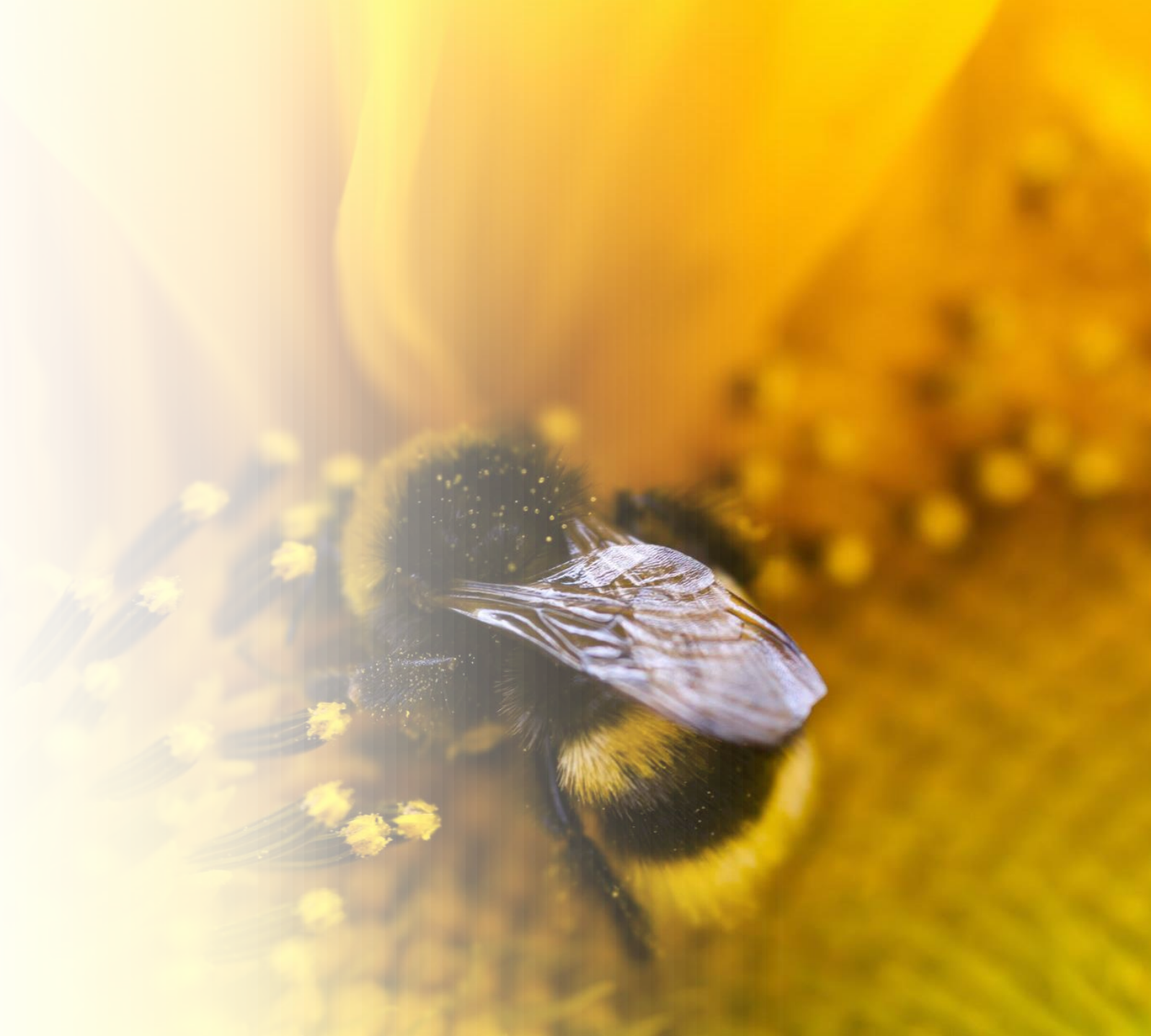
Why a professor of physics?



Humla- projektet

Hållbar Utbildning för Medvetande
om Lika villkor i Akademin med fokus
på bias

Projektledare: Tomas Brage



Plan for today



Introduction to bias.



Where?



Some advices.



What can HT do?

Introduction to bias

- I. Definition of bias.
- II. How do we detect or measure bias?
- III. Systemic bias.
- IV. Bias and academic values.



Introduction to bias

- I. **Definition of bias.**
- II. How do we detect or measure bias?
- III. Systemic bias.
- IV. Bias and academic values.



What is bias?

Bias is a cognitive process, where the cultural and social context affects a person's decisions, judgement and actions.

It could be a negative effect if it is based on stereotypes, beliefs, prejudices and preconceived notions. It is therefore a threat to meritocracy!

It can lead to micro-aggressions (and worse) and non-events.

It is not only psychology, but also organizational.

Cognitive biases



- Affinity bias
 - Prefer people that are similar to us
- Attribution bias
 - Explain behaviour/success/failure differently for different groups.
- Confirmation bias
 - “We see/hear what we expect to hear”.
- Conformity bias
 - Bandwagon effect or majority bias.
- False consensus bias
 - Overestimate the extent to which our beliefs/opinions are typical and general.
- Horn-halo effect
 - Assumptions cloud our judgement.

... and many more

- See the links on Canvas:

<https://canvas.education.lu.se/courses/22901/pages/during-the-workshop>

Introduction to bias

- I. Definition of bias?
- II. How do we detect or measure bias?**
- III. Systemic bias.
- IV. Bias and academic values.

II. How do we “measure” bias?

1. Statistics of “success rates” – segregation.
2. “Experiments”
3. Evaluation of processes and organisations.
4. Experiences from observers.

II. How do we “measure” bias?

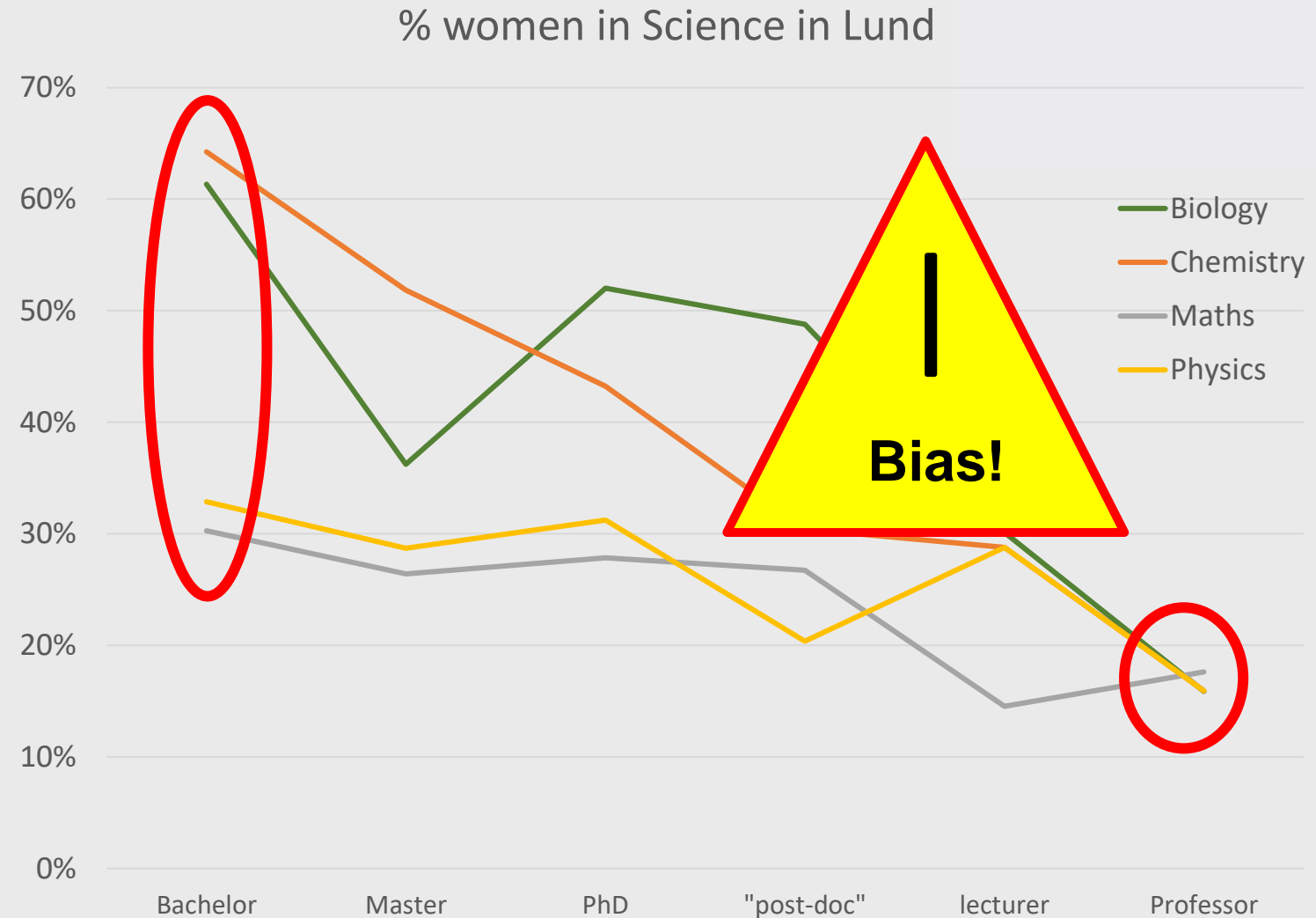
1. **Statistics of “success rates” – segregation.**
2. “Experiments”
3. Evaluation of processes and organisations.
4. Experiences from observers.

Evidence of bias: pipeline

Career paths in a typical Science faculty.

Many different curves – but the same outcome

Weak dependence on input!



II. How can we “measure” bias?

1. Statistics of “success rates” – segregation.
- 2. “Experiments”**
3. Evaluation of processes and organisations.
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Bias Experiment.

From Moss-Racusin et al. 2012,
*Science faculty's subtle gender
biases favor male students,*
PNAS **109** 41

Watch it in the movie *Picture a
Scientist* at 47.30 min

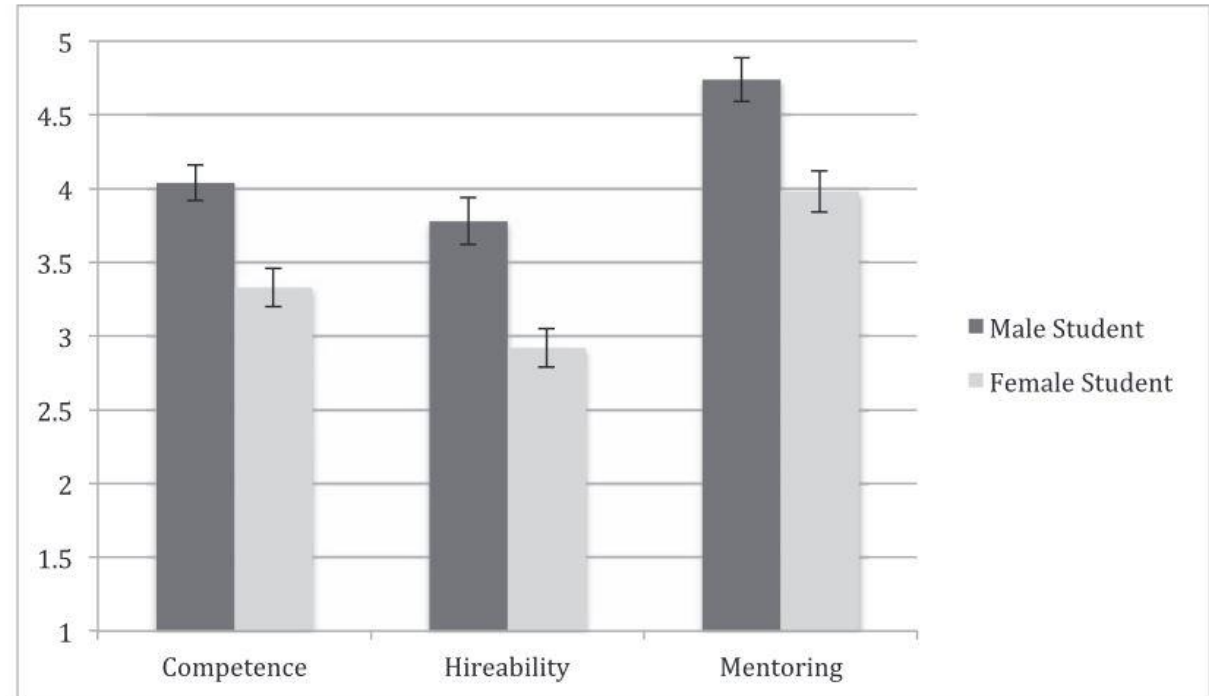


Fig. 1. Competence, hireability, and mentoring by student gender condition (collapsed across faculty gender). All student gender differences are significant ($P < 0.001$). Scales range from 1 to 7, with higher numbers reflecting a greater extent of each variable. Error bars represent SEs. $n_{\text{male student condition}} = 63$, $n_{\text{female student condition}} = 64$.

Bias experiment: The IAT-test

Test of your own bias.

Banaji et al, *Project implicit*,
<https://implicit.harvard.edu>

Watch it in the movie *Picture a Scientist* at 50:30 minutes

[See "before workshop"](#)



Project Implicit®

II. How can we “measure” bias?

1. Statistics of “success rates” – segregation.
2. “Experiments”
3. **Evaluation of processes and organisations.** – we return to this.
4. Experiences from observers.

II. How can we “measure” bias?

1. Statistics of “success rates” – segregation.
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4. **Experiences from observers.**

11.4 Observers: Swedish Research Council (VR)

Critical friends – observers – are the best method to work against bias influencing processes.

This was done by the Swedish Research Council (VR) and has been developed and practiced for over two decades.

They found (*Wennerås & Vold 1998 Nepotism and sexism in peer review*):

- Gender bias: Women had to publish 2.6 times as much as men to receive grants.
- Cognitive bias: Scientific proximity was rewarding.
- Personal/Institutional bias: someone you know, from your institution (Mathew effect).

II.4 Continued observations.

Later reports (2012, 2016, 2020)

- Ageism combined (intersected with) sex:
 - Myth of youth – “made all major discoveries before 30” – which fits male life-cycle
 - Age is also an advantage for men (invaluable, world leading), but not for women (too old).
- Different wordings:
 - Male applicants: excellent, respected, a rising star, front figure
 - Female applicants: good, strong, good merits, high novelty
- Questioning womens independence from co-authors
 - Supervisors, husbands, relatives, ...
- Leadership: Men trusted; women questioned.

II.4 changing meeting format

To finally reach that bias did not effect the outcome:

- Change seating
- No informal talks or dinners before meeting
- Change speaking order and time
- Transparent and strict formalized meetings, with educated chairs.

Managed to get “correct” success rate – now it is up to the universities!

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Not only psychology ...

Systemic recruitment hijacking

- Decoupling
- Standardisation
- Symbolic boundary work

Inspired by:

Nielsen 2015, *Make academic job advertisements fair to all*, Nature **525** 427

And Nielsen in Drew and Canavan 2020, *The Gender-Sensitive University*, Routledge

1 Decoupling

Saying one thing, doing another e.g.

One says: *“We only look at qualifications and merits – it is all about the best candidate”*

... but one does, e.g.

- Tailor-made advertisements
- Hand-picked experts
- Lack of openness

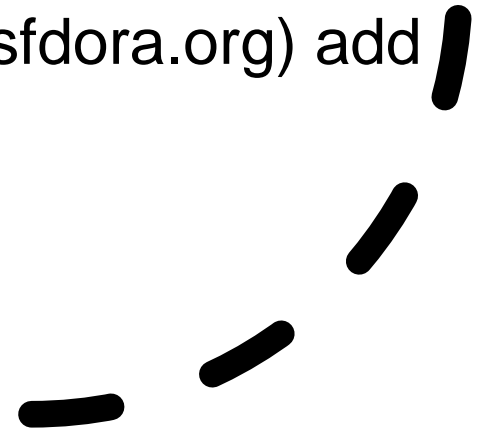


2. Standardisation

Pretending there are objective measures e.g.

- What are excellent journals and publishers?
- Point-system with weak justification.
- h-index.

See [DORA](#) or [COARA](#) association (sfdora.org) add one more!



3. Symbolic boundary work

Justifying through stereotypes.

e.g. Sexism

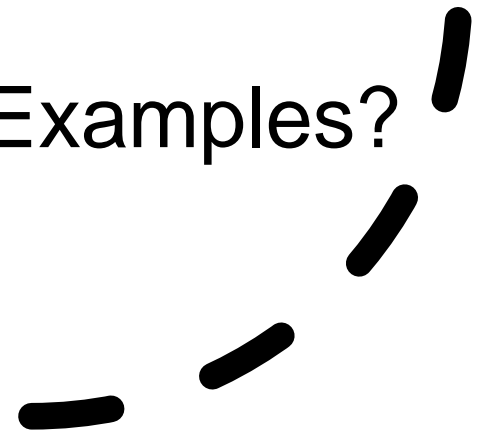
- Old sexism: “*Women are not fit to or it is dangerous for them to ...*”
- New sexism: “*Women do not want to do*”

Or

- Cloudy ideas of “*risk-taking*” and “*caring vs competition*”

Systemic recruitment hijacking

- Decoupling
 - Standardisation
 - Symbolic boundary work
- do you recognize them? Examples?



Introduction to bias

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Academic values

- Academic freedom
- Meritocracy
- Excellence

Are they threatened? By what?



Core values work in academia

– with experiences from Lund University

EDITED BY TOMAS BRAGE AND INGER LÖVKRONA
LUND UNIVERSITY 2016

Bias against academic values

- Academic freedom
 - If you face bias, you are not free in research and teaching.
- Meritocracy
 - Merits are questioned (standardisation bias).
 - Cracy from "kratos" = power, is not distributed fairly (see leaky pipeline)
- Excellence
 - Diversity gives excellence, if correctly managed (needs good leadership!)



Diversity and excellence

A number of recent research:

- Freeman and Huang 2014, *Collaboration: Strength in diversity*, Nature News **513** 305.
- Powell 2018, *These labs are remarkably diverse – here's why they're winning in science*, Nature **558** 19.
- Nielsen et al. 2018, *Making gender diversity work for scientific discovery and innovation*. Nature, human behaviour. **2** 726-734
- Nielsen et al. 2017, *Opinion: Gender diversity leads to better science*, PNRAS **114** 1740



Fika!

Vad vi vill ha ...

Vad vi kan få

Ständiga frågan...

Plan for today



Introduction to bias.



Where?



Some advices.

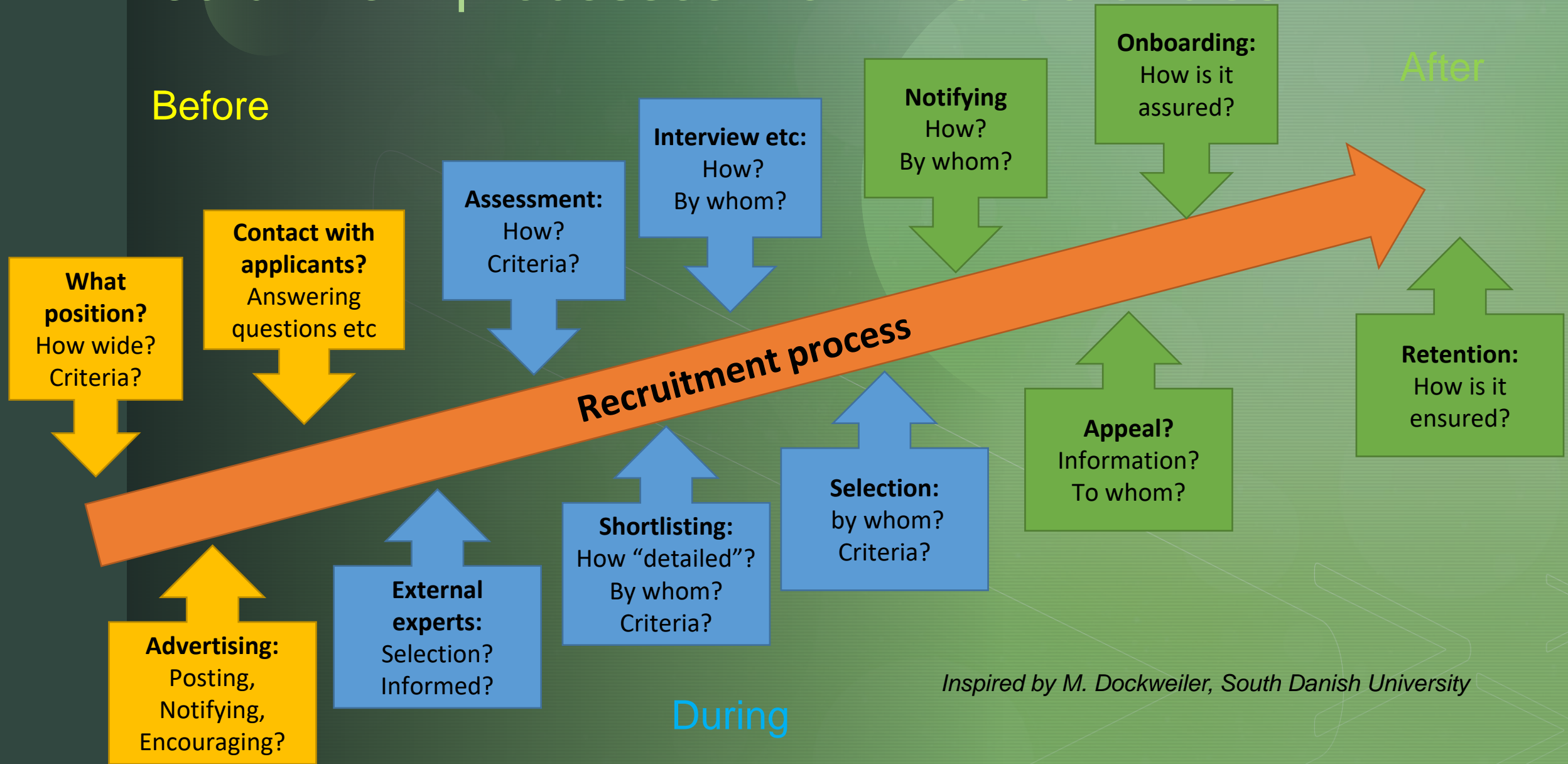


What can HT do?

Where?

- Career paths – recruitment and promotion.
- Study paths – teaching and learning.
- Mobbing, harassment, discrimination.

Recruitment processes – a minefield of bias



Promotion is similar

Before

Who is eligible?

Contact with applicants?
Answering questions etc

Assessment:
How, by whom?
Criteria?

Evaluation:
by whom?
Criteria?

Appeal?
To whom,
information?

Retention:
How is it
ensured?

Promotion process

After

“Advertising”
Informing?
Automatic?
Encouraging?

External
experts:
who?
Informed?

Interview etc:
How, by whom?
Criteria?

Decision:
How, by whom,
observed?

Onboarding:
How is it
ensured?

During

Study paths

Before

What do we teach?
Subject?
Content?

Contact with students?
Answering questions etc

Arrival:
How?
By whom?

Representation
Literature
Examples
Applications ...

Assessment:
How?
Content?
Grading?

Recommendations

After

Recruitment process

Alumni contacts

Advertising:
Posting,
Notifying,
Encouraging?

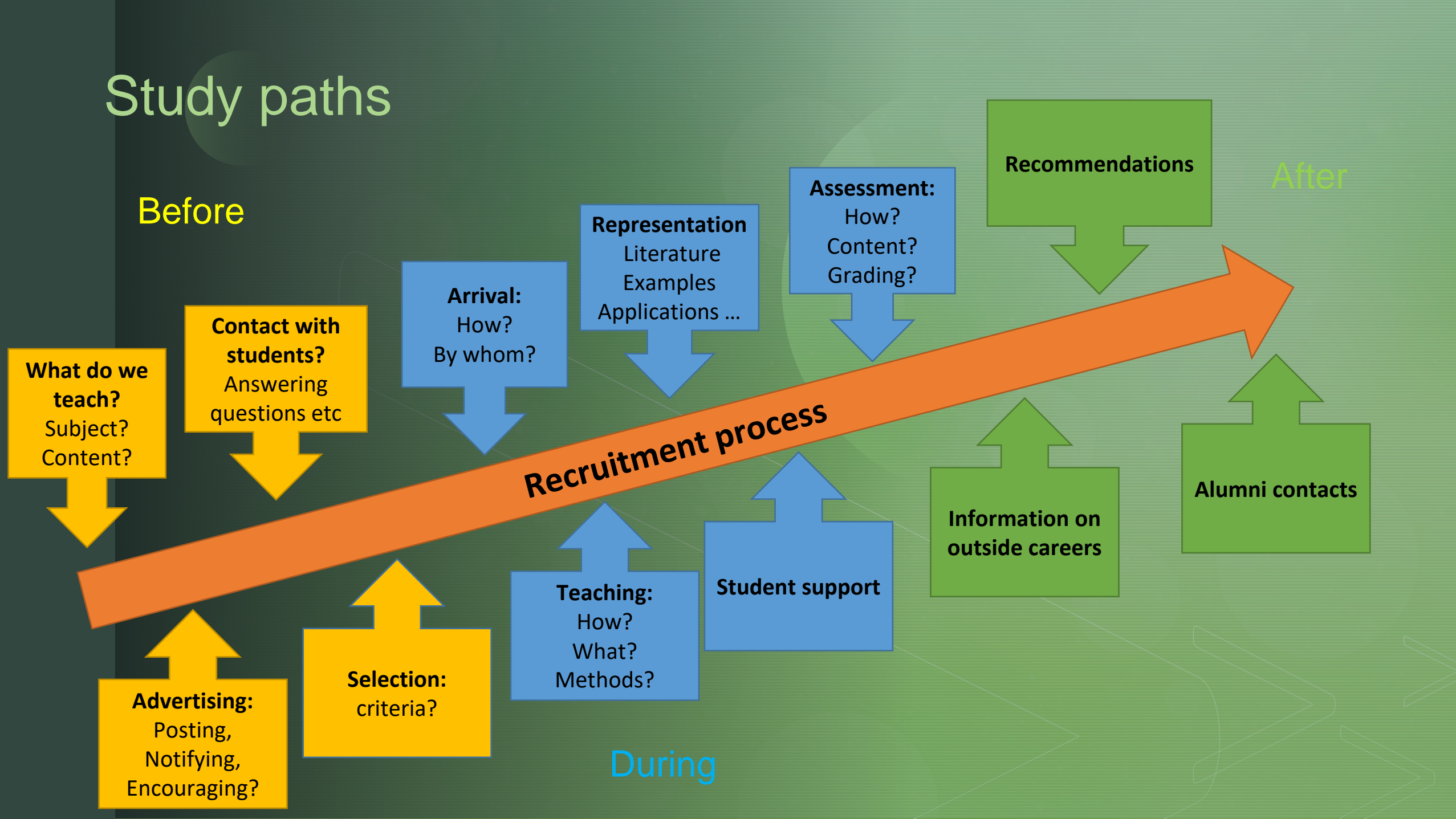
Selection:
criteria?

Teaching:
How?
What?
Methods?

Student support

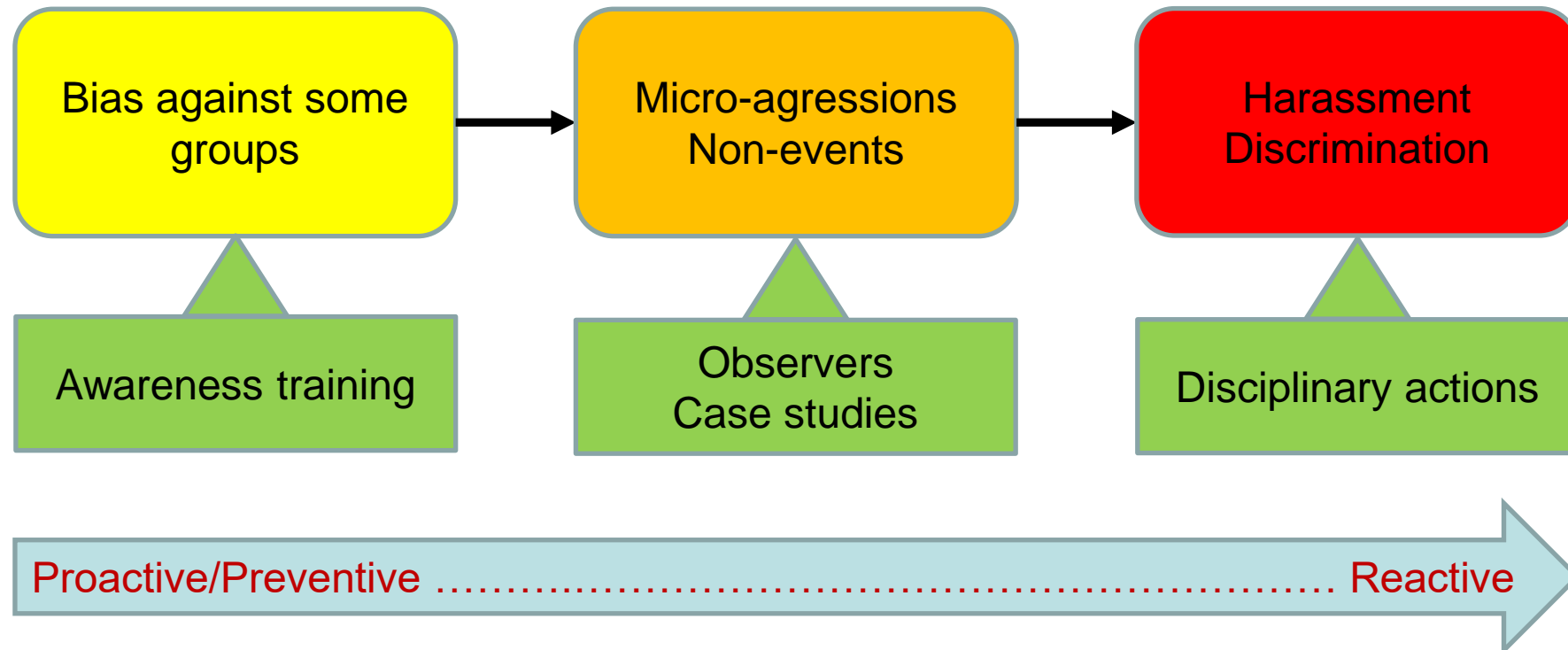
Information on outside careers

During



Step towards discrimination

Actions will be harder the further it gets in this process.



Actions!

How to prevent the influence of bias

LERU advice paper on bias – full process

1. **Monitor** career development and assign responsibilities. **Accountability.**
2. **Measures** for countering gender bias
3. Offer gender **bias training**
4. **Recruitment and funding** processes should be monitored. Use **bias observers!**
5. Evaluate the **language** in recommendations etc
6. Eliminate gender **pay gap**
7. Evaluate **quality**; Compensate for **care leave.**
8. Monitor **precarious contracts** and part-time positions.
9. Use **positive actions** against vertical segregation

Implicit bias in academia:

A challenge to the meritocratic principle and to women's careers –
And what to do about it



Actions for meetings

From Swedish Research Council 2020.

- Observers were essential – followed process and pointed to bias.
- Clear and transparent processes – stick to the criteria and agenda.
- Formalised meetings, down to speaking time and seating.
- No informal discussion in breaks, dinners etc
- Trained panel-members and chairs, with assistants from the council.

[CERCA on actions for meeting.](#) (8 min)



Cognitive bias – five strategies

Devine (2012)

1. Stereotype replacement.
 - Recognise stereotypes and try to replace them.
2. Counter-stereotypic imagining.
 - Imagine in detail a person who counteracts the stereotype.
3. Individuation.
 - Make it personal, instead of group-based, by obtaining information about individuals.
4. Perspective taking.
 - Step into someones shoes.
5. Increasing intergroup contact.
 - Engage in positive interaction with your “outgroup”.

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Discussion

In groups, discuss:

What can be done at HT to prevent bias-influences?

choose project and level (faculty, department, group, individual ...)?

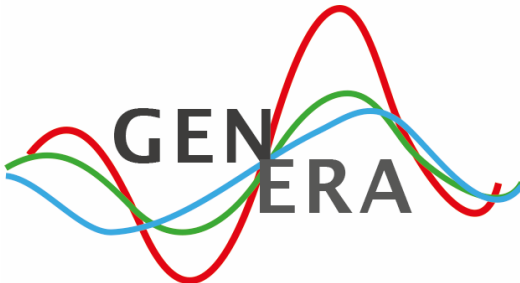
Discuss how a project could be formed, e.g.

- What problem to solve?
- What actions and interventions?
- How to monitor success?
- Time-line for intervention.
- Who would be responsible?

Thank you for the attention!



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References

- Banaji et al, *Project implicit*, <https://implicit.harvard.edu>
- Brage and Lövkrona 2016, [*Core values work in academia – with experiences from lund university*](#), Lund University
- Bernard & Castilla 2010, *The paradox of meritocracy in organizations*. Administrative Science Quarterly, **55**(4), 543-576.
- Devine et al 2012, *Long-term reduction in implicit race bias: A prejudice habit-breaking intervention*, J. of Exp. Soc. Psych. **48** 1267-1278.
- Drew and Canavan 2020, *The Gender-Sensitive University*, Routledge
- Freeman & Huang 2014, *Collaboration: Strength in diversity*, Nature News **513** 305
- LERU advice papers on Gender: <https://www.leru.org/publications?q=gender>
- MacNell et al 2014, *What's in a Name: Exposing Gender Bias in Student Ratings of Teaching*, Innov High Educ, Springer Verlag.
- Moss-Racusin et al. 2012, *Science faculty's subtle gender biases favor male students*, PNAS **109** 41
- Nielsen 2015, *Make academic job advertisements fair to all*, Nature **525** 427
- Nielsen, Bloch Carter & Schiebinger 2018, *Making gender diversity work for scientific discovery and innovation*. Nature, human behaviour. **2** 726-734
- Nielsen et al. 2017, *Opinion: Gender diversity leads to better science*, PNAS **114** 1740
- Stewart and Valiant 2018, *An Inclusive Academy – Achieving Diversity and Excellence*, MIT press.
- Wennerås and Vold 1997, *Nepotism and sexism in peer review*, Nature **387** 341
- VR 2020: *Does the Swedish Research Council Have a Gender-equal Assessment Process*, <https://www.vr.se/english/just-now/news/news-archive/2020-05-07-does-the-swedish-research-council-have-a-gender-equal-assessment-process.html>