

Evaluation of interdisciplinary collaborations and working

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Cross-disciplinary collaboration

1. Multidisciplinary collaboration:

- **different disciplines** but is **designed to address a question or problem pertaining to a single system.**
- Theory, methods, and interpretive standards of the different disciplines are employed. **Interpretation of the results from different disciplines typically occurs post hoc**, often **from the perspective of one discipline** that may emerge as dominant within the project.

2. Interdisciplinary collaboration:

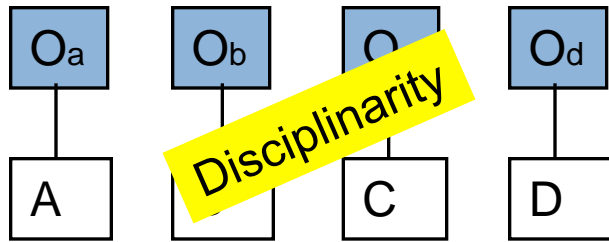
- **a greater degree of coordination among disciplines**, from **problem formulation through analysis and interpretation.**
- Research questions often **span several spatial and temporal scales**, such as those germane to interacting human and biological systems.
- Methods and analytical approaches may be synthetic.
- **Collaborators accept, understand, and sometimes apply one another's disciplinary methods and approaches.** More than multidisciplinary coordination, **interdisciplinary integration** can lead to **new questions and new methodologies.**

Choi, B. C., & Pak, A. W. (2006). Multidisciplinary, interdisciplinarity and transdisciplinarity in health research, services, education and policy: 1. Definitions, objectives, and evidence of effectiveness. *Clinical and investigative medicine*, 29(6), 351.

Cross-disciplinary collaboration

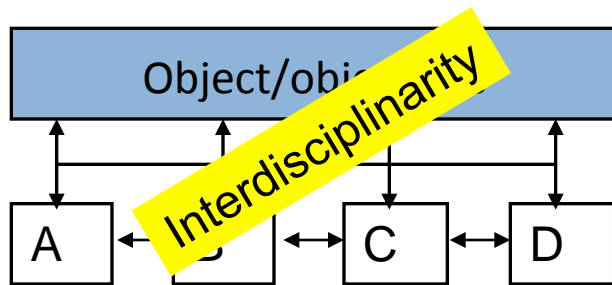
3. Transdisciplinary collaboration:

- Problems are uniquely formulated and cannot be captured within existing disciplinary domains.
- Collaborators accept and adopt **epistemological perspectives unique to the collaborative effort and distinct from those of any of the cooperating disciplines.**
- The term **metadiscipline** can be applied to an **emergent and sustained epistemological framework** spawned by **persistent transdisciplinary effort.**

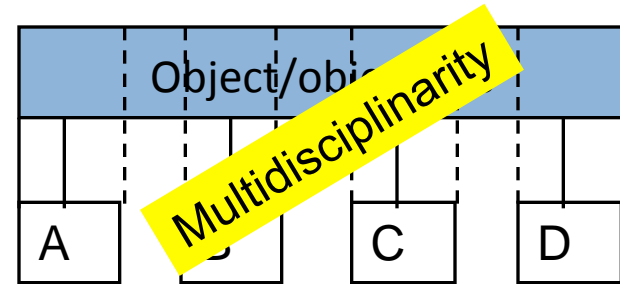


Disciplines set boundaries on the parameters of interest; dictate the range of methodological approaches. They provide clearly defined starting points, but also pre-determine the outcomes of the research

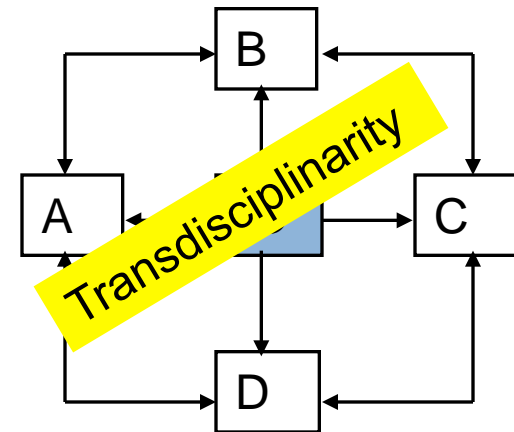
Bruce et al. 2004; "Disciplines have a way of imprisoning their creations"



Coordinated and integration-oriented collaboration between researchers from different disciplines

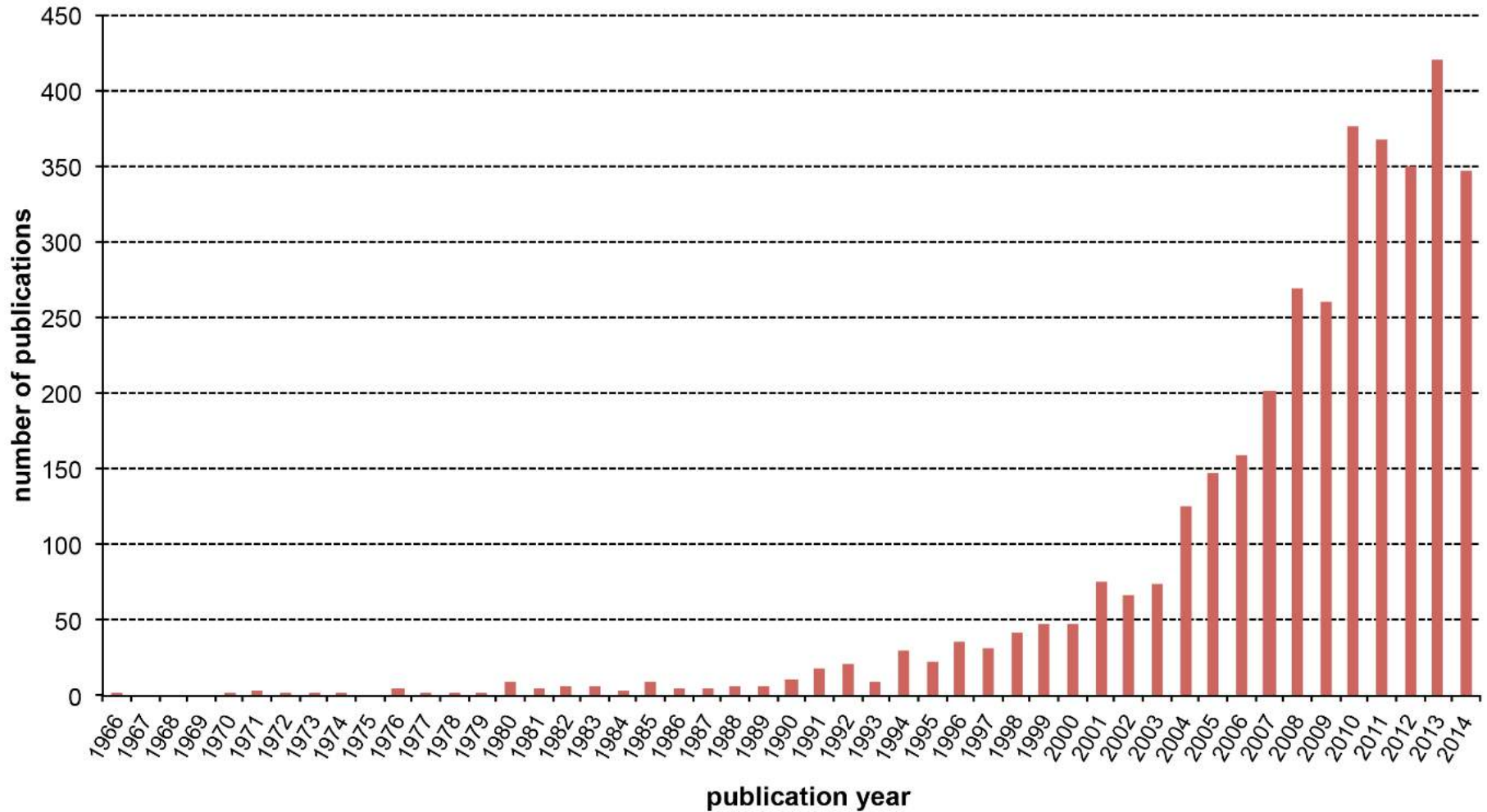


Approaches an issue from perspectives of different disciplines, but each discipline works in a self-contained manner with little cross-fertilisation or synergy in the outcomes



„The world has problems, universities have departments“

Number of publications 'Transdisciplinary' or 'Transdisciplinarity'



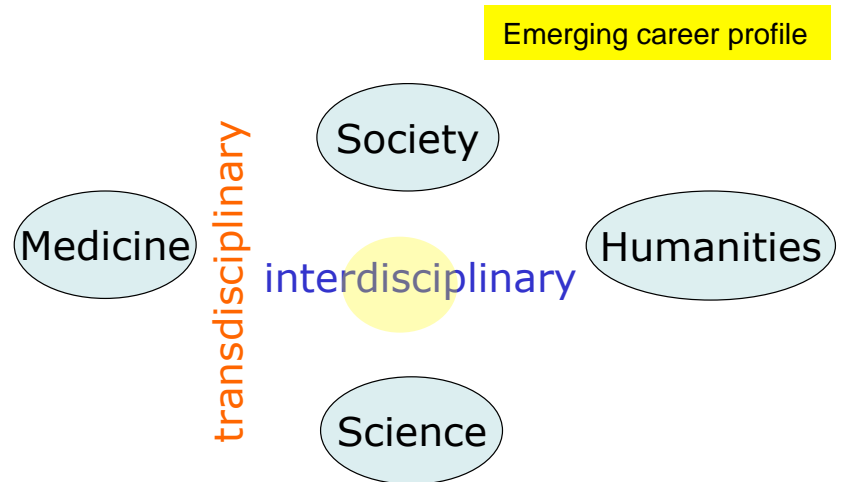
Key Characteristics and Principles of Transdisciplinarity

- Collaboration between disciplinary researchers and actors of the life-world
- Contribute to knowledge about the issue (practical experience, scientific models, results) and approaches (e.g. action research)
- Starting point not specific disciplinary paradigms, but a socially relevant problem (e.g. violence, hunger, poverty, disease, environmental, pollution)
- Analogous approaches to transdisciplinarity – recognizing the need to integrate disciplines and engage civil society in view of the relevance to the policy problem in question, complexity and uncertainty: **Post-normal sciences; Science of Team Science** in North America, **Integration and Implementation Sciences** in Australia and **Public Engagement** in Europe and elsewhere

Real-world problems:

often with scientific uncertainty, relatively high level of conflicts of interest and values, and institutional barriers

Uncertainties of knowledge: which parameters are relevant?, how are they connected in processes?, which disciplines need to be involved?

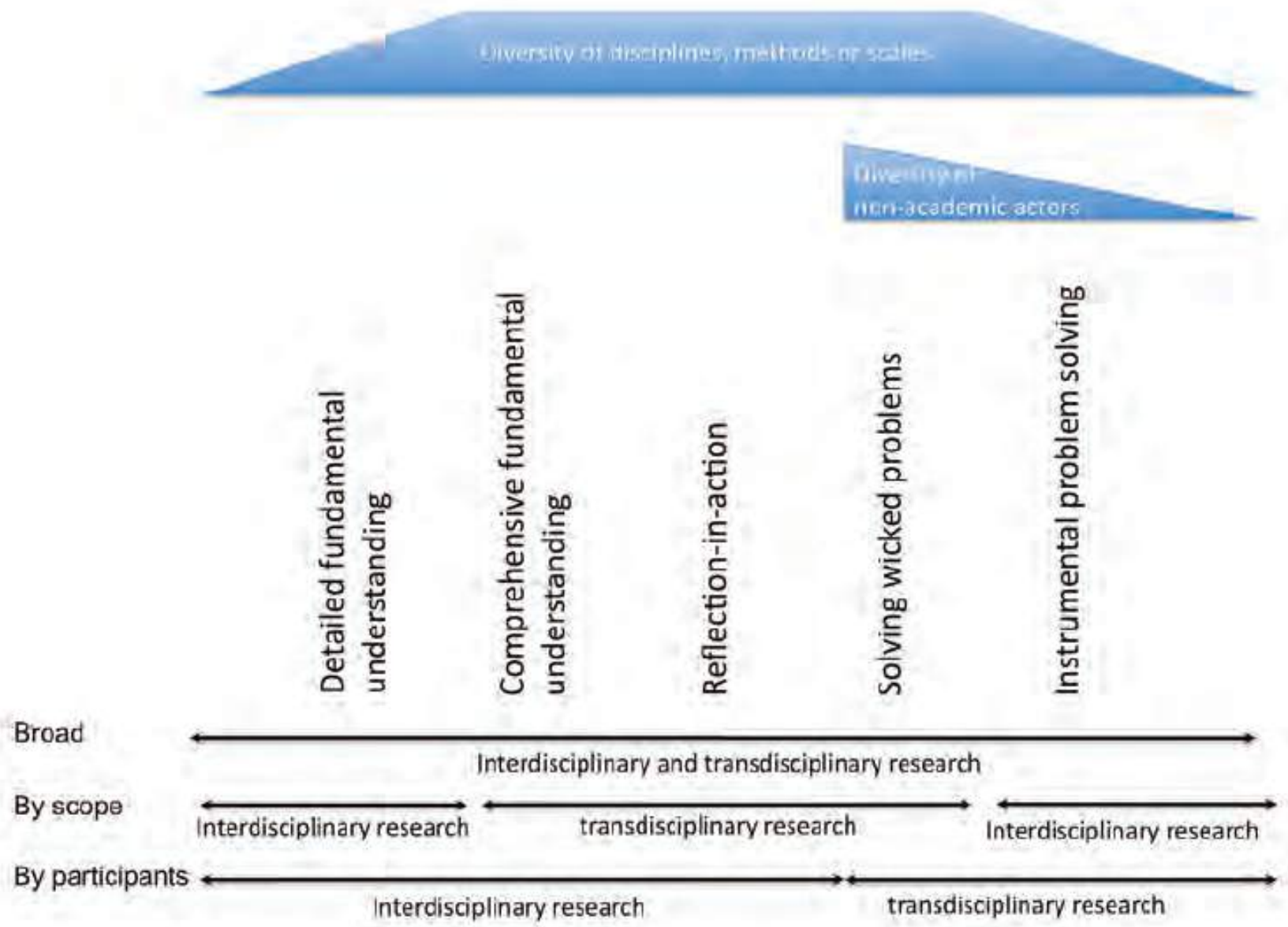


NEOH HANDBOOK: Interdisciplinary outcomes

- **Interdisciplinary** research relies on the fact that individuals from **different disciplines get together** to **create new knowledge** and understanding through **sharing of ideas** and **bringing together different perspectives**.
- The **outcomes** should reflect the **added value** of such **interactive endeavors**.
- We define **interdisciplinary outcomes** as outcomes of the **One Health initiative** that occur in the realm of **multiple disciplines** simultaneously.
- Examples:
 - Vaccination coverage in human and animal populations
 - Food security - multiple sectors (food availability, food access and food utilization).

NEOH HANDBOOK: Interdisciplinary outcomes

- Interdisciplinary outcomes are ideally measured in a **common metric in all concerned disciplines**, i.e. they should rely on an interdisciplinary consensus on how to assess and weigh the particular outcomes.
- Such metrics are even more policy relevant and effective if they are produced and measured in a **transdisciplinary process**, which **transcends both horizontal boundaries between scientific disciplines, and vertical boundaries between science and other societal fields** (private sector, public agencies and civil society)
- **Stakeholders** share **different perspectives** and can therefore **improve the contextualization** of the **problem** and its potential **solutions**.



Purposes of inter- and transdisciplinary research

In the following a number of questions are proposed to evaluate transdisciplinarity in case studies of One Health. (Adapted from Stokols et al., 2005; Gray, 2008; Pohl et al., 2011; Buttigieg & West, 2011)

No	Question	Explanation	Comments/Answers
Presentation of the societal problem within One Health			
Q1	What is the societal problem? Is it well described?	The question focuses on identification of the statement of the problem.	
Q2	Which stakeholders are concerned? State the groups, individuals and dimensions that are concerned by the problem.	This question is intended to complement the chart in previous page and assess who is considered and involved.	
Q3	1) is transdisciplinarity (TD) required to solve this problem? 2) What are the benefits of using TD rather than a conventional approach? 3) Is the problem relevant to the health of people, animals and/or the environment? 4) Is it relevant to One Health?	The questions check for transdisciplinarity and relevance to One Health Strategy	

Assessing broadness to further classify case studies

Q4	<p>How diverse are the disciplines, methods, scales of analysis and/or social actors involved?</p> <p>Please enumerate all disciplines, methods, dimensions and scales of analysis considered, as well as the social actors involved. In the chapter about OH thinking, we will introduce the concept of dimensions as spaces where entities can be measured with the same metric”, such as legal dimension, spatial dimension, etc. and use the term scale or level within a dimension, e.g. cell vs organism.</p>	<p>The question further distinguishes the purpose of a case study within the classes “fundamental understanding” and “problem solving”. A high diversity is typical for “comprehensive understanding” and “wicked problem solving”.</p>	
Q5	<p>Is the non-scientific community involved?</p>	<p>This question aims at differentiating interdisciplinary from transdisciplinary projects</p>	
Q6	<p>If the case study has a low diversity, does it still fall into the category of inter- and transdisciplinarity?</p>	<p>The question asks the reviewer to reconsider the case studies classification as inter- and transdisciplinary research based on the case studies diversity.</p>	
Q7	<p>If the case study has a low diversity, does it still fall into the category of an inter-sectorial project?</p>	<p>This question asks the reviewer to consider whether the case study applies cross-sectorial principles.</p>	
Q8	<p>How does the approach compare to the concerned dimensions? Compare Q2 to Q4</p>	<p>This question aims at comparing the broadness of the approach to the extent of the problem.</p>	

Assessing integration			
Q9	To what extent have the different disciplines worked together?	The question probes for experience of transdisciplinary working.	
Q10	Are there power (i.e. academic or disciplinary dominance) or gender imbalances within the group, which risk biasing the process?	This question probes for dominance of one discipline over the rest.	
Q11	Are there cultural / religious issues that need to be considered? If yes, kindly specify	This question looks for contexts which may inhibit the success	
Q12	What is the spatial proximity among disciplines' offices? Are there face-to-face interactions? If yes, how frequent are these interactions?	The question probes for readiness for collaboration.	
Q13	How innovative and how suitable is the combination of disciplines and fields of expertise for the specific purpose?	The question asks the reviewer to assess originality and suitability of the combination of disciplines and fields of expertise for the specific purpose.	
Q14	How structured is the approach to integration?	The question assumes that a structured approach to integration is a sign of high inter- and transdisciplinary quality.	
Q15	How balanced is the weaving of disciplines or fields of expertise?	The question assumes that an integration that balances disciplines or fields of expertise is a sign of high inter- and transdisciplinary quality.	
Q16	Is a common One Health objective formulated that covers all the disciplines, and can it serve in the process as a basis for knowledge integration?	The question checks for One Health objectives in transdisciplinarity and for knowledge integration	

Assessing reflection and learning

Q17	<p>How structured is the approach to self-reflection and adaptation? When answering this question, kindly analyze at individual, team and institutional level.</p> <p>How flexible is the project design and timeline to respond to internal or external changes? At short-, mid- and long-term.”</p>	<p>The question assumes that planned stages of learning and self-reflection and the possibility to adapt the case study based on this is a sign of high inter- and transdisciplinary quality.</p>	
Q18	<p>How likely is reflection going to feed back into corrective action within the case study?</p>	<p>The question asks the reviewer to assess whether the case study will connect reflection and action.</p>	