

# Scientific cooperation and scientific cooperation<sup>2</sup>

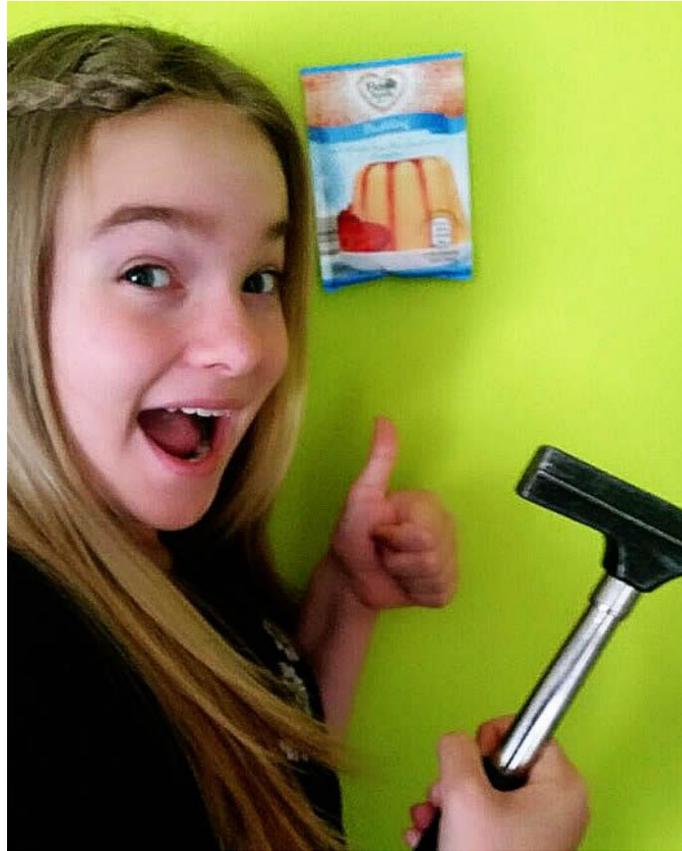
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Köhler

# What is interdisciplinarity ?

Exchange of perspectives  
Pseudo-Interdisciplinarity

Combining disciplinary thinking



Cooperation

Multidisciplinarity

Cross-Disciplinarity

Melting-pot of disciplines?

Sharing a method

Transdisciplinarity

# Origins of the concept part I

Science policy background: problem solving capacity of interdisciplinary research (IDR):

- Promotion of IDR already in the 1920s by the Social Science Research Council in the US, the Rockefeller Foundation etc.



- “In this new framework, the European Union finances interdisciplinary projects that are likely to respond to great economic and social challenges while taking into account the need for investment in future jobs and growth. Instead of representing specific disciplines, these interdisciplinary projects will focus on *7 societal challenges* that concern today’s Europeans, such as standard of living, security, and the environment.”
- Source: <http://www.b-bice-plus.eu/eu-brazil-ri-cooperation/european-programmes/horizon-2020/>, last access: 6.9.2016

# Origins of the concept part II

**Interdisciplinarity as an inherent feature of science systems?**

- **Bibliometric research studies scholarly communication, interconnectedness of academic scholarship as evidenced by co-authorships and co-citations, diffusion of methods and concepts across different disciplines**
- **(e.g. Porter & Chubin 1985, Cronin & Pearson 1990, Van Leeuwen & Tijssen 2000, Boyack et al. 2005)**

# Origins of the concept III

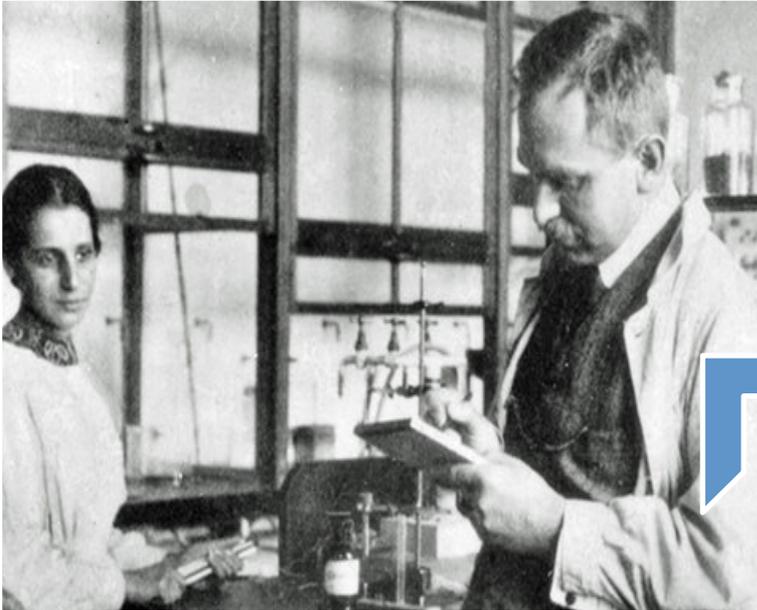
**IDR as a derivative from the system of disciplines?  
History of Science, philosophical and sociological  
perspectives on the nature of disciplines and relations  
among them:**

- **Whitley (1984): increasing mutual dependency of disciplines in the course of 20th century, esp. in natural sciences, sharing of instruments**
- **Abbott (2001): system of disciplines has been stable since turn of the last century, interdisciplinarity stable as a second-order system but does not threaten disciplinarity**

# Definition(s) and related concepts

<b>Interdisciplinarity</b>	<b>Integration of disciplinary data, methods, tools, concepts and theories in order to create a common understanding of a complex problem</b> <b>Partnering mode, collaborative input, organizational framework</b> <b>Formation of a new community of knowers</b> <b>Holistic understanding of a problem, new perspectives</b>
<b>Multidisciplinarity</b>	<b>The multidisciplinary research product is the sum of its disciplinary parts,</b> <b>Disciplinary elements retain their original identity and are combined</b>
<b>Transdisciplinarity</b>	<b>New form of research and scientific working to solve societal problems. Comprehensive and permanently established new framework for research transcending and transforming disciplinary world views, new modes of knowledge production drawing on expertise from different organizations and collaborative partnerships, more than the sum of its parts</b>

# Famous examples



**Discovery and  
theoretical  
explanation of  
nuclear fission by  
physicists Lise  
Meitner, Otto Frisch  
and chemists Otto  
Hahn and Fritz  
Straßmann**

# Interdisciplinary testimonials

## **Group assignment:**

**Please listen to the testimonial provided to your group by using the provided headphones and note down the form(s) of interdisciplinary cooperation and the advantages and disadvantages of this cooperation the researcher describes.**

## **Group discussion:**

**Present you case to the others.**

**Which coping strategies are needed to circumvent problems of interdisciplinary cooperations?**

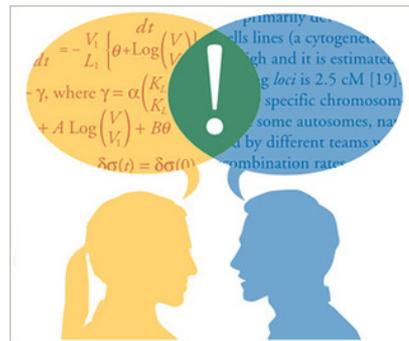
# Summary: Advantages of interdisciplinarity

- **Source of creativity and innovativeness, „thinking out of the box“, recombinations of disciplinary thinking into new forms**
- **More successful at problem-solving**
- **Diversity trumps narrow disciplinary specification**
- **Accommodating plural perspectives**
- **Synergy effects**



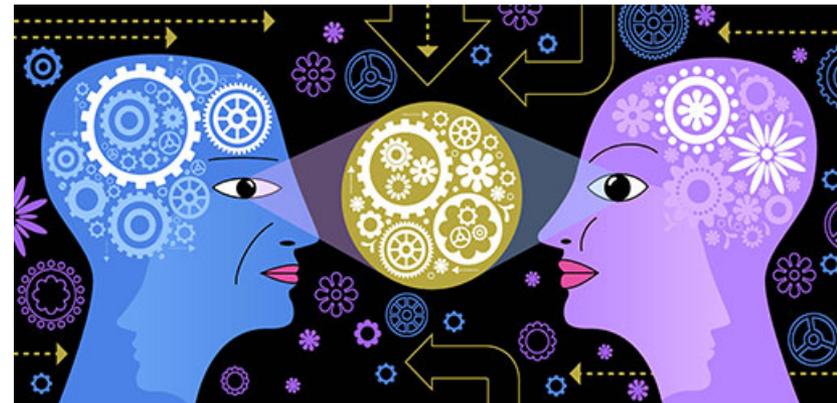
# Summary: Disadvantages of interdisciplinarity

- Higher coordination costs due to lack of common language, lack of shared meaning and norms within diverse teams,
- Administrative load and time needed to manage IDR
- Problem of assessing value of IDR, „citation penalty“ for IDR,
- Limits career prospects since the academic labour market is still structured mainly by disciplines



# Making IDR successful

- Valuing the other and self-worth: disciplinary identities are valuable
- Openness towards other perspectives
- Enough time to engage with the other and learn from the other
- Supporting institutional frameworks (exchange platforms and more time for projects)
- Join networks, like INSIST 😊



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