The Situation Is Tense! Inter- And Transdisciplinary Research Between Social Demands, University Logic And Multidimensional Competence Requirements

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Abstract

Inter-and transdisciplinary research claims to react to sociopolitical issues and to prepare empiricist and theoretical material that knowledge becomes operative. This means that the concerned people become able to act and realize options on which decisions can be made. The field of research can be described as limitless, divergent and diverse. This contribution focuses on three essential aspects: the inter- and transdisciplinarity and its embedding in the society, the paradigm shift within the science system as a determining factor and the (new) competence requirements for inter- and transdisciplinary researchers. Linked to this, the focus lies on the connection between the poles of role flexibility, project- and process responsibility and the expertise in order to conclusively consider the question which consequences it has on the education of young scientists and which conclusions emerge for the science system.

Keywords: Transdisciplinary research, (social) competences, project management, group dynamics, diversity management

Introduction

One aim of the transdisciplinary intervention research – a form of the transdisciplinary participation research which was developed in Klagenfurt (cf. Krainer et al. 2012; Lerchster 2011) – is to prepare material that knowledge becomes operative by enabling the involved people to act and to recognize options out of which different decision possibilities emerge. In other words: “intervention research generates awareness that a change in the system happens.”(Heimerl et al. 2006, S. 12.).

This premise requires a general interest in the environment and its cultures. Following this interest, it becomes obvious that the field of research

can be described as limitless, divergent and diverse. The research teams are therefore constituted project-specific heterogenic and interdisciplinary and the method faces contradictions and challenges within its paradigmatic. Some aspects and challenges are outlined below in the sense of a reflection or rather two aspects – the inter- and transdisciplinarity and the connected competence demands on scientists – are delved.

The call for interdisciplinarity and the (often) ignored obstacles

An answer to the above described diversity is the *inter- and transdisciplinarity*. The cooperation across disciplines and faculties can be logically argued in several ways (also in respect of the utility of research). Additionally, the science's as well as the society's demand for a synergistic and systematic overlap between increasing specialised and detailed knowhow can not be ignored. Less attention is paid to the pragmatic and practical aspect of this demand and the obstacles in the area of implementation of this "good" and meaningful thought which meanwhile also touches faculties which had no need for such network-collaborations and had no appreciation for that. Despite the (apparent) realization of the necessity, a high degree of scepticism, maybe even distrust, still exists. In most cases you are at least confronted with a certain degree of cautiousness. Sentiments that are on one hand understandable but on the other hand can hinder the research process if they are not addressed frankly. The experiences have shown that cooperation with traditional disciplinary oriented sciences are not easy to organise and that a high degree of attention has to be paid to that prior to the project, especially concerning the constitution of research teams. Dilemmas develop on several levels:

- *The amount of the material*

The achievement of the goal named above seems illusory concerning the increasing specialised, complex and hardly comprehensible and understandable scientific expertise. On one hand, it is necessary to have a more and more specialised and detailed science due to the fact of a rapidly changing environment, on the other hand, the high degree of specialisation delights us and the microscopic approach of the different areas is fascinating. At the same time, a certain kind of discouragement emerges. The work within the scientific community (a community that has not a lot in common with the basic meaning of the term) changes with the demand for interdisciplinary cooperation. Certain areas of expertise are asked to leave their special field – a clear defined territory which was defined for a reason – and to focus on the larger whole. What becomes obvious then, is that no individual is able to get an overview of or to apprehend the amount of global knowledge.

To work interdisciplinary can be an answer to all these challenges. Interdisciplinary teams have the advantage to use the resources of a whole group and since the whole is something different than the total of its individual participants, hope for a more comprehensive result is given. Where results without the emphasis of particular interests are summarised and selected, interdisciplinary research projects can be valuable in terms of the assignment. Where priority is given to the interest of an individual, where participative and "inter"-generated results are seen as an insult to individual competences and where disciplinary dominance is foregrounded, an interdisciplinary project will have little chance of success. The parameters for a successful cooperation is therefore the engagement with special fields as well as the orchestrated dialog on these special fields (and the connected vanities) and the elementary competence to compactly argument the intelligent selected knowledge to finally be able to provide a logical and understandable synopsis of the acquired knowledge.

- *Researchers socialised in their discipline and about the opening of claims*

As already described somewhere else (cf. Lerchster / Lesjak 2014), psychodynamic dimensions become operative on the level of the individuality of the scientists. The issue of the identity of the interdisciplinary formed research groups (who am I here?) is becoming relevant in the sense that cultures, beliefs, values, idioms and phrases imported from the system of origin – dimensions which determine the identity – are being questioned. In this atmosphere of the unknown and the connected uncertainty, the question of acceptance (how do I think about it and how do others see my contributions?) has a more important role than in disciplinary – and sometimes well operating and tested – collaborations. Linked to this is the question of the space (how much space do I have here?). The organisation of the social room is to negotiate, dominance and transgression has to be discussed, territorial shifts and the resulting conflict situations have to be managed. Within these conflicts the matter of motivation and will (what do I want here?) have to be clarified because several different expectations come together. When it is an assigned research project, it is about expectations like concerning the knowledge interest, the formulation of research questions, the determination of content, the survey methods, the available resources and last but not least the way the clients are faced.

To some extend the members of the interdisciplinary research groups are strangers to each other, at least at the beginning. Leading and moderating a discussion as well as a sensible and well-structured organisation of management activities is therefore necessary. The management of such research groups has to consider this moment of unfamiliarity and it has to

consciously organise the start, the processes and the procedures internally as well as the communication externally. Within the universities almost no attention is paid to the communication and if you follow the statistical relevant numbers, the process-related management of research teams as well as the organisation of communication processes with the actors is valueless in the practice.

- *Changed parameters and the role of the university facilities*

Not only the individual or the group face new challenges but also and not least the organisation of the university is asked to examine and ideally to develop its self-conception and culture. The current development in the tertiary education sector currently counteracts an interdisciplinary cooperation. The demands of the society concerning what universities should do are changing and several areas of studies are more often under legitimisation pressure. Economic parameters are becoming more and more constricting and although the wish for a disclosure of the achieved is understandable, the request for a return of investment seems hardly helpful. Universities are asked to implement quality-management-processes, to accredit its apprenticeships, to check knowledge surveys and if it necessary to think of sanctions if the fulfilment of obligations is failed. They are also asked to negotiate performance and objective agreements and especially to take pressure of the national budget and to acquire external funding – without becoming dependent from the economy or political sponsors. The state is stepping back, research budgets are outsourced to external carriers which then decide (often due to criteria which is hard understanding) which research sector and which subject areas are allowed to use the budget. Interdisciplinary (ideally transnational) projects are requested but at the same time the scientists should be excelled in their own discipline, should steadily publish in reputable and international journals. Young scientists should be involved but as soon as there is a project without a reputable member of the scientific community, there is almost no chance for a sponsorship.

In the sense of the freedom of research and science you will be asked to reflect upon institutional heteronomy but this does not change the fact that it is becoming more difficult in science to have the freedom of thought (which normally would require time, space and money) while the tertiary education sector is being surprisingly and almost without the chance to stop economised. “The state’s almost not discussed, neoliberal withdrawal from the former responsibilities means for the science system that the humanistic idea of the *universitas* is given up. The free thought falls by the wayside and the socialisational impact for whole generations of students and their political awareness can not be predicted” (Krainz 2009, p. 9).

The situation is tense! Thinking may seem as it is inefficient and “the human’s unrestrained curiosity which we owe our science and technology is

often an expression of inefficiency. Inventors, broody people, gatherers, everyone who is obsessed by an idea or question – are generally not seen as inefficient. The steadily spreading bad habit of mainly judging scientific achievements by the number of pages, types of publications and the amount of quotations, suppresses what science is ultimately all about: the discourse, consideration of arguments and the lively discussion" (Liessmann 2013).

In a time of ongoing financial crises, it admittedly would be unappropriated to promote a university that devotes itself to the freedom of science and research and operates independently from all economic and public restrictions. It is also wrong to believe in the illusion that the current parameters which are affected by structural deficits can lead to a beneficial development of science (and the society) or even to a disciplinary exchange. Teaching at the universities is becoming more and more school-like and the students have to reproduce learned content rather than to think together. Gert Bachmann (2013) summarises his observations of the university developments and attributes the educational system an "enormous pressure to the trend away from the sophisticated responsible acting human to someone who is metrically-confirmed excellent without a humanistic economic obligation or philosophic education" – the educational institutions are becoming more and more factories of excellence if you look on the requirements that young scientists have to fulfil and therefore you have to worry about the children.

In order to prevail, young scientists have to produce excellent publications, they should visit congresses or hand in presentations by themselves, they should acquire foreign experiences before or after their doctorate, they should teach and ideally be involved in the provision of external funding for projects. Additionally, young scientists find themselves in precarious labour conditions and have to fight in temporary projects for their survival at the universities.

This amount of demands supports the tendency to the anew reinforcement of claims. The demanded attestation of excellence supports egoistic self-profiling activities and the demand for individual expertise and visualization counteracts the demand for intra-scientific cooperation. At the same time – and this is the paradox – science is judged more and more by its success and achievements. Success means to reduce the deficits up to maximize the profit and to be in black figures but it also means to be closely connected to the economic sector and to use the available research budget. The economy on the other hand, has a strong interest in complementary results and possible comprehensible concepts – or in other words, intra-scientific cooperation that leads to productive results that possibly include everything. If local or also national politics are the clients, they are interested in immediate viable concepts while the publications of research results do

not have priority and sometimes are even seen as precarious. The universities are asked to process the here only indicated fields of tension like opening and closure, autonomy and dependence, profit maximization and knowledge acquisition, internationality and local demands, individual excellence and participative inter- and transdisciplinary research. This should happen against the background of limited budgets which are more suitable for managing rather than using them for proactive design.

The demand for an expansion of the interdisciplinary cooperation makes sense and to tackle an issue with different views can help to master the challenges in our environment. Universities can get a new design and can shed their ivory-tower image in order to support a thriving development of the society and to work on their profile. It will also be necessary to react and become active on the level of the students which most commonly come from a school-like environment. In response to the call for a stronger practical orientation from the research and science, students have to be integrated flexible, fit and confident in the academic activities. In some cases it is therefore necessary to re-socialise the intervention-researchers. Furthermore it is necessary to find a way to deal with the given freedom and at the same time with the required adaptation or to find a balance within this contradiction, to enable scientific work which respects the expertise of the practice in order to produce valuable results close to the respective research context.

Therefore it should be of high importance to focus on the education of this "species" and not surprisingly is the question in the field of the transdisciplinary research asked which competences will be required in this research area.

Education and competences of transdisciplinary researchers from the perspective of the organisational development and the group dynamics[49]

From the perspective of the organisational development, especially the question of the cooperation management (cf. Grossmann/Neugebauer 2014) and the for that usable strategies and control procedures (such as large group methods, cf. Krohn 2012) for cooperation issues is focussed. Group dynamics concentrates on social roles, functions and competences that people but also groups have, acquire or develop together in order to be productively effective. Furthermore it is explored which learning settings are especially suitable for the acquirement of these competences.

The following roles and the connected tasks have repeatedly emerged within our research projects (cf. Falk/Krainer 2006):

[49] See further: Krainer/Lerchster 2015.

- Scientific Administration (communication with clients, responsibility of finances, research activity, data evaluation, theory construction),
- Scientific project staff (operative conduct of the research projects),
- Project coordination (point of intersection between project management and project administration, operative responsibility for the research management),
- Project administrates (research documentation, project- and finance controlling)
- Project supervision (support of the reflexion of the research design, the overall control/management, the balance between the researching detail view and the overall view, team supervision, theoretical reflexions).

An overview of the existing publications from the field of group dynamics or with reference to them, shows that there exists a broad agreement that inter- and transdisciplinary researchers need, besides their specialised and methodical expertise, especially personal and social competences for the administration of and the participation in research projects and that the requirements of the practice need an adequate counterpart in the scientific socialisation (cf. i.a.: Lesjak not published; Reitinger et al. 2014; Krainer et al. 2014; Lerchster 2011; Lerchster/Lesjak 2014; Wieser et al. 2014; Lackner not published; Königswieser 2006; Zepke 2008).

Project management already starts in the phase of the project conception where the experts for the particular research areas have to be selected and the research teams have to be constituted. The scientific expertise of the potential team members is just one side because what is further needed is a) a high willingness to cooperate inter- and transdisciplinary and b) experience to handle time-consuming and energy-intensive negotiation and communication processes (also overcoming conflicts) (cf. Krainer et al. 2014).

The scientific leadership is responsible for the selection of the team members (sometimes in cooperation with the clients) which in further consequence has to organise the team. At this stage – namely the start of projects – the leadership function is responsible for a sensitive and at the same time really important task. The team needs a form of team development, the group has to be "organised" because no new mixed expert group is able to work only by its composition. Especially the management of expert groups is a challenge because all involved participants have a claim of autonomy and can react sensitive to a possible loss of individuality (cf. Krainz 2015) due to the fact that scientists are normally freedom-loving, autonomous operating and competent colleagues (cf. Defila et al. 2006, p. 39).

As already mentioned, right at the beginning of the project the parameters concerning the content and social- and group dynamic level are set (cf. Lerchster/Lesjak 2014). The type/form (the how) is constitutive for the content (the what). With this background, managing mainly means to provide a reflexive clarification process where knowledge interests, methodological preferences, research know-how, personal motives, individual resources (strength, weakness, time and availability) and collective expectations and goals are made transparent. The paradigm of participation (and the often meant and named cooperation on equal footing) which is dominant in transdisciplinary projects, also counts for the ongoing research management. Therefore it is beneficial to have a balanced and reflected relationship with one's own authority and vanity as a project leader due to the fact that participation and equality does not approve a charismatic person that acts in the way of "leader against co-workers.

To direct high heterogenic – and therefore more conflict-prone – groups it needs a social-integrative leadership as well as the understanding that employable (mature) groups can achieve better results than individuals. The model of the reflexive management (cf. Krainz 1995) has proven to be successful in yielding a collective power within the research teams. Reflexion is thereby seen as a medium of self-controlling/autoregulation. Furthermore it brings orientation and relief (cf. Lerchster/Wagenheim 2015), supports creativity and courage, creates self-confidence, promotes implicit knowledge and is per se further education (Königswieser 2006, p. 74 ff). This does not mean that hierarchies can be completely abolished. Governance implies hierarchy and in certain sequences of the research project it needs clear role- and management structures as well internal as external (e.g. rarely are all team members or practice partners responsible for the calculation and final account of the research funds). Since "the Doing of the One is the Doing of the Other", as it is accurately formulated by Stierlin (1971), it depends on how it works out when to be authoritative and when not, to develop an individual reflective awareness for oneself in the role of the manager and to encourage, process, moderate and implement collective reflexive self-controlling in the team and in the field of practice.

Necessary competences for the interdisciplinary research team, the practice- and science system

The described roles and tasks have interfaces and can diverge in their theme variety. As it becomes obvious from the analysis of the literature, the governance of inter- and transdisciplinary research projects and research associations includes several dimensions:

- Professional competences, which are inalienable,

- Method- and field competences (mainly linked to requirements of empiric experiences),
- Social competences,
- Personal / intuitive competences as well as
- Management- and governance competences, which includes three dimensions:
    - Management of the context to balance and adjust the project with the clients or the research program with respect to content and pragmatic-formal style (including the adjustment of the research focus which is to adapt during course of the process as well as the realisation of the aims in the sense of the project conduct and financing).
    - The governance / coordination of the different research teams under the consideration of their structural contexts and differences (environment, original systems, disciplines, languages, cultures) on three different levels (content, methodical implementation, project governance).
    - The governance in the practice field requires also the management of the identified and participating stakeholders which first have to be convinced content-wise and then integrated in the research processes (involvement in the topic as well as administration of addresses and coordination of appointments).

The here described roles, tasks and competence requirements – which require more than a general academic education – justify itself due to the fact that researchers have to switch between three systems or fields of action during the execution of inter- and transdisciplinary projects. Firstly, researchers interact in an interinstitutional and interdisciplinary compound team. Secondly, this team cooperates with a practice system which again can be segmented into different stake-holder groups. Thirdly, they are tied to a scientific system. This system landscape basically corresponds with the reality of projects which try transdisciplinarily to find social stable problem solutions and it is also used for the evaluation of transdisciplinary research projects (cf. Bergmann et al. 2005). When you now try to describe these competences, it is absolutely necessary to consider these three fields of action and to think of the challenges the particular system and the particular interface present to the researchers.

A detailed characteristic for inter- and transdisciplinary researchers is neither affordable nor beneficial or expedient. The following offered overview which adds the governance- and management competences to the fields of the usual basic competences – professional competences, methods- and field competences, social competences and personal/intuitive

competences – and links it to the named systems, serves on one hand for complexity reduction and on the other hand it should give information which resources are useful for inter- and transdisciplinary research projects and which challenges the basis represents for a proper project controlling.

<table>
<tr><th></th><th>Interdisciplinary Research Team</th><th>Practice Field / Practice System</th><th>Educational System</th></tr>
<tr><td rowspan="10">Professional Competences</td><td colspan="3">Disciplinary expertise / Expert knowledge</td></tr>
<tr><td colspan="3">Inductive and interactive generating of theory for practice and science</td></tr>
<tr><td colspan="3">Knowledge of praxeological concepts and local theory generation</td></tr>
<tr><td>Familiarity with the paradigms of the inter- and transdisciplinarity</td><td></td><td></td></tr>
<tr><td colspan="2">Construction of collective research interests</td><td>Scientific innovation</td></tr>
<tr><td colspan="2">Knowledge of / Understanding for the functionality of groups, organisations and institutions, their reactions/responses to intervention-impulses as well as their system immanent contradictions and fields of tension</td><td>Creation/Development of science-relevant results</td></tr>
<tr><td colspan="2">Design of communication processes, moderation (setting and tools)</td><td>Communication with the „scientific community“ (publications, congress participation, dialogue and examination)</td></tr>
<tr><td colspan="2">Creation/Development of practice-relevant results</td><td>Integration of the findings/conclusions in the research-led science</td></tr>
<tr><td></td><td>Creation/development of action strategies</td><td></td></tr>
<tr><td colspan="3">Moderation- and advice methods: methods of the group and organisation development, process design, governance of and participation in collective settings, design competences, project management and project architecture</td></tr>
<tr><td rowspan="7">Method- and field competences</td><td colspan="2">Conflict management (mediation) / creation of space for thematisation of perceptive disruptions</td><td>Adherence of scientific standards</td></tr>
<tr><td colspan="2">Organisation of intervision- and supervision settings</td><td>Exact description and argumentation of the method choice and the process operation</td></tr>
<tr><td>Choice of research methods (qualitative/quantitative)</td><td></td><td></td></tr>
<tr><td>Knowledge of the intervention character of the chosen methods</td><td>Exploration and partial immersion in the logic of the practice field (temporary „going native“)</td><td></td></tr>
<tr><td></td><td>Support of the implementation of new action strategies</td><td></td></tr>
<tr><td colspan="2">Time management (Adaption to the time-limitation of the practice partners vs. necessity to invest enough time)</td><td></td></tr>
<tr><td rowspan="5">Social competences</td><td colspan="3">Ability for linguistic integration</td></tr>
<tr><td colspan="3">Communicative skills as central competences</td></tr>
<tr><td colspan="3">Experiences how to deal with conflicts and emotions</td></tr>
<tr><td colspan="3">Identification of countertransference phenomena and usage as empiristic material (reflection phenomena)</td></tr>
<tr><td colspan="2">Asking and listening as qualification</td><td>Readiness to engage in</td></tr>
</table>

			dialogues
	Pleasure in interactive exchange		
	Experience with open-ended processes		
	Conscious way of being not so authoritative in a scientific way towards non-professionals and appreciation of non-professionals as experts		
Personal / intuitive competences	Openness and flexibility towards unfamiliar disciplines and the expertise of the practice		Broad-minded handling with competitive situations
	Self-thematisation ability and reflective faculty (own stereotypes, sentiments, sympathies, identification, fears and experiences)		Standing and confidence
	Sensorium for social situations		Ability to network
	Flexible handling with unpredictable and open processes		Ability for (critical) self-thematisation
	Fearless approach to conflict situations		
Governance- and management competences	Generation of research questions, proposal preparation, consideration of funding programs and finance logics, administration of the budget		
	Formation of research teams		
	Creation of a project plan inclusive communication architecture (Stakeholder dialogues, communication within the research association, communication with the science system, communication with the clients as well as team communication)		
	Decision-making competence		
	Resource management		
		Clarification of the assignment and communication with practice partners	Governance of the scientific innovation
		Conduct negotiations (level of the participative participation, funding contribution, own scientific interest etc.)	Planning of the output
	Governance of group dynamic and social processes		University internal, inter-university and international Interconnectedness
	Governance of reflexion as a medium of self-controlling		
	Conflict management, mediation		
	Process- and project management		
	Delegation competence		

This overview demonstrates primarily three things:

a) The competence requirements mainly in the area of the method- and field competences as well as on the level of the social competences are so diverse that an overload on the individual level has to be considered,

b) The communication- and governance demands affect all three levels (interdisciplinary research team, practice field/practice system and scientific system) the content level as well as the formal one,

c) The range of these demands can normally not be covered within a disciplinary-oriented academic curriculum and therefore additional qualifications are necessary.

The ongoing discussion about the competence extension (starting in the secondary educational sector where pupils should be taught competence-oriented) can also be seen as critical and reflected. Young scientists are faced with an almost not comprehensible amount of demands and they often think they have to meet these demands. On one hand, a strategy for overcoming uncertainty can be assumed, on the other hand, this discussion goes along with a change of paradigm within the scientific community. Scientists that work inter- and transdisciplinary deal with processes which have to be managed communicative, social and content-wise. These processes are generally complex and only partially plannable. If competences are understood as "capabilities to act, then they are especially essential for successful actions in open, unclear and complex situations which require creative shaping of the future" (Heyse 2014).

The acquisition of necessary competences (education and further education, experience-based learning)

Since the question, which competences characterise researchers or which qualifications are necessary in order to meet the demands, is widely discussed, it seems that thoughts on the area of education for scientists, if such an education is explicitly offered at all and not only implicit (learning on the job or through qualification agreements), are more the exception (cf.: Defila/Di Giulio 1996, p. 125-142, Paul-Horn et al. 2015).

The most scientific educations are aligned to the respective discipline and primarily to the expertise which serves as the basis for every form of scientific activity and by which the scientists can be measured. On one hand, the expertise generally refers to an established theoretical knowledge within the discipline and on the other hand to science-theoretical and methodological competences. The comprehensive education aims to educate people to be well-informed in their discipline, to produce output (publications, congresses, research projects) and to be theoretically, thematically and linguistically compatible. The reference to the character of the researchers is created on the level of methodology (cf. Devereux 1998; Feyerabend 1986; Lamnek 2010; Flick et al. 2000; Girtler 1988; Strauss 1998 und weiterführend Glaser/Strauss 2005; Felt/Nowotny/Taschwer 1995). In comparison to that, themes of the research management are often outsourced to the area of further education and therefore they are highly individualised. Funding organisations (e.g. the FWF in Austria) or university-external providers have identified the needs and the target groups.

From our point of view, the question in which way these additional qualifications can be acquired, the individual should not exclusively be responsible for it. "Competences are based on values, are consolidated through experiences and are internalised through emotions and (self-)

motivation. When competences should be understood in that way and when they should encourage and strengthen character-development goals, then it is necessary to question the way of their acquisition differently than the imparting of knowledge and skills. At the end, the study should unite knowhow and competences. Competences do not develop through sheer imparting of information and grade-focused memorisation or appeals to the intellect. Possibilities for learning by doing under supervision of trained teachers with additional individual feedback are necessary" (Heyse 2014).

Therefore it is going to be necessary that inter- and transdisciplinary research associations discuss how an adequate education can be conceived. This happens rudimentarily and at different places in form of study courses, conferences, trainings or position papers. Despite this obvious dynamic of change, the call for a comprehensive education at our universities is still there. It seems as the time for a realisation of such programmes or the fundamental change of the curricula is not there yet. Based on this analysis, Schneidewind et al. (2014) develops on one hand a model for "lagging universities", on the other hand, there are several offers for further education which try to close the gap. The University of Bern provides an overview of further educational offers in Switzerland (cf. Bestvater/Beywl 2005) and at the same university a specific certification course deals with further education in research management (see www.forschungsmanagement.ch). At other places, such as the University of Vienna or the Alpen-Adria University of Klagenfurt, so called extension curricula and elective modules are being developed. These programs have different focuses. Many of them serve as an interdisciplinary perspective extension in the sense of the discipline but we assume that a major part of the curricula deals with the area of social competences, as it is the case in group-dynamical learn setting. In order to achieve this, the focus lies on the development of self-thematisation- and reflexion competence.

In group-dynamic laboratories and interdisciplinary group settings, cooperative learning in the sense of emancipatory education is trained practically and the experienced is theoretically translated. The competence extension in the area of conversation techniques, the governance of interest conflicts, the support of self-enlightenment processes and the connected acquisition of training- and organisational development tools is only partially covered with the reading of relevant publications. In order to operate in research properly, a form of experience learning, participation in supervised learning by doing and a profound theoretical basis referring to logic and functionality of social systems is necessary. The practical doing in the sense of overcoming current and future societal challenges firstly requires a comprehensive subject-specific and at the same time practice-orientated university education. Secondly, reflective acting as well as a conscious and

proper handling with the involved actors is necessary and thirdly a reflective view on existing barriers, objections and often beneficial obstacles is required.

Conclusion: How to handle role flexibility, the task diversity and the multidimensional competence demands?

The degree of cooperation in interdisciplinary research associations as well as the participation respectively the intensity of the participation of the concerned stake-holders from the practice in inter- and transdisciplinary projects are often the reasons for a project to get started or to expire. Therefore highly complex projects need a thorough planned project- and process management.

The worked out role diversity is striking and the accompanied contradictions between disciplinary narrowness and interdisciplinary multi-perspective, hierarchy and project management, proximity and distance ("going native"), counselling and research, scientific expertise and professionalism in the practice, closed systems and participation, authority and cooperation etc. require constant reflection processes within the team as well as between the team and the practice partners.

This management of contradictions needs participation of all people involved, the understanding of the differences which exist and it is necessary that they approach one another in order to create a successful balance. Only if all contribute and evolve as a team together, then it is possible that group-dynamic mature groups (in our case research teams) arise. From our experience, the project governance can therefore not be divided and allocated to different people due to the strong conjunction of form and content. It also seems not reasonable because it became obvious that the communication- and governance requirements always affect the content level as well as the formal one. Since form and content in inter- and transdisciplinary research projects are strongly interwoven and are constitutive for each other, it needs either scientists which are all-rounders and have the necessary competences in governance of social systems and are subject-specific competent (respected and recognized as a subject-matter expert) or a heterogenic constituted research team that covers all the required competences. In this case the focus has to lie on the team composition as well as on the team development- and accompanying process (cf. Lerchster/Lesjak 2014).

Therefore I come to the following results:

- It seems meaningless to demand from the scientific system to establish new professional careers which focus exclusively on research- and project management of inter- and transdisciplinary research associations or research projects.

- I rather argue for enabling successful integration and to focus on the development of more offers which provide the described learning methods. In doing so, it may be a good idea to establish mentoring-models which give young scientists the chance to gain scientific experiences (on the theoretical and methodological level) and to participate in the management of projects of inter- and transdisciplinary research associations and research projects.
- Beyond that, we suggest to add the issue of governance and organisation of (successful) stakeholder-dialogues to the spectrum of publishable empiric data. In times where scientific careers more and more depend on peer-reviewed publications, the only chance for research and learning for further development is to gain the appropriate attention in journals.

Despite the wish for assistance due to the complex problems and the complicated processes it seems not sufficient enough to reduce it on a level of cook book recipes for successful research. In fact, the description of research experiences can contribute to the assistance and parallel to that it is possible to develop peu à peu curricula which could provide answers to the described requirements for inter- and transdisciplinary research projects and research associations.

If the issue is how "science can and should interfere more exact, more effective, more appropriate, more controversial, more honest, happier, more explicit, more radical and more revolutionary" (Winiwarter 2014; p. 12), then the handling of successful participation processes in inter- and transdisciplinary research projects is mainly dependent on the qualifications and skills of the researchers. The question for the required skills is therefore going to stay virulent and we will have to dedicate ourselves critically, reflectively and perpetually to this issue for the purpose of the quality development of a relatively young research practice.

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