



# THOUGHTS ON DIVERSITY IN A 'PHYSICS COURSE'

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# Climate of Change 2019

Navigating the stormy seas of the changing climate

## ***EMPOWERING INTEGRATION OF ART AND SCIENCE, FACING CLIMATE CHANGE TOGETHER***

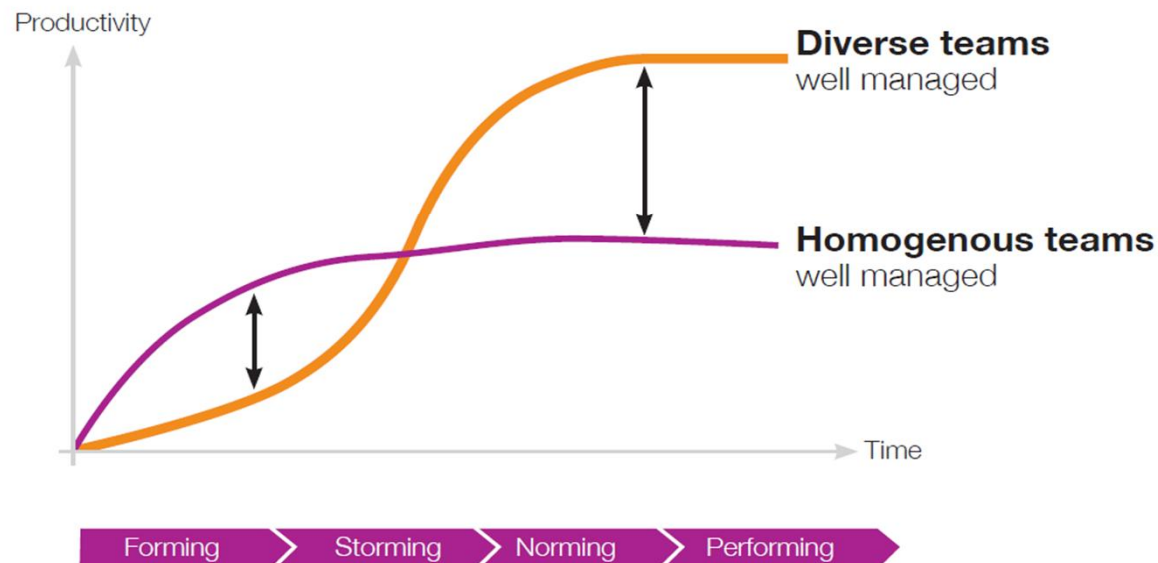


# ?DIVERSITY & CLIMATE CHANGE?

- Physical sciences work on questions requiring collaboration over field of science and other borders. For example climate change - set of answers that are focused on principles and physical processes behind the problem is not enough for the information to be received by non-scientists.
- Facing climate change causes can cause defense mechanisms such as denialism and shutting down, and Hulme (2015) concludes that we cannot find solutions only based on fact but it is also crucial to cultivate adequate spaces of public encounter and listening.
- Climate change scientists often emphasize dispassion, suppress painful emotions, use humour and switch off from work to protect themselves (Head and Harada, 2017).
- Feelings such as worry, anger and regret in a way fostering and practicing resilience e.g. in the form of transformational leadership that supports hope and action (Davenport, 2017).
- Art can provide an alternative path for climate change, it activates viewers more than engagement or participatory activities (Sommer et al., 2019).

# DIVERSITY – TEAM WORK

## Impact of diversity on team performance.



Research shows that a **group of people with diverse individual expertise is better** than a homogeneous group **at solving complex, nonroutine problems.** People with different backgrounds bring new information and interacting with individuals who are different forces group members to prepare better, to anticipate alternative viewpoints and to expect that reaching consensus will take effort (Phillips 2014).

Figure by Korn Ferry. *The Inclusive Leader*, 2019, synthesizes work by Phillips *How Diversity Makes Us Smarter*, Scientific American, 2014 and Tuckman, B.W. 1965. "Developmental Sequence in Small Groups," *Psychological Bulletin* 63:384-399.



# JOINT COURSES

University of Helsinki Institute for Atmospheric and Earth System Research and Theatre Academy, University of the Arts organize joint intensive courses emphasizing dialogue, communication and language.

How is information about climate change and its impacts communicated and understood?

How can this be utilized in society to promote solutions?

What kind of feelings do we experience when facing climate change and can we turn them into an asset?

Joint transdisciplinary courses enable master and doctoral students to explore and share methods from art and science in order to identify and work with synergies, and support transdisciplinary communication as well as enable adopting new ways of working from other communities that have different traditions and practices.



# COURSE AIMS

- **Exchange of skills and knowledge;** Participation, discussions and group work reveal practical means to address climate change and foster ideas of how artistic and scientific work contribute to working towards solutions of climate change.
- **Creation of new practices:** Emphasizing integration, this transdisciplinary workshop will support emerging new practices in short and long term.
- **Empowering;** Students rightly view climate change as a phenomenon of complex factors. They express anxiety and powerlessness in relation to it. We support students in becoming the agents of change. Students gain skills, information and experiences for different forms of working cultures.



60° 10 1.2 N, 24° 57 18 E





# RESIDENTIAL COURSE VALLISAARI MAY 2018







# ÄND HYYTIÄLÄ MAY 2019





# DIVERSITY I IDENTIFIED AT THE COURSE?



# DIVERSITY OF PLANNERS

- Course planning by

Taina Ruuskanen

University of Helsinki, Science

Female

University lecturer in Physics

Finnish – Finnish

Doctoral thesis in physics  
**Measurements of Volatile Organic  
Compounds - from Biogenic Emissions to  
Concentrations in Ambient Air**

<https://helda.helsinki.fi/handle/10138/23296>

Ville Sandqvist

University of the Arts

Male

Vice dean of teaching

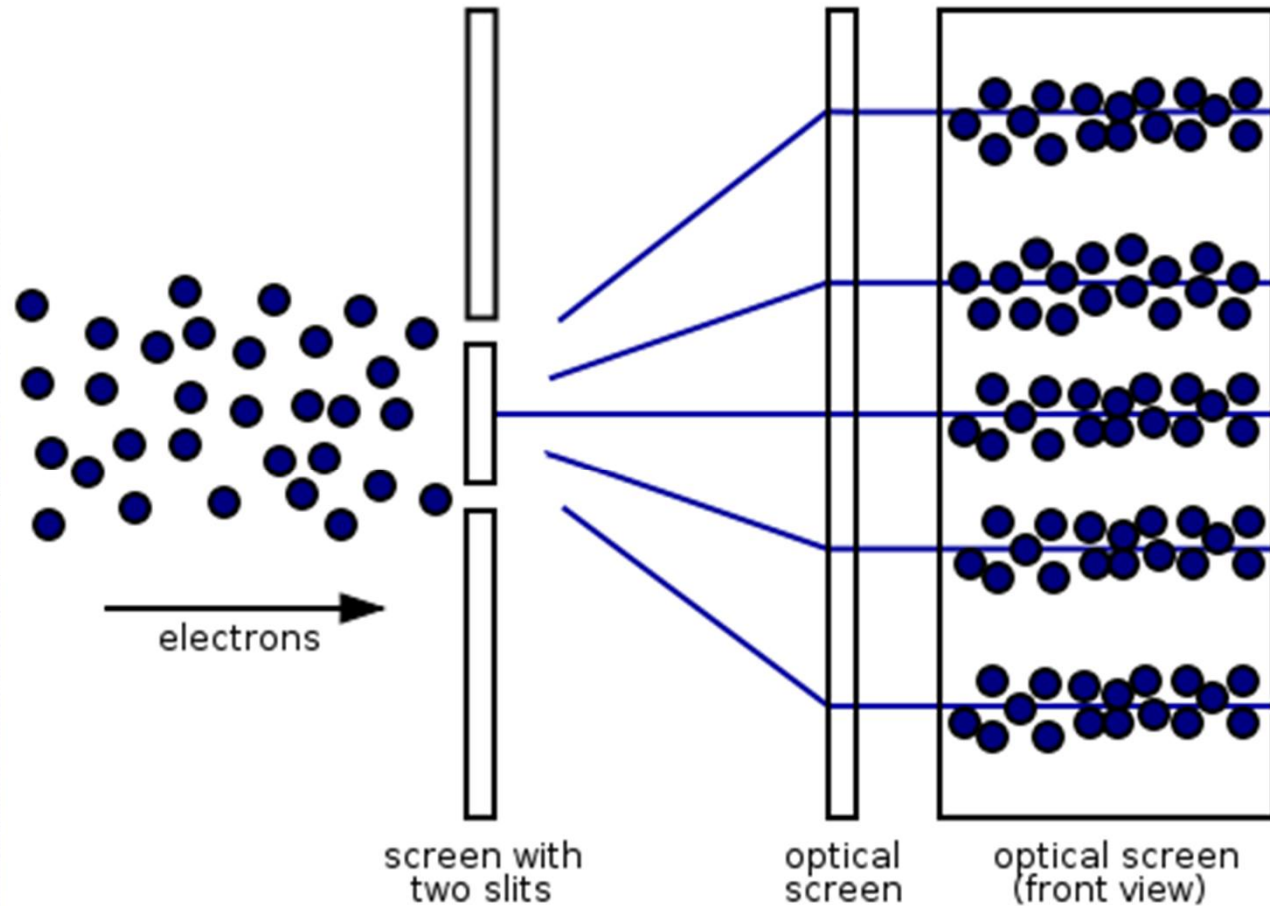
Finnish – Swedish

Doctoral thesis in performing arts  
**Minä, Hamlet : näyttelijäntyön  
rakentuminen**

<https://helda.helsinki.fi/handle/10138/38143>



# DIVERSITY IN TEACHING METHODS





# DIVERSITY OF PARTICIPANTS

University of Helsinki – Faculty of Science

University of the Arts – Theater Academy

University of Helsinki – Faculty of Agriculture and Forestry

Aalto University

PhD and Master students:

- Aerosol physics
- Cryosphere geophysics
- Environmental sciences
- Landscape architect
- Dance
- Sound design
- Dance pedagogy
- ...



# DIVERSITY ARTISTS - SCIENTISTS



**HELSINGIN YLIOPISTO  
HELSINGFORS UNIVERSITET  
UNIVERSITY OF HELSINKI**

Institute for  
Atmospheric and Earth  
System Research



# DIVERSITY OF PARTICIPANTS

## Nationality

- Finland
- Germany
- China
- USA
- ...

## Gender

- She
- He
- They
- ...

Something else?



# BUT EVEN LECT

- Old dining hall lecture – physics of climate change
- Remote skype lecture – double slit, quantum mechanics
- Lecture to students in the Maja – physics of condensation particle counters
- Seminar room lecture – peatlands and climate change







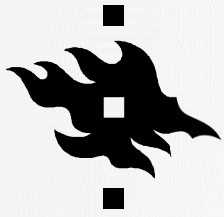
# INAR OUTCOME?

- Brought students (and teachers) from different backgrounds together, building an atmosphere of trust and collaboration among the diverse group the students was very productive.
- Course participants faced climate changes eco-anxiety and eco-hope on personal as well as societal level.
- Working together has is inspiring and activating as the teachers and students have shared different approaches and gained new insights from one another.
- Problems? Sure, collaboration in a diverse team is not easy. Different norms, ways of working and expectations make even the coordination difficult. Students felt that they had learned a lot about themselves and their field.



# DIVERSE OR NOT?





**INAR**

# **EXERCISE – FORM A LINE ARTS AND SCIENCE**

OR

ARTISTS AND SCIENTISTS

DIVERSE

LITTLE IN COMMON

HOMOGENIOUS

MUCH IN COMMON