Reflections on Inter- and Transdisciplinary Work in Social Sciences and Humanities

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Abstract Inter- and transdisciplinarity are still novelties for academic scholars. However, crossing disciplinary boundaries and leaving the ivory tower opens avenues to new insights worth leaving the beaten track. In this introductory chapter, we provide information on the background of the research project. We further examine the concepts of interdisciplinarity and transdisciplinarity, weigh their pros and cons for academic research and the conservation of cultural landscapes, and stress the benefits and advantages of these forms of cooperation. Finally, we give an overview of the following chapters in the book to orient readers.

Keywords Cultural landscape, social innovation, interdisciplinarity, transdisciplinarity.

Introduction[1]

Everything started with the workshop "Negotiating Heritage in and beyond Academia" in Heidelberg in the fall of 2020 amid the Covid-19 pandemic, dealing with cultural heritage, use and perception of landscapes, as well as with conflicts around heritage sites. This first contact and exchange of ideas on the topic with scholars from different academic backgrounds and practitioners was very inspiring. It opened the doors for further cooperation as we realized the close interconnection between protecting artifacts and landscapes and a respectful attitude towards landscape custodians. The goal should be, so our starting point, to find a sustainable approach to cultural landscapes in consensus with the local population and civil society actors. A few months

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later, an opportunity arose to apply for some seed funding with Heidelberg University's Flagship Initiative "Transforming Cultural Heritage." The editors immediately came together and discussed options for collaboration. This was our starting point for working on cultural heritage in a new way. In the interdisciplinary approach we developed, we investigated "cultural landscape" with regard to its potential as space for social innovation in marginal regions. This innovative approach looked for insights into the (re)vitalization of and social innovation in cultural landscapes that overcomes extreme forms of development and exploitation of local resources and is reached via a functional and transformative innovation process (B1, see fig. 1 below). Cultural landscapes shape and are shaped by the close interaction of humans with their environment. As an impact area and habitat, a cultural landscape is subject to a wide variety of socio-economic changes that exert a lasting influence on its very character. The aim was to investigate if and to what extent tangible and intangible heritage assets can be used as a resource for social innovation. Special emphasis was given on the empowerment of local communities and the selective promotion of local knowledge for sustainable regional development. We conducted three case studies to contrast the revitalization of an "inactive" archaeological landscape on the island of Crete in the Mediterranean Sea with the (re)valorization of two "active" terraced agricultural landscapes in southwestern China (cf. Panagiotopoulos et al. 2023) and Taiwan.

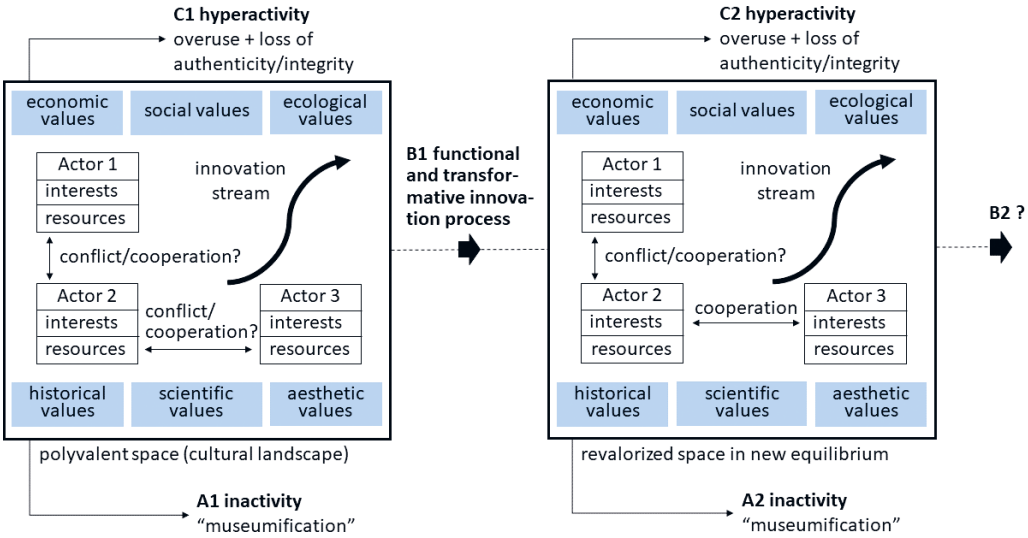

Figure 1 A third way between museumification and overuse (Panagiotopoulos et al. 2023, 7684).

Our approach does not categorically exclude an economical aggregation of value by means of natural and cultural heritage resources from such a process. Overexploitation, however, should be avoided through social investment. Thus, the focus is not

exclusively set on economic benefit, but always on a contribution which is oriented towards the common good. The main question this approach seeks to answer is how different actors use their respective resources to implement their own interests, and how their interaction in the form of cooperation and/or conflict contributes to or prevents social innovation in cultural landscapes. The bottom line we came up with was that if we strive for "living landscapes" instead of museumification, we must consider the wellbeing of those living in these landscapes. Living in a cultural landscape should not be equated with living in a museum, but perhaps rather with a dyad: living with the landscape and living from the landscape. The challenge how this could be solved—keep a landscape alive but still attractive for the people living there today as well as for future generations—cannot be solved by one scientific discipline alone. Instead, we are convinced that tackling this problem requires different disciplines and people.

This was the beginning of our interdisciplinary journey; a so-called research tandem "Cultural landscape as a resource for social innovation. A contribution to the (re)vitalization of marginal regions" (Panagiotopoulos et al. 2023). The research tandem has now been working for three years (2021–2024). In the course of these three years, we held several workshops with a broad range of colleagues from various disciplines as well as practitioners. Their contributions stimulated, influenced, and enriched the research tandem's work and constituted a result of its own value, worth to be published. Therefore, this book presents contributions from these meetings and discussions with practitioners and scholars from different countries about opportunities for the revitalization of cultural landscapes, their heritage, and related obstacles. The collaboration as such but also the intriguing presentations and discussions further revealed advantages as well as challenges for interdisciplinary collaboration and research.

Interdisciplinarity and transdisciplinarity: what are we talking about?

The three classic faculties—the trivium theology, law, medicine—always had an applied component. Their ratio essendi was to empower practitioners, priests, judges, and doctors. The young disciplines of technoscience stem from engineering schools and in their youth were learning more from practice than informing it. Until today, in the field of technology, there is a close connection between (fundamental) research and application in practice. In the disciplines that developed from the more frivolous artes liberales, the orientation towards an application of knowledge gained in a non-academic context is not always given. But not only is application or transfer of knowledge (besides teaching) unchartered territory. It gets even more complicated when one has to talk to other disciplines. Interdisciplinary work, not to mention transdisciplinarity, is still seen at least as a challenge if not as a waste of time leading away from real, fruitful, and straightforward research.

The terms “interdisciplinarity” and “transdisciplinarity” have long been actively used in scientific research, but there is no consensus in the literature on the definition of these concepts. The terms “interdisciplinarity” and “transdisciplinarity” were primarily coined by Julie Thompson Klein and Jürgen Mittelstraß in the late 1980s and early 1990s. However, instead of a common definition, a broad discussion has arisen about their meaning, both in terms of method and content (Mittelstraß 1987; Klein 1990; Bogner, Kastenhofer, and Torgersen 2010).

In its broadest sense, interdisciplinarity refers to the collaboration of researchers from various academic disciplines or across their areas of expertise to achieve common goals and objectives. Collaboration in transdisciplinary research requires scholars to expand beyond their own fields and work with experts from diverse disciplines, both within and outside of academia. Transdisciplinary studies, in contrast, involve scholars breaking the boundaries of their disciplines and joining forces with specialists from other spheres, including non-academic partners (Choi and Pak 2006, 351; Lawrence 2010; Alvargonzález 2011; Groth et al. 2019; Fam and O’Rourke 2021, 2). In addition to the different composition of the participants and the different fields of competence, another feature that distinguishes one approach from the other is that “while scientific cooperation in the form of interdisciplinarity usually means temporary cooperation, transdisciplinarity means that cooperation leads to a permanent scientific order that changes the structure of the subjects and disciplines” (Mittelstraß 2019, 31–32).

Interdisciplinarity and transdisciplinarity can be understood as responses to internal scientific crises, such as the internal differentiation of science, which can lead to a limitation of knowledge (Bogner, Kastenhofer, and Torgersen 2010; Mittelstraß 1987). They can also be used to solve external problems that are brought to science by external groups and contribute to the unification of different disciplines (Bogner, Kastenhofer, and Torgersen 2010; Luhmann 1994).

Kastenhofer (2010) describes second-order criteria which might be helpful in analyzing the interdisciplinary object at hand. The first is bandwidth: the category of interdisciplinary bandwidth deals with the number of different disciplines and sciences, in particular the distinction between “strong” and “weak” sciences and practitioners. Her second category is the type and extent of interdisciplinary integration. This category examines the question of whether interdisciplinarity is practiced and promoted in the project at the beginning, towards the end, selectively or comprehensively. The third category is scientific vs. societal relevance: This deals with the question of which logics and practices should be followed and which objectives should be pursued, as these can differ greatly in a societal context from a scientific context. The inclusion of society also matters, as science communication and the presentation of results always aim to have an impact on society.

In our case, we had interdisciplinarity from the very beginning with every partner contributing their ideas and expertise to a learning process. The team members came from the fields of Classical Archaeology, Chinese Studies, History, and Social Sciences. The project united three institutes of Heidelberg University, the Institute of Classical

and Byzantine Archaeology, the Heidelberg Center for Transcultural Studies, and the Center for Social Investment. The primary goal of our project has been to move beyond an interdisciplinary framework and work towards achieving transdisciplinary synergy, a challenging but ultimately rewarding endeavor.

Problems and challenges of inter- and transdisciplinary work

The application of interdisciplinary and transdisciplinary approaches can give rise to several challenges, which can be divided into three main categories.

1. Problems related to disciplinary boundaries

Doing interdisciplinary research in general is characterized by unclear boundaries between interdisciplinarity and transdisciplinarity. The vague definitions can often lead to confusion due to their broad and non-specific usage. Apart from the challenge of defining terms precisely, there are several other difficulties and obstacles to achieve inter- and transdisciplinary collaboration. For example, problems related to limited disciplinary competence and the problem of competence required for inter- and transdisciplinary collaboration (Toš 2021). Another disadvantage is that hierarchies and relevance differ, and interfaces between the disciplines must be dealt with. There might also be content-related contradictions between the disciplines on a specific topic or formal differences in the individual disciplines (design, citation, etc.). Also, the dynamics of the individual disciplines might differ (progress, speed of development, etc.) (Arnold, Gaube, and Wieser 2014).

2. Problems related to the interaction of participants

The collaboration of professionals with varying competencies and backgrounds, especially in transdisciplinary projects, can often lead to significant differences in values, priorities, and culture of participants, creating the potential for failure at every stage of the project (Fam and O'Rourke 2021, 2). Another limiting factor is the scientific vocabulary and language for describing certain natural or social phenomena, which is accepted in the academic environment and incomprehensible to non-academic professionals. If different explanatory models are used, not everyone in the team might be familiar with them. Also, agreement needs to be reached on commonly used methods and theories (Arnold, Gaube, and Wieser 2014). Due to the absence of a recognized "scientific Esperanto," academic scholars are tasked with the responsibility of translating and rephrasing their thoughts and concepts to make them accessible to partners from other disciplines or non-academic partners (Sass 2019, 14). Another possible consequence of involving non-academic participants in research is that they may violate the procedures and rigorous standards set by academic institutions (Lang et al. 2012). Further, it might become challenging that researchers must fulfil a dual role: being representative of their discipline and representative of the interdisciplinary

team. This is especially tricky if there are discipline-specific perspectives on one topic or question (Arnold, Gaube, and Wieser 2014).

3. Institutional challenges

There are also institutional constraints in applying the two approaches. In particular, despite the increasing number of interdisciplinary projects, it is difficult for interdisciplinary researchers to embed themselves in the academic mainstream (Ledford 2015). Professionals in this field often face inadequate assessment mechanisms for status, promotion and lower success rates in grant applications (Bammer 2017). Furthermore, studies have found that scientists' productivity in publishing articles may suffer when they engage in interdisciplinary research, as it involves a substantial commitment of time and effort to gain proficiency in various domains of knowledge (Leahey, Beckman, and Stanko 2017). Problems in transdisciplinary research are known, for example, from the work of real-world laboratories. Kück and Schmid (2019) stated that the challenge of interdisciplinary collaboration is usually underestimated, the mutual appreciation of the respective competences is central to constructive transdisciplinary collaboration. This requires encounters in different situations and tasks as well as a reliable routine. Finally, the individual disciplines should not act primarily in favor of their own purposes. Kück and Schmid also distinguish three levels of cooperation: 1) the planning level referring to day-to-day collaboration; 2) the process level looking at the course of the project; and 3) the format level focusing on the results, publications, events, etc. Problems can arise on all three levels and at different points in time.

Finally, communication is key: it takes a high communication effort as well as a high degree of willingness to communicate with each other and understand the other (Arnold, Gaube, and Wieser 2014). So, all in all, "despite the overwhelming rhetoric, virtually nobody denies transdisciplinary collaboration to be easier said than done" (Maasen 2019, 104).

Advantages and gains of inter- and transdisciplinary cooperation

Despite the difficulties and drawbacks described in the literature, there are still advantages to be gained from both methods. Even the multitude of interpretations for these two terms can be viewed as a benefit, since the lack of precise formulations is a factor that encourages the theoretical and methodological development of interdisciplinarity and transdisciplinarity (Vienni-Baptista 2023). Interdisciplinary and transdisciplinary researches are crucial in a practical sense, since the key to tackling global challenges (e.g., sustainability issues and environmental problems) lies in the collaboration between academics and civil society actors (Lawrence 2010; Da Rocha et al. 2020; Schipper, Dubash, and Mulugetta 2021).

Engaging in inter- and transdisciplinary collaboration not only promotes the exchange of knowledge between participants with diverse areas of expertise, but also

generates new research questions, ideas and approaches, and potentially paves the way for the emergence of new research fields (Groth et al. 2019; Morss, Lazrus, and Demuth 2021). Additionally, studies demonstrate that involvement in interdisciplinary projects can positively impact a scientist's visibility within the scientific community (Leahey, Beckman, and Stanko 2017).

However, how would one combine the necessary cooperation between the disciplines on the one hand and non-scientific actors on the other with a strong concept of disciplinarity? Sass observes that when working on this problem, it is necessary to remember that "transdisciplinarity (…) goes hand in hand with a certain kind of scientific attitude and ethos" (Sass 2019, 14). Since there is no common scientific language for fruitful cooperation, the willingness of researchers involved to translate their ideas and concepts, and to stay open for those of others, is very important.

Since the Horizon 2020 program, the European Union has stated that collaboration across disciplinary borders leads to "radical breakthroughs with a transformative impact" (Maasen 2019, 104). The reasons for this are manifold. Focusing on the individual researcher, it allows for recognition of the limits set by one's own discipline and closure of the blind spots in one's own discipline/research by other disciplines. The discipline of sociology, in particular, has the capacity to evaluate the social interaction between actors. By researching in interdisciplinary teams, the resources for the project can be increased, topics that do not fully belong to one discipline will be dealt with, and new areas of tension between (classic) disciplines can be recognized. Above all, it seems that the consideration of perspectives from the humanities, social sciences, and law leads to an improved acceptance of research results and their justification (Arnold, Gaube, and Wieser 2014).

Implementing inter- and transdisciplinarity in the course of our project

The first steps of our cooperation took place at an interdisciplinary level. During the preparation of our research tandem application, each of us got acquainted with subject, methods, and objectives of the other disciplines and explored how the possibilities of a joint project would promote common research interests. We soon realized that the success of such a synergy was dependent not only on the interdisciplinary potential of each discipline but also the willingness for open cooperation and the specific research foci of the project participants. After the successful application and during the first stage of our project, the interdisciplinary exchange between all project members was consolidated in the course of numerous discussions as well as presentations in several formats of the Flagship Initiative "Transforming Cultural Heritage" of Heidelberg University. The circle of interdisciplinary cooperation was expanded through two international workshops at Heidelberg University in 2022 where we had the opportunity to practice an open dialogue within and beyond academia, involving scholars from eight European and Asian countries, and stakeholders from different

fields relating to cultural heritage. In the following year, we hosted an international conference, several contributions of which are presented in this volume. During all of these occasions, the participants experienced the open interdisciplinary dialogue as an asset, exploring new pathways inspired from the competence of other disciplines. The time was then ripe for a transdisciplinary endeavor in which the involved disciplines played a different role. Applying methodologies from the Social Sciences, an attempt was undertaken to explore the potential of Archaeology and Chinese Studies as applied sciences. The results of this cooperation were presented in the joint article mentioned above (Panagiotopoulos et al. 2023).

Contributions to this book

The contributions to this book come from a wide variety of fields and backgrounds, some focusing on scientific research, others on strategies and actions. What unites them is their focus on place, landscape, perception, and challenges of today and tomorrow. The arrangement of the individual papers follows a logical path moving from theoretical concepts to practice-oriented perspectives and implementation. Georg Mildenberger and Gudrun-Christine Schimpf give a short overview of the theory of "social innovation." They present basic elements (and varieties) of the concept and give a short overview on applications in the context of regional development. They point out that up to now the strengthening of communities and recourse to local traditions and knowledge are well established. But the resources of cultural landscape are not utilized in a systematic way and neither are synergies for conservation. Alexandra Gaidos examines the concept of incubation, a widely used entrepreneurial strategy to nurture early-stage ventures, particularly in rural settings. One of the key challenges in marginalized, non-urban areas is, according to the author, to address societal issues by rethinking rural and cultural resources from an economic standpoint. Guillermo Reher outlines a framework for identifying the cultural values embedded in landscapes, using a sequential method that incorporates indigenous knowledge, storytelling, and mental mapping for data collection. Stelios Lekakis engages with commons theory, exploring the complexities and opportunities of leveraging collectively managed resources for the sustainable stewardship of landscapes and their heritage. Focusing on the rural cultural landscapes of the Aegean islands, he investigates a culture-centric approach to heritage management that is based on participatory processes and involves non-state, non-expert communities. Despina Catapoti, in her insightful analysis of "space" within heritage studies, discusses a shift from traditional, categorical views of nature and history to a postmodern, participatory, and fluid interpretation. Using three Greek case studies, she demonstrates the importance of this holistic and flexible approach, especially in the context of societal shifts brought by the digital age. Cord Arendes offers a fresh, idiosyncratic perspective on two questions about modern ruins: first, how the study of ruins has developed over the past century in history and cultural studies, and second, how ruins are experienced and

visualized through academic tourism. Diamantis Panagiotopoulos explores archaeology's potential as a creative discipline, using a field project in the Cretan mountains as a case study. The emphasis on the broader, dynamic notion of 'cultural heritage' in his contribution, rather than the narrow concept of 'antiquity', encourages archaeologists to create strategies for not only excavation but also the development of marginal archaeological sites as heritage spaces. Fabienne Wallenwein engages with the question of how landscape heritage may constitute a medium and/or a space for (re)establishing social and community ties. She presents recent approaches to landscape stewardship in two remote mountainous regions of East Asia: the Hani Terraces World Heritage landscape in southwestern China and the Gongliao rice terraces in northeastern Taiwan. Her comparative analysis focuses on the ability to respond to local needs, the creative use of new technologies and an appropriate balance between economic benefits and landscape conservation. Alexander Siegmund, Maike Petersen, Emmanuel Eze, and Johannes Keller emphasize the role of modern geotechnologies such as remote sensing, GIS, and mobile geotools in assessing and mitigating risks at UNESCO sites. Their paper clearly illustrates how environmental hazards and human conflicts make these advanced technologies essential for the sustainable development of heritage areas. Hexing Chang and Huixian Wang's contribution sensitizes us to the paramount significance of Chinese cultural landscapes in an era of excessive urban development. Landscapes which have been forged through a complex of natural, biological, and cultural processes over centuries or even millennia provide focal points of cultural identity and the most appropriate places for rebuilding harmonious relationships between humans and the land. Georgios A. Kalomoiris examines the role of digital tools in cultural planning strategies for pastoral communities in the mountainous regions of Crete. His paper proposes a collaborative roadmap that aims to balance global influences with local needs, revitalizing the socioeconomic dynamics of the area. Finally, Barbara Fath and Sabine Hagmann explore the "Prehistoric Pile Dwellings around the Alps," a transnational UNESCO World Heritage site spanning six European countries. These over 110 settlements, located in shallow lakes, present significant challenges for scientists and stakeholders due to their dual role as scientific data sources and tourist attractions.

Lessons learned

A central research question that our tandem dealt with in its interdisciplinary exchange formats throughout the project lifecycle was whether cultural heritage could provide a starting point for social change. In our discussions with colleagues, experts, and practitioners, first answers were found and many new questions arose. After three years of engagement, we have the impression that there is a common interest in the humanities, social sciences, and non-academia to find new ways for conservation, on the one hand, and development of cultural landscapes on the other. One important aspect remains the inclusion of local people and actors from civil society.

This is not only relevant in the context of a change of perspective, in terms of what understanding of landscape and knowledge is available among local stakeholders and how this can be incorporated into the interpretation of landscape cultural heritage. Rather, greater attention should be paid to civil society actors in the processes described, as cultural heritage, natural heritage, and cultural landscapes can only be preserved through their active participation and constant involvement. Regular reflection ensures that the interests of future stakeholders, as well as changing interests, are heard. Finally, attention should also be given to how the interpretations of cultural landscapes are utilized by different stakeholders to serve economic or political goals.

Coming back to inter- and transdisciplinary work, one should keep in mind that interdisciplinarity requires additional time for many steps and tasks in the project (e.g., project meetings, applications for grants, writing articles). This is related to the problem that it is not possible to apply a simple division of labor. Rather, every project member needs to understand and be aware of, at least in principle, what others are planning to do. Also, every partner needs to foresee extra time to discuss the research design and the methods applied. Therefore, such an endeavor requires trust that every partner will be able to deliver, especially in times of tight schedules when this seems hard or impossible to realize.

When it comes to the transfer of knowledge, communication might pose additional difficulties in an interdisciplinary project. This is as much true within a mixed team as it is between scientific actors and the public. Terms might have different connotations, which might result in misunderstandings and differing expectations. Transdisciplinary work makes it obvious that practitioners have different problems, goals, and timelines. This might lead to unexpected changes and make adaptations necessary. Especially when it comes to talks and papers. Also, it is worth to consider that work ethics and working culture might differ between project partners.

Is it still worth all the hustle? Definitely—but just start reading and judge for yourself.

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