



Supplement of

Workshop – psychologically resilient communication between actors based on the example of a transdisciplinary approach

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TRANSDISZIPLINÄRE FORSCHUNG ZUR ENTSORGUNG
HOCHRADIOAKTIVER ABFÄLLE IN DEUTSCHLAND

Psychologically resilient communication in the interaction of actors using the example of the transdisciplinary approach - Workshop

BaseND Symposium, Berlin, 11th November 2021

Oliver Sträter, University of Kassel & Pius Krütli, ETH Zurich

Agenda (2h)

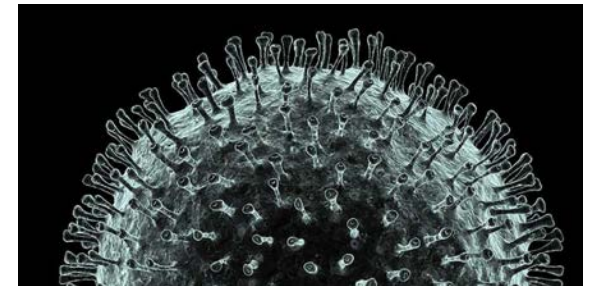
09:40	Welcome, goals
09:45	Setting the scene
10:05	Input I
10:15	Exercise, group work (steps 1&2)
10:35	Plenary discussion
10:50	Input II
11:00	Exercise, group work (steps 5,8,9)
11:20	Plenary discussions
11:35	Wrap up
11:40	End of Workshop

Goal(s) of the workshop

- Introduction to 10-steps approach for rendering research societally relevant
- Introduction to psychological aspects of communication
- Linking transdisciplinary research process & psychology of communication
- Acquire some practical experience of these two tools

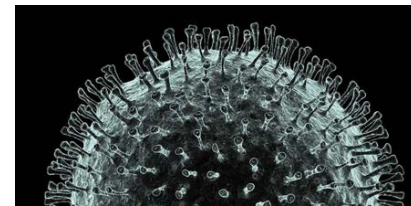
Setting the scene – introductory examples

- a) Example of a transdisciplinary research collaboration with the Swiss Federal Office of Public Health – support of decisions under pressure and uncertainty
- b) Why transdisciplinary research? Examples of relevance for safety
- c) Feedback: Transdisciplinary issues in the current discussion of nuclear disposals



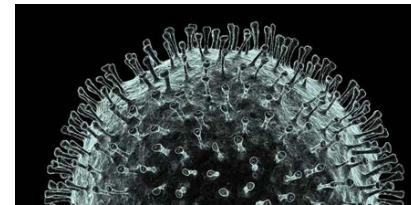
(a) What is the project about; key characteristics

- Modelling of effects of vaccination under the condition of scarcity – and epidemiological, regulatory & societal requirements
 - Joint ‚problem farming‘ (co-design) and joint knowledge generation (co-production)
 - Succession of interdisciplinary work (mathematics; informatics; epidemiology; social psychology; medicine) and continuous exchange
 - Decision making support (decisions under high uncertainty)
 - Moving target



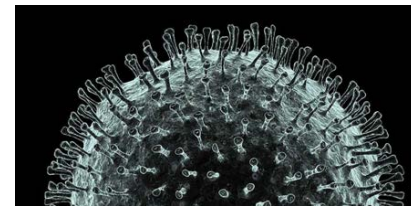
Some further characteristics

- Continuous meetings (30 in 1y) to keep us on track
- Work under uncertainty and high time pressure
- Continuous learning process on both sides
- Modelling as learning tool
- Decision support vs decision making

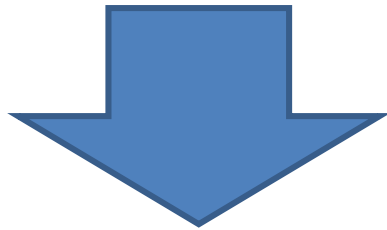


Findings

- Communication is key
 - Scientific evidence needs to be understood
 - Participants are more than receivers of ‚results‘ → bi-directional interaction on equal footing
 - Listening is as important as talking
 - Transparency (re: uncertainties, assumptions, etc.)
 - Respect (e.g. other opinions)
- Trust building → creates ownership of the problem
→ supports adoption of findings/learning



(b) Why transdisciplinary research? Examples of relevance for safety



What is Listening, Transparency, Respect, Trust building and ownership of the problem good for?

(Some) Examples of lack in Listening, Transparency, Respect, Trust building and ownership of the problem



Challenger 1986



Cologne archive 2009

Love Parade 2010



Boeing 747 max 2018

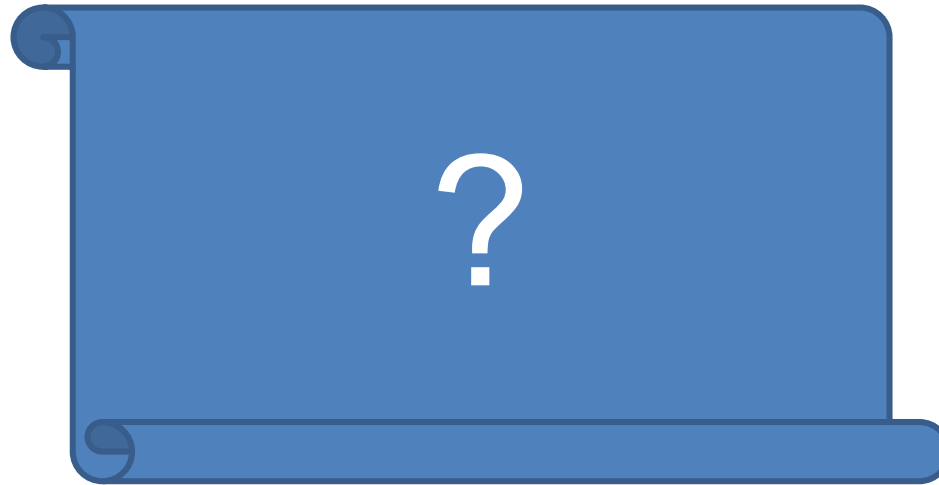
Severe accidents have a common psychological nature ...

Psychological Nature of Examples

- | | |
|---|----------------------|
| • (Ab)Use of Power in decision making instead of mutual process | Respect |
| • Information hiding to seek for advantage | Transparency |
| • Lack of considering minority-opinions followed by loss of valid information | Listening |
| • Yielding Biases instead of thorough analysis leading to self-contradictions | Trust building |
| • Omitting inclusion of other opinions, options or solutions | Ownership of problem |

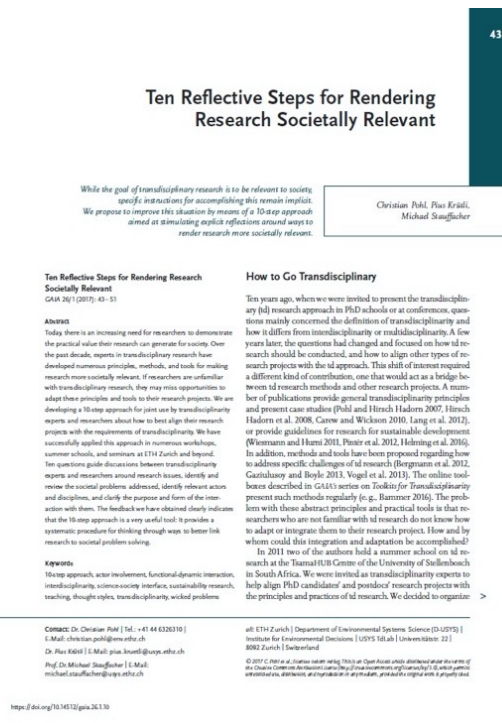
Psychological aspects overcome established safety-barriers.

(c) Feedback: Transdisciplinary issues in the current discussion of nuclear disposals



Input: 10-steps, steps 1 & 2

Ten reflective steps for rendering research societally relevant

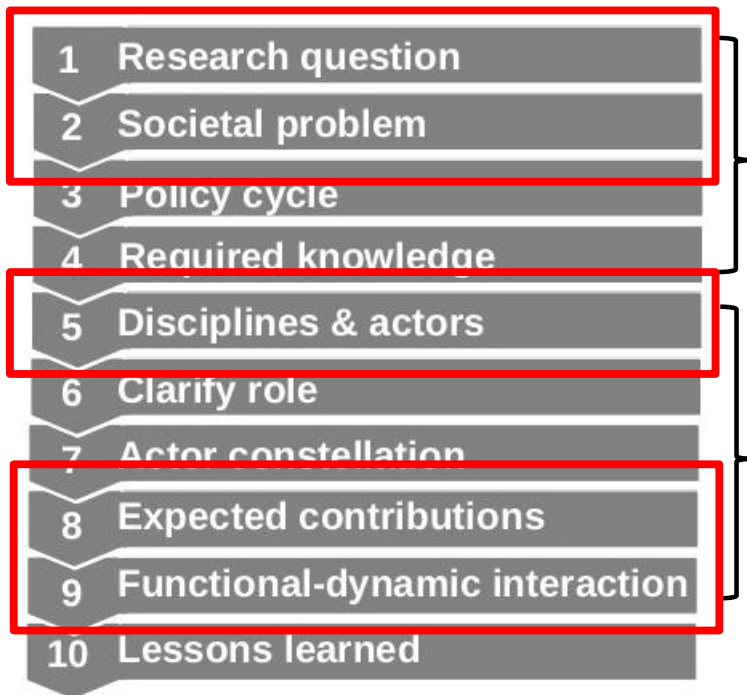


(Pohl, Krütli and Stauffacher 2017)

Goals of the ten steps

- **For td researchers:** analyse own project and identify potentials for improving the science-practice interfaces
- **For other researchers:** analyse own project and reflect how own project is embedded in broader societal context
- **For both:** know how to use a set of questions for further iterative refinements after consultation of literature, (scientific) experts and stakeholders
- **For ,practitioners`:** understand the logic of a transdisciplinary research process and learn how to contribute to a scientific project

General structure of the ten steps



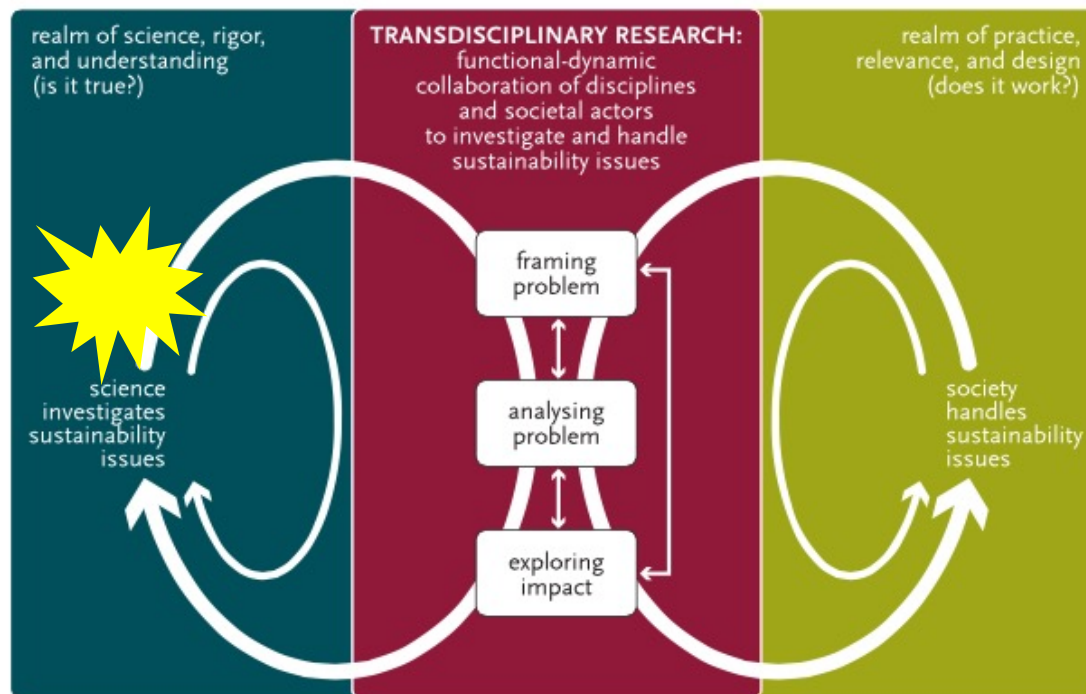
- **Steps 1 to 4** help you *(re)framing* your research project and how it relates to social problems
→ **problem focus**
- **Steps 5 to 9** help you *designing interactions* with other disciplines and social actors
→ **people focus**
- Important: it is an iterative process, steps 5 to 9 might indicate that you need reframing your research (again)

Step 1: Formulate your research question(s)

Formulate a research question and classify research as basic, applied, or transdisciplinary.

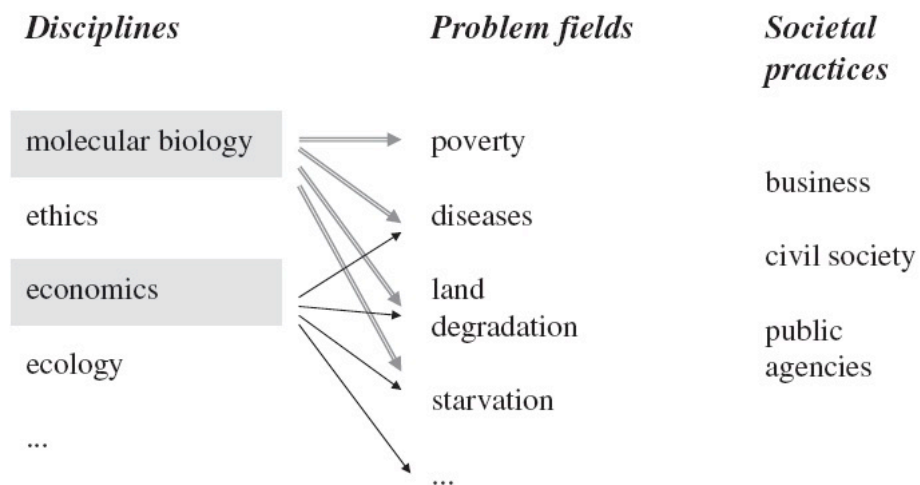
This step helps the researchers to recognize that there are two different realms, and that positioning one's own research between them might cause tension.

Research questions can be at different places of the science-practice interface



(Pohl, Krütli and Stauffacher 2017)

Problem framing in basic research

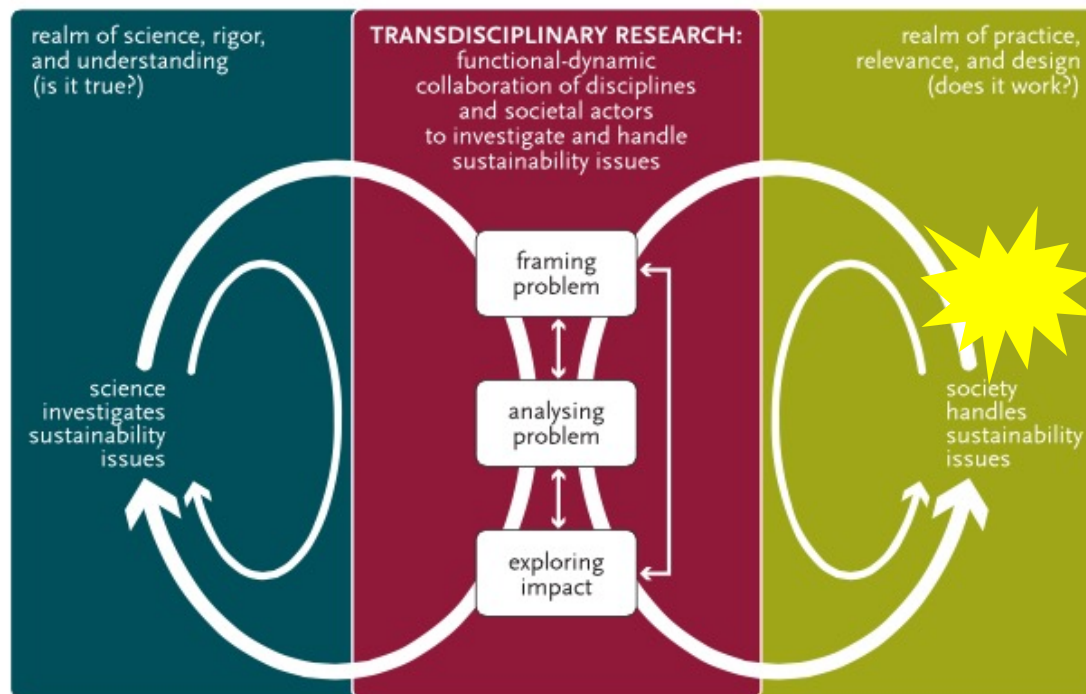


Problem/Problemsolving: describing and explaining processes by general models

Fig. 1–Identifying and structuring problems in basic research.

(Pohl and Hirsch Hadorn 2007)

Research questions can be at different places of the science-practice interface



Problem framing in applied research

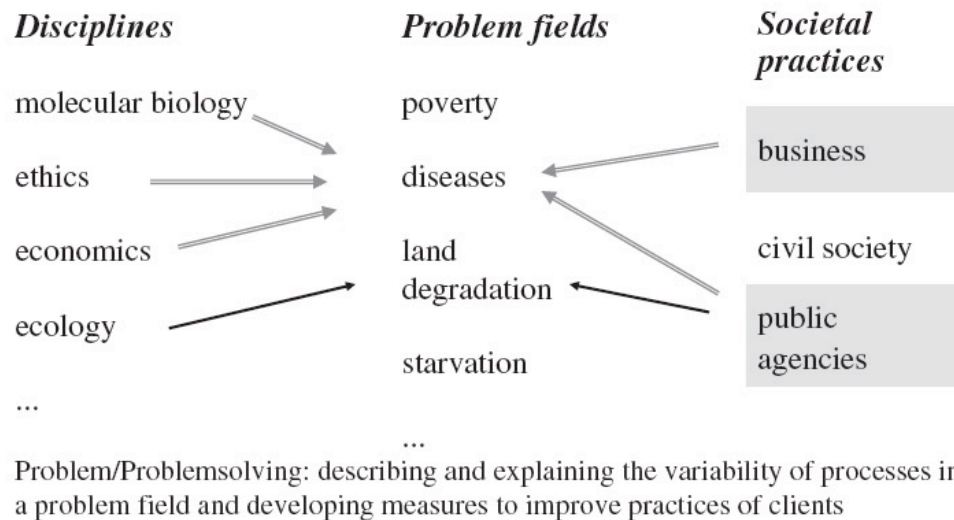
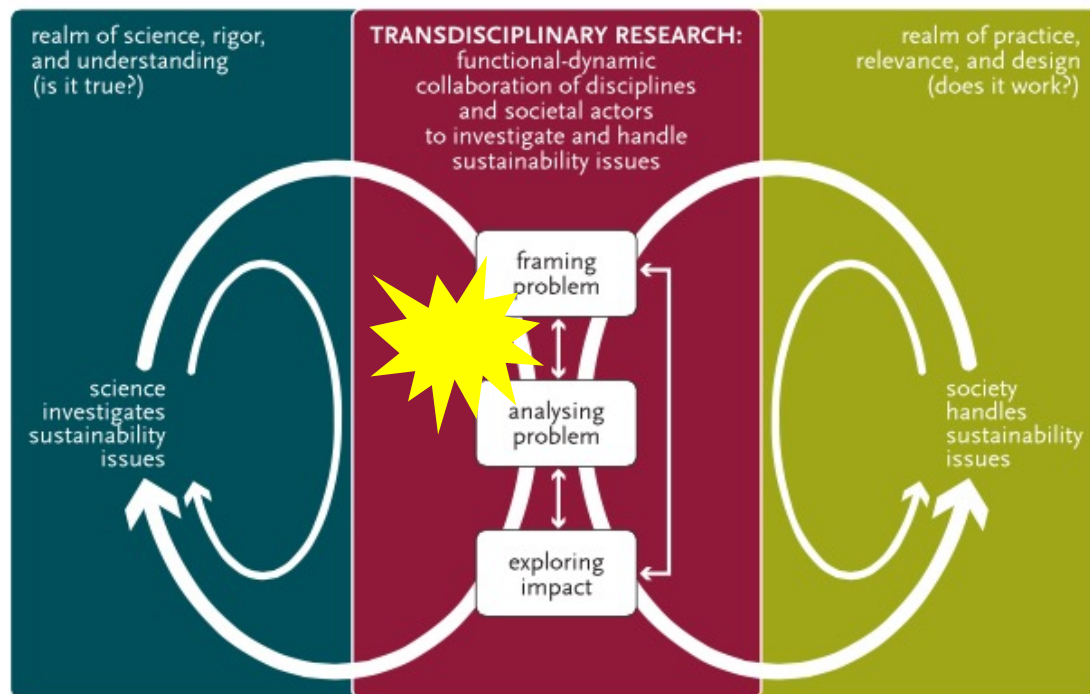


Fig. 2–Identifying and structuring problems in applied research.

Research questions can be at different places of the science-practice interface



Problem framing in transdisciplinary research

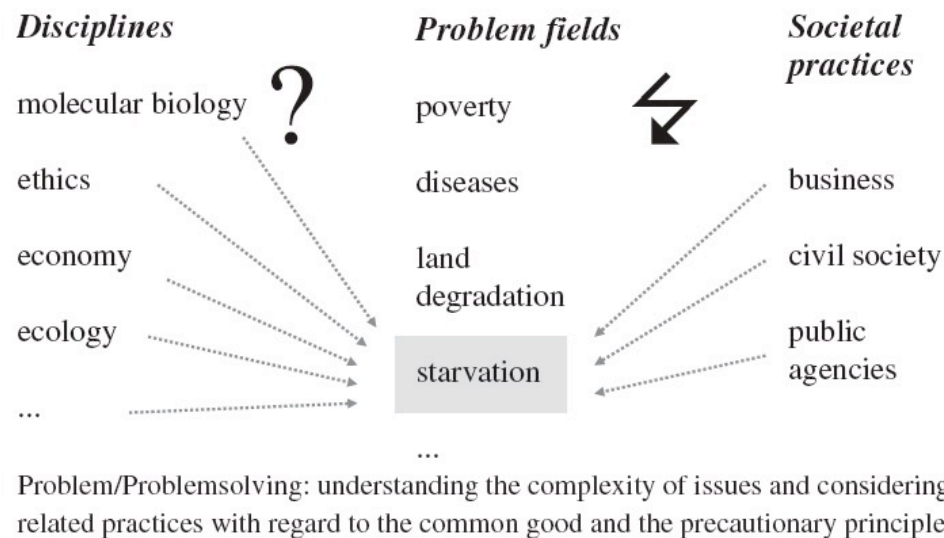


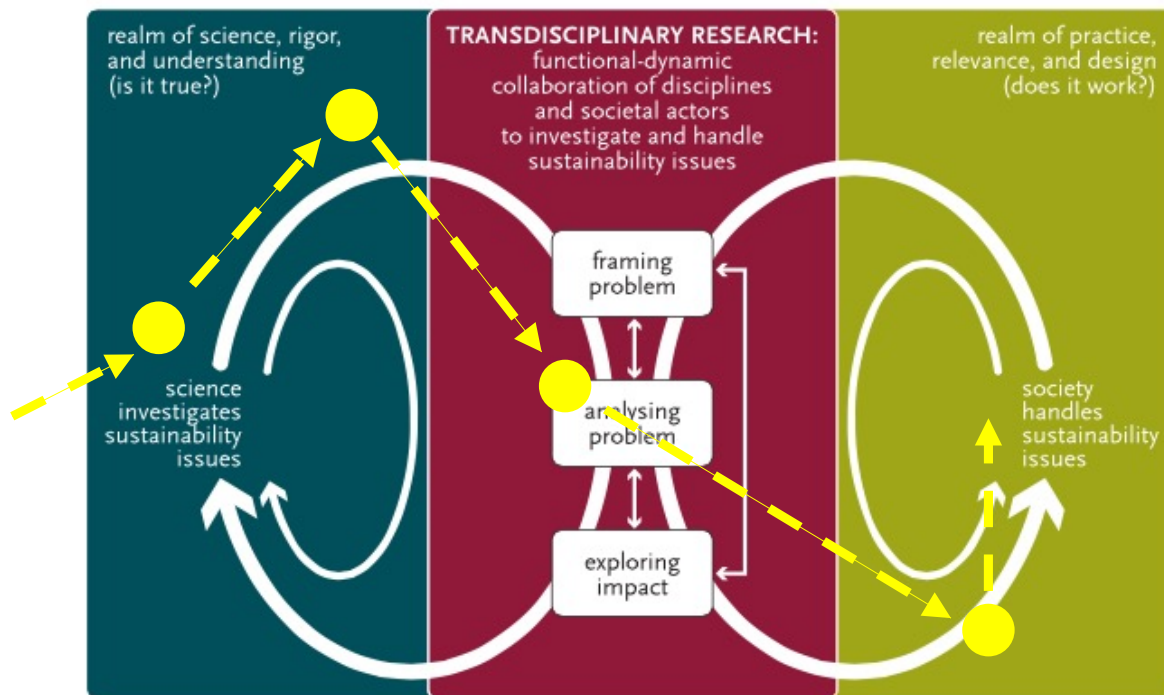
Fig. 3 – Identifying and structuring problems in transdisciplinary research.

Step 2: Formulate the societal problem you want to help solve

Distinguish between research question and societal problem; make links between both.

This step makes the researchers reflect about what the societal problem actually is, and if and how their own research contributes to solving a societal problem.

What societal problem does your project help to solve? Through which steps?



Exercise 1

Topic Site selection process for a deep geological repository for high level nuclear waste

Task (1) Think about a potential field (a) of interest to be researched, and (b) that is societally relevant
(2) Formulate a research question (RQ) (can be a social sc. or a science/engineering oriented RQ or a combination of both)
(3) What is the related societal problem you want to help solving

Alternatively, you can start with 3 and then go to 2

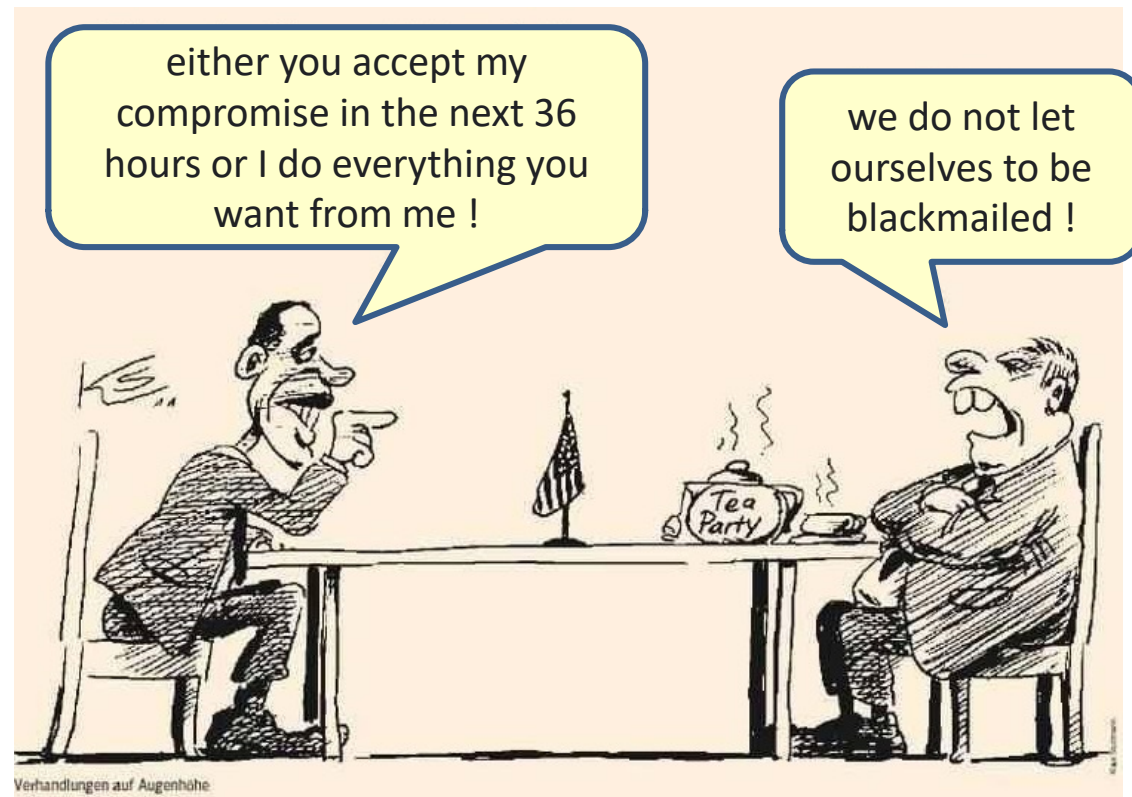
Format Group work (mixed groups of scientists and ,practitioners')

Time 20'

The role of communication

Communication is ...


- 1st emotional
... and only ...
- 2nd content

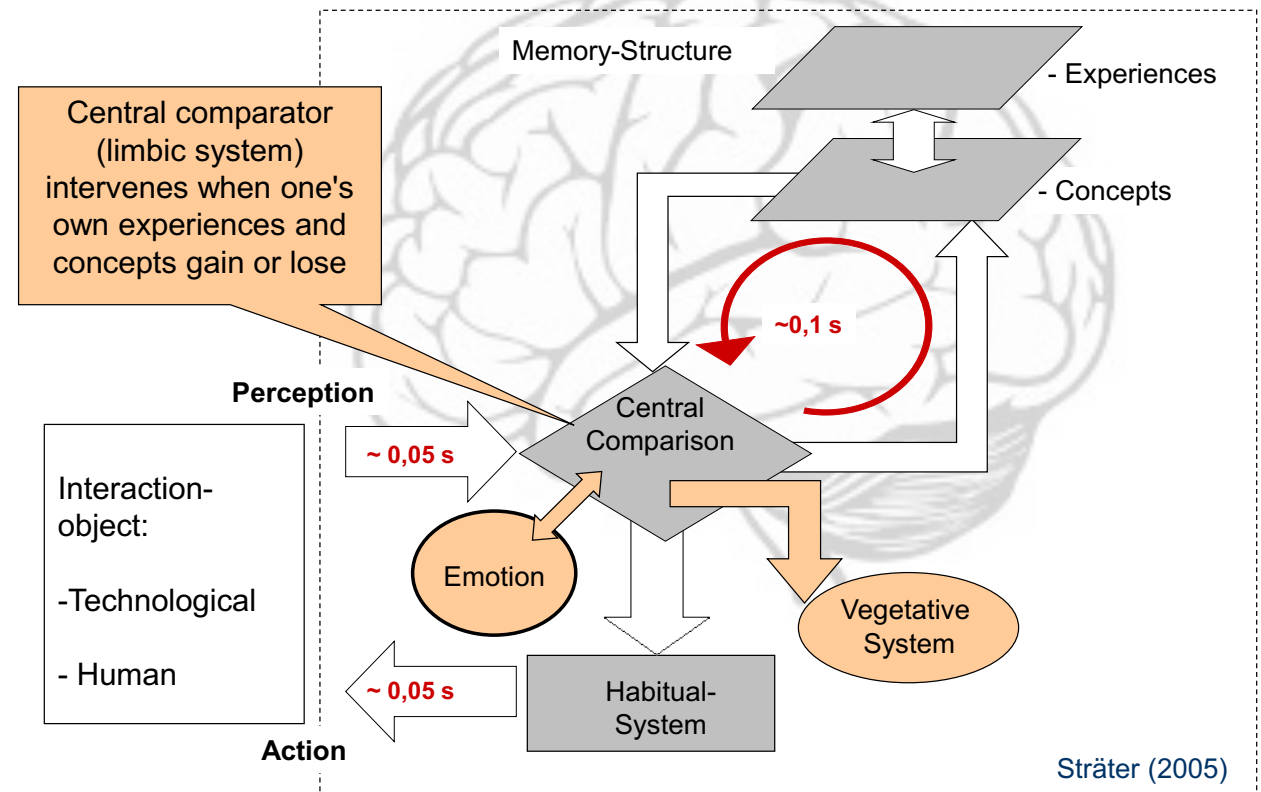


The hard wired structure of communication

Emotional regulation ...

- ... protects own experiences
- ... defends endangering interventions
- ... tends to diminish / fight endangering actors

 usually results into negative feedback loops



Overcoming the emotional barrier ...

... within myself

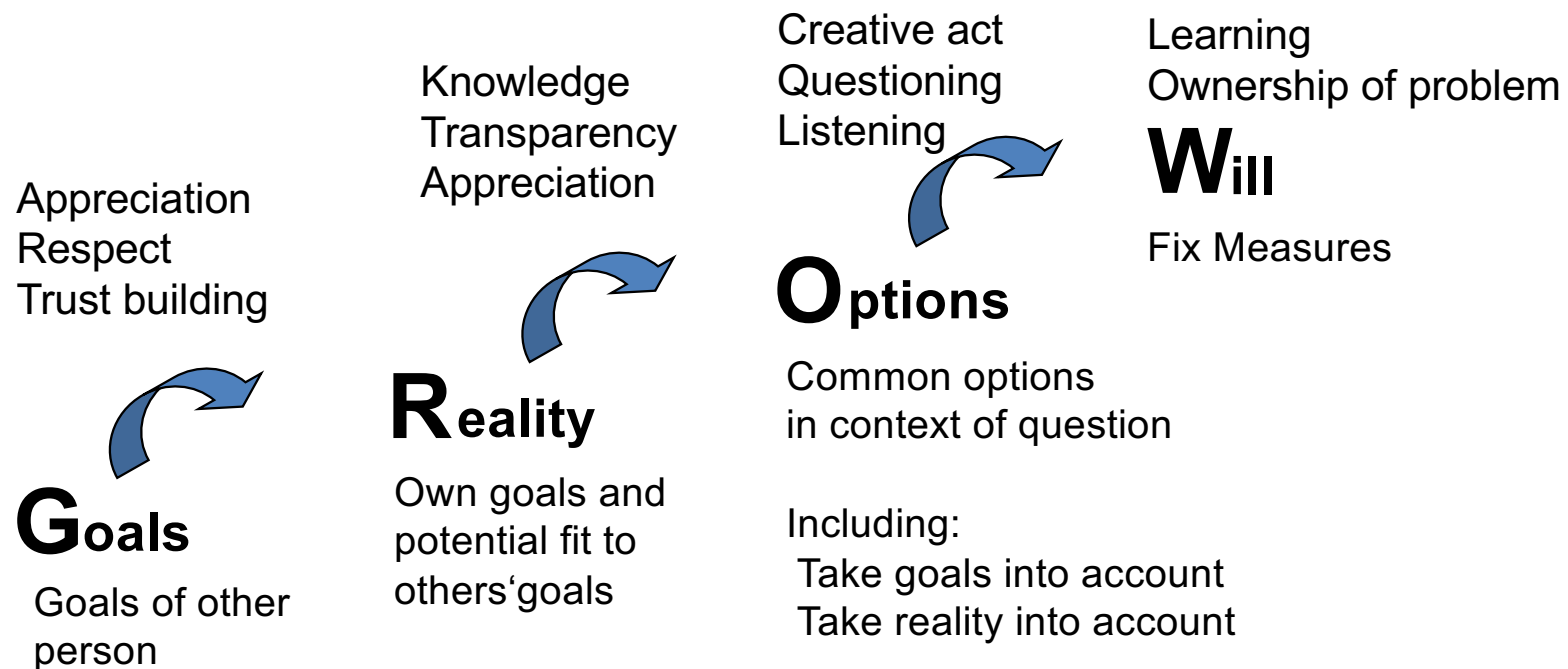
... of the other

Think positive on disagreements	Accept emotion as hint for issue	<i>cognitive</i>
Accept anger as hint for experience	Appreciate level of emotion as importance	<i>emotional</i>
Do not reply with anger	Interpret emotions as seek for interaction	<i>habitual</i>

Working with emotions rather than let them work you ...

GROW Model of Communication

➡ Healthy appreciation & positive feedback



For the Exercise ...

- ... always start conversation with the position of the other
- ... force yourself seeing the world from the position of the other (positively)
- ... if a statement makes you angry, start appreciating this as opportunity for own progress
- ... get your position in as second and on the same power-level (neither higher, nor lower)
- ... try to find creative solutions for all positions (others and you)

Working with emotions rather than let them work you ...

Input: 10-steps, steps 5, 8, 9

Step 5: Identify relevant disciplines and societal actors

Identify disciplines and societal actors to be involved in the research project.

This step specifies and extends steps 3 and 4 to the world of societal actors and disciplinary researchers. It increases awareness of relevant expertise and decision power available elsewhere.

Disciplines and societal actors might be relevant because of their...

... interest
... power
... expertise
...

(Wuelser et al. 2012)

Step 8: Clarify Disciplines' and Societal Actors' expected contributions

Clarify expectations and interests of the societal actors and disciplines involved.

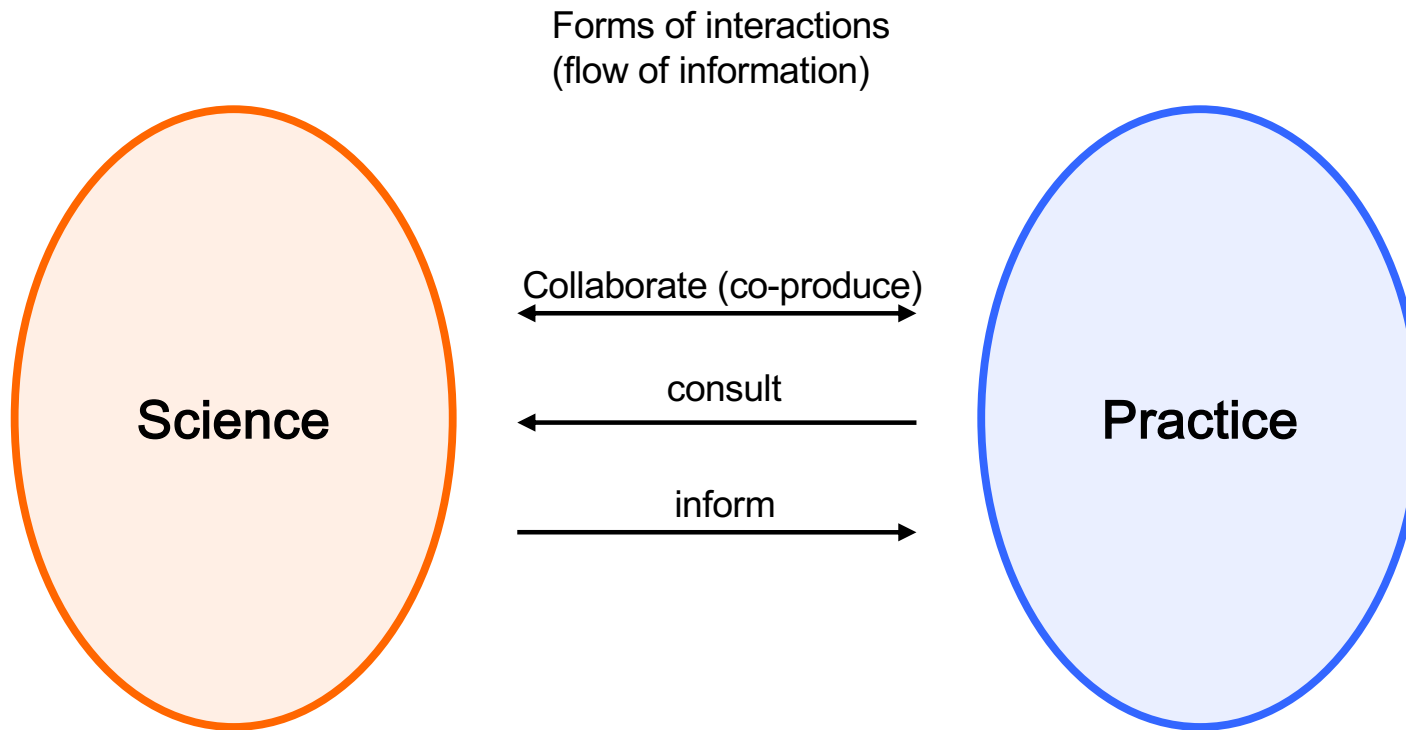
Researchers must substantiate why societal actors and other disciplines need to be involved. This makes the vague notions of involvement and interaction (see steps 5, 6) more explicit and concrete.

Three rationales of involvement

Fiorino (1990) distinguished between three reasons for public participation

- **substantive** (i. e., those to be involved have relevant expertise),
- **normative** (i. e., the democratic principle requires that those affected have a say),
- **instrumental** (i. e., by interaction one hopes for more legitimized decisions).

Forms of interactions



(Rowe & Frewer 2005; Jahn et al. 2012)

Step 9: Plan a functional-dynamic interaction

Design a plan on why to involve which societal actors and disciplines at different stages of the research project.

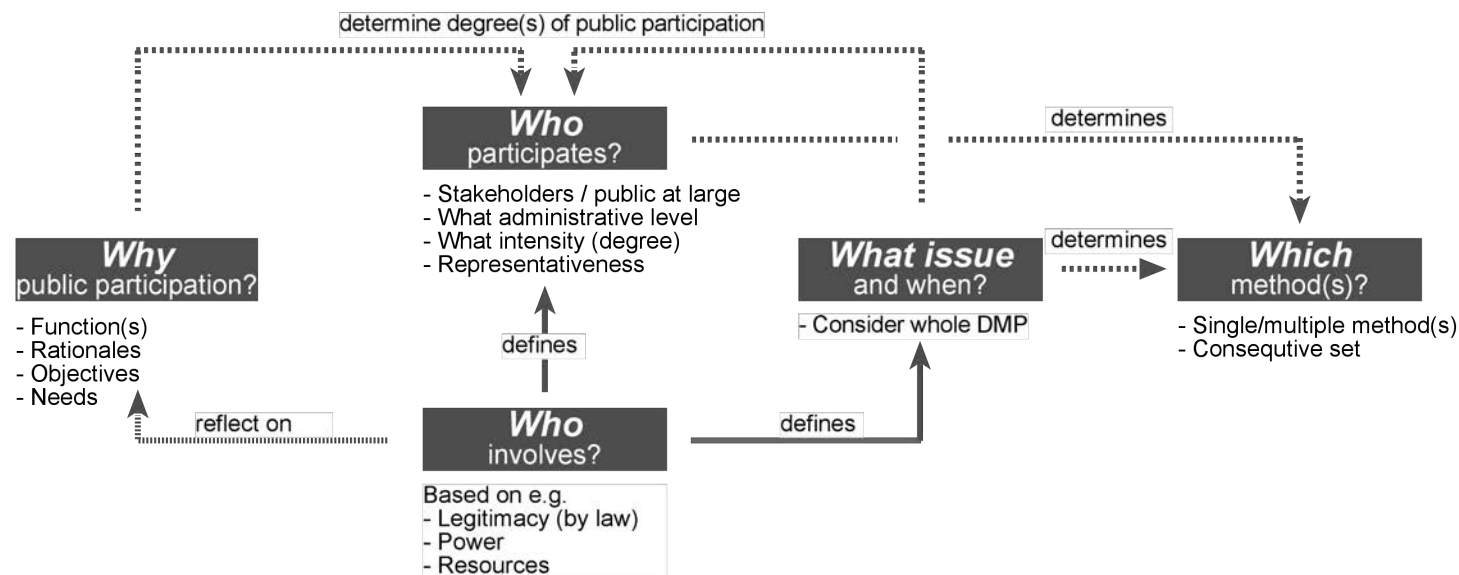
This step encourages reflections about who to involve/collaborate within one's research project depending on the desired societal impacts. It helps to understand that collaboration is dynamic over time.

Td-research: Actor involvement – why, who, when, and how

Public participation: Key questions pattern

Process owner's perspective (who involves)

Td-research



(Krütli et al. 2010:863)

Who to involve, when and how?

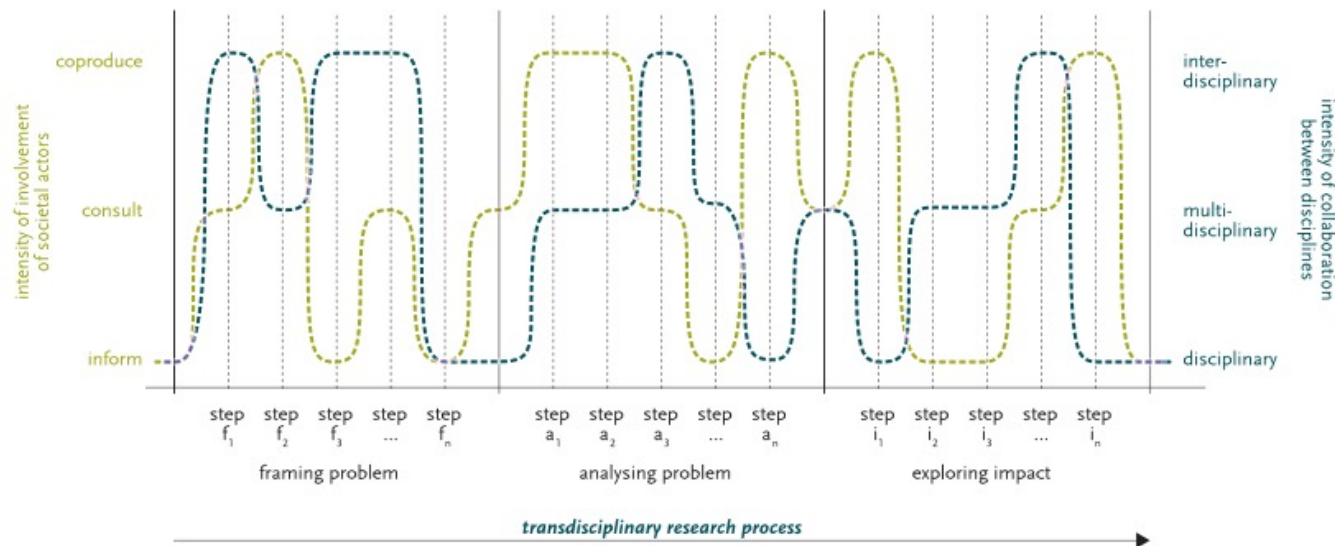


FIGURE 4: Functional-dynamic approach to collaboration in a hypothetical project. The intensity of involvement of societal actors (*light green dotted line*) and of the collaboration between disciplines (*dark green dotted line*) varies over the transdisciplinary research process. It depends on the stage, goals, and content of the process as well as its context (further developed based on Stauffacher et al. 2008 and Krütli et al. 2010).

(Pohl, Krütli and Stauffacher 2017)

Exercise 2

Topic Site selection process for a deep geological repository for high level nuclear waste

Task (1) take your research question and your societal problem you want to help solving
(2) Think about (a) which discipline(s) should contribute to, (b) which societal actor(s) should be involved, and (c) why

Format Work in the same group work as before

Time 20'

References

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