The *Other* Kind of Research: On the Ambivalent Ties between Disciplinary, Multi-, Inter- and Transdisciplinary Scholarship

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Research about interdisciplinary research is less and less done by those doing it. This paper tries to reflect upon my own interdisciplinary practices and experiences. In the first part, I present an example of successful interdisciplinary research. Then, I attempt to introduce two nested cases of interdisciplinary scholarship and their development, one being my 'Fakultät' (which roughly equals a department) and the other, smaller one, being my research group. In the third part, I attempt to offer explanations for the development described with reference to some of the burgeoning literature on interdisciplinarity. Incentive structures, epistemological challenges such as disciplinary capture and structural effects of the hosting university are discussed. In a final section, othering as an inevitable process is used to elucidate the dynamics of developments within and beyond academia and to draw conclusions about the two cases presented.

1. Introduction

1.1. The Long-term Evolution of the Danube River Reconstructed as a Socio-natural Site

Between 2010 and 2016, equipped with two consecutive grants from Austria's Fund for Basic Research (FWF), a group comprising landscape and aquatic ecologists, historians, and architects (many of them having been trained in more than one

discipline) elucidated how the Danube and the city of Vienna interacted over time, starting in the mid-sixteenth century. The results comprise reconstructions of the evolution of the river bed under human and natural influences, the development of the city as influenced by river dynamics and the side-effects of interventions into the river system. Results also concern issues of conflicting river uses, administrative and technical developments and the fossil-fuel-induced transformation of the river and the city in the late nineteenth century. Results were published in scholarly journals (especially *International Journal of Water History*) and have been made public as videos on a YouTube channel, in exhibitions and in media. Reviews of the two projects are very positive, valuing them as unique and as models of interdisciplinary research. The Institute for Social Ecology, where this research happened, won two ERC-grants unrelated to this topic in 2017. Yet the institutional structure of a 'Faculty of Interdisciplinary Studies' that made these developments possible is currently undergoing a re-organization process effectively dividing it along disciplinary lines. The following reflections offer a possible explanation for this apparent contradiction between success and the perceived need to restructure.

1.2. The Faculty for Interdisciplinary Studies and Continuing Education (IFF)

The Faculty for Interdisciplinary Studies and Continuing Education (IFF) is one of four Faculties of the Alpen-Adria-Universität (AAU), a state-funded regional University in southern Austria with an enrolment of about 10.000 students. The three other faculties are designated for cultural studies (comprising, for example, media, history, languages, education and psychology), for economics and for computer sciences. Students concentrate on very few subjects, such as Applied Economics, Media Studies and Psychology. Designing IFF, its founders worked from the assumption that the structures of organizational units with regard to faculty and staff competences have to be different, if different inter- and transdisciplinary results are to be produced. Thematically, public goods seemed a good choice for a publicly funded institution.

IFF had existed in various forms since 1979, until 2002 as an inter-university-institute with faculty and students from several universities, but as a legal body in its own right. With a new legal situation for universities in Austria, IFF had to join one of its supporting institutions, and, after negotiations with several Austrian universities, joined AAU.[1]

From 2007 onwards, Austria's public universities were governed using an indicator-based business plan as the basis of 3-year budgets negotiated between the Ministry of Science and university managements. A reporting system based on performance indicators should ensure that universities actually did what they had agreed to do. Student enrolment became an increasingly important budget mover. This hit IFF, which concentrated on inter- and, increasingly, trans-disciplinary work, teaching mainly at the PhD-level and in continuing education. AAU management acknowledged the high degree of external funding of IFF, almost half of whose staff

were or are financed this way, but the faculty did badly on several of the indicators designed for traditional, undergraduate-dominated, disciplinary units. The university management, using the indicators posited by the Ministry of Science, its funding institution, increasingly had to see IFF as overstaffed and underperforming. In agreement with the rectorate, IFF had already opened one Masters programme (Social and Human Ecology), and by and by closed most of its postgraduate continuing education courses, keeping only PhD programmes. It also engaged in a strategic exercise, trying to develop a new profile, resulting in a self-definition as an 'experiment-friendly' unit. However, IFF, as a legacy from its original inter-university-structure, was spread over three campuses, the mother campus in Klagenfurt, plus a large part of the employees working in Vienna, and a small group in Graz, several hours away. The rectorate saw the three campuses not as an asset, but as a cost factor and as 'added complexity' that was difficult to govern. So IFF found itself under increased pressure 'to normalize' and to concentrate on Klagenfurt. Staff positions, the rectorate decided, would not be replaced in cases of retirement, or only at the Klagenfurt campus, as teaching commitment had become the main indicator for staff and faculty size.

Proposals for new Master programmes developed in an attempt to further 'normalize' were only accepted at Klagenfurt campus. IFF's strategic efforts were not considered as remediating the situation in the eyes of the rectorate. In August 2015, the situation became precarious, as the management of the university (the president and three vice-presidents) were faced with budget cuts. They saw the need to stop the replacement of a retired full professor, one of only seven IFF professors. This move was followed by the announcement of the closure of the institute where this position was based by the end of the same year.

As things stood by Autumn 2017, negotiations were under way to divide the faculty and move institutes to several other universities where their themes fit, 'normalizing' their work as much as possible. With the superstructure – the umbrella for a joint identity – breaking away, the institutes will likely be too small to keep a distinctly different, interdisciplinary profile.

IFF's institutes were originally designed to address specific, public-goods-related 'problem fields' of society, such as the environment, technology development, the secondary education system, the organization of cooperation between public and private organizations (e.g. in the health care system), human dignity in sickness and death, and, last but not least, scholarship as such (in a social-studies-of-science approach). For a short time, IFF also hosted the Conflict-Peace-Democracy Cluster, focusing on peace as a public good.

The staff and faculty of the resulting small units came from different disciplinary backgrounds. By means of this organizatorial principle, the 'problem field' with its communities of practice, and not the discipline, becomes defining for the cooperation of the members of the unit. The Institute for School Development worked on a transdisciplinary basis, including secondary school teachers and headmasters, often working part-time in both worlds, among its staff. This close link to the practice field is defining for the work of most IFF institutes. Hence, the basic difference between

IFF and other parts of the university is a different principle of structuring: institutes were not designed to serve the needs of a disciplinary curriculum and research agenda. By pulling together different fields of knowledge, IFF aimed at creating and putting useful, practical yet scholarly input into a community of practice gathered around a particular theme (such as 'environmental problems'). This had major consequences on priorities and operation. Third-party funded research became a foundational principle, because the likelihood of implementation of results depends on stakeholder interest, commitment and participation.

Inter- and transdisciplinarity as such was always a field of self-reflection in the faculty, especially in formative evaluations undertaken for self-development, but it never became the dominant research field. A volume on practices and methods of inter- and transdisciplinarity was published recently but, as it is in German, it has not been much noticed.[2]

IFF saw itself as flexible: institutes were founded and changed, sometimes completely new structures emerged, especially when employees moved and took up new research fields. What exists now essentially took shape during the 1980s, and a wave of retirements in the upper ranks of IFF characterized the faculty in the mid-2010s. As Dean, I had to organize three replacement processes for full professors at three keystone institutes, namely 'Social Ecology'; 'Science, Technology and Society'; and 'Higher Education and Social Studies of Science'. The fourth such process was stopped midway, as already mentioned. Hiring from one's own faculty was a no-go at a university aspiring to be an increasingly internationally minded, 'thoroughly modern' institution. Agreeing on the job advertisement with the Rector, who is ultimately responsible, and hence, on the search criteria, proved difficult. We should hire excellent professors, not excellent interdisciplinary researchers, and this is what we eventually did, somewhat compromising the original idea of IFF. The professors are excellent professors, but degrees of integration vary. The person who came from an interdisciplinary research centre has been most deeply integrated into the faculty to date. The other two, who came from universities, are seen as engaged in the normalizing agenda by old IFF hands, although they were engaged in interdisciplinary research at their former institutions.

What I have described here at some length is wrought with value judgements and uses a central difference, the difference between 'us' and 'them', with the university management portrayed as normalizers of something that was different and valuable for its difference. What is offered here as self-description mirrors the external descriptions of IFF by other deans, the president and the vice-presidents and many among the staff. We are all engaged in processes of othering, to which I shall return in the final section.

1.3. The Case of the Centre for Environmental History

Let me now briefly turn to my work as an environmental historian, which is interdisciplinary. My first educational background is technical chemistry and I worked as a technician in an atmospheric chemistry research laboratory at Vienna University of

Technology for several years before starting to study history and communication sciences. My habilitation (*venia docendi*) is in Human Ecology. Over the past 25 years, I have helped to shape environmental history as a field by organizing conferences, building scholarly societies, engaging in review processes and, of course, by producing, together with interdisciplinary teams, the kind of environmental history that I find important and of high quality. For the latter, I have co-founded the Centre for Environmental History, a small group of researchers from two universities and one archive. I lobbied for a chair at an Austrian university, and after about 10 years of lobbying such a position was created at IFF's Institute of Social Ecology. I applied for it and, luckily, was hired. Since then, I have been increasingly engaged in bringing environmental history into university programmes; members of the Centre currently teach it at three Austrian universities. I have co-written several large grants for basic research, winning major funding for topics relevant for Austrian environmental history.

In the endeavour to develop and stabilize a group of academic researchers, I have encountered serious challenges. Historians suspecting environmental determinism have questioned the quality of our work. Reviewers repeatedly have exhibited the well-known and empirically well studied 'disciplinary bias', and our proposals therefore have usually needed resubmitting before being accepted. The added complexity of interdisciplinary research has proved overwhelming to aspiring PhD students; their PhDs taking longer than disciplinary ones. But the rules of our main source of research money ask for the inclusion of early-career scientists, in particular PhD students.

The fate of the Centre remains unclear in the ongoing reorganization. As holds true for all current chairs at IFF, continuation of my own chair is somewhat unlikely after my retirement, due in about 10 years. Large grants would be needed to transform and enlarge the informal Centre to make this more likely, but my CV lacks one crucial element of success for winning such grants in a disciplinary funding world: I have never written an English scholarly monograph. Writing such a monograph is contrary to my conviction that teamwork ensures the best results.

2. Making Sense of the Two Cases

2.1. Surviving (or not Surviving) in a World of Disciplinary Incentives

The teams I led had serious discussions about publication strategies. I draw from them to offer a first set of reflexive observations.

> (1) For success, the level of experience of team members with interdisciplinary processes is crucial. If members without experience in such processes join, the interdisciplinary team has to start from scratch. As the grants require PhD students as a major part of the teams, I am increasingly plagued by déjà vu moments, teaching yet another set of bright but bewildered graduate students how to walk the slippery terrain of interdisciplinary work. Each new team member needs to learn individually, which gives us great teaching opportunities, but on

> the other hand presents a serious obstacle to increasing the sophistication of research.
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> (2)   In teams including PhD students, contexts of education and research are enmeshed. Javier Echeverria has argued that science cannot be restricted to its epistemic or cognitive aspects,[3] which happens when you only look at the knowledge produced. Looking at science as an activity, Echeverria distinguishes four contexts: that of education, of innovation, of evaluation and of application.

Having PhD students in a team embeds a research project into a context of education. According to Niklas Luhmann's sociological systems theory, the education system's central code is different from that of the research system, being 'placement', rather than new research results furthering 'truth'. Students have to be focused on their career. Choosing the right venue for joint publications, even choosing the sequence of authors on them, and choosing the reference space (whom do you quote) into which the students embed their own research has an important bearing on their future placement chances. This is one reason why our team ruled out edited collections. It also led to offering thematic issues to a journal that was relatively young and was unlikely to have a large backlog of papers, which would have led to long delays in publication. We chose a venue where I was an editorial board member and we knew other members personally, hoping to gain acceptance faster than elsewhere. We chose neither to maximize the interdisciplinarity of our presentations nor the impact factor, the latter choice would have been open to us as other environmental history journals have a comparable factor. Had we been engaged with the Vienna Business School as a cooperating partner, with PhDs in economics, this path would not have been viable, as placement there is largely dependent on publishing in venues listed by the university administration as appropriate. The chosen path was also viable because all students were enrolled in programmes that encouraged or at least accepted cumulative dissertations. But placement of our graduates within history departments, their hiring policy being still based on monographs, remains unsure.

By privileging the context of education, we had to find a balance with the scientific success of the projects – interdisciplinary investigations of the long-term co-evolution of the urban waterscape in Vienna with potential relevance, for example, to sustainable urban planning. Reaching out to the Vienna Magistrate would have been much easier with policy papers in German than with English contributions to journals. But such papers are ranked very lowly in my university, so neither I nor the graduate students had an incentive to write such papers. Hence, we did not offer the Viennese easy access to their own environmental history. It has to be assumed that most Viennese would seldom read the *International Journal of Water History*, even though our articles are available via open access. We tried to remedy what we felt was a serious drawback, choosing a goal that is regarded only the 'third mission' in wide swaths of disciplinary academia. One team member, an archivist at the Vienna City Archives, was able to secure exhibition space at the archive. We put together a small but very instructive exhibit. This transdisciplinary work did hamper the PhD

students' concentration on their theses, but having experience in outreach is not bad for placement, so it was acceptable. While the entire team invested time into the exhibition, I bore the brunt of work for the small catalogue, as I was the only one capable of scraping together enough time to develop a synthetic narrative and write it in an appropriate style.

Let me summarize where the reflection stands: with funding agencies prescribing research projects to be carried out mainly by PhD students, interdisciplinary projects have to negotiate publication strategies in the context of education while Principal Investigators (PIs) face recurrent team-building processes, having to bring teams up to speed rather than being able to build on previous experiences. PIs are often the only ones that can devote time to products that are considered less valuable by their universities and by the funding agencies. In Austria, PI time is usually written into projects as an 'in-kind' contribution, as they have a funded position. This allows a certain flexibility and gives room for a wider range of publications – even if over-commitment is a likely downside.

There is another downside, though, and this brings me to my next point. By writing the synthesis narrative I found myself engaged in *disciplinary capture*. I take this phrase from an analysis of the obstacles to successful interdisciplinary cooperation in African conservation issues by Evelyn Brister.[4] She distinguishes four epistemological challenges to successful interdisciplinary cooperation which, she points out, can occur even if everyone involved is well-meaning and there are no attempts at disciplinary imperialism. She suggests that such epistemological obstacles can occur in four interlinked and reinforcing domains: (1) facts, (2) evidentiary standards, (3) causes, and (4) research goals. 'Disciplinary capture occurs when the standards, value commitments and methodological presuppositions of one discipline in a collaborative project consistently take precedence over other disciplines, hereby playing an out-sized role in how the ostensibly integrative interdisciplinary research progresses' (Ref. 4, p. 84). Disciplinary capture needs neither bad faith nor nefarious intentions.

Let me now link this insight to the fate of IFF and my own environmental history work. I have described two incentives for disciplinary closure and disciplinary capture. One is the career options for PhDs that led to decisions about publication venues in an education context rather than maximizing interdisciplinarity or the impact factor. The latter maximization is a disciplinary strategy that might have led to a better recognition of the field and, above all, would have made the institute more valuable in the indicator-driven view of the university management, which might have boosted IFF's standing.

Second, funding agency requirements led to project structures with one senior PI. Although we had two to three senior post-docs in the projects, in such a structure, disciplinary capture by the PI is difficult to avoid, as the junior/senior difference lends itself to epistemological and thematic domination by the latter. Brister[4] has identified the difference in goals as one additional obstacle. Our goal to reach out to the public added another incentive to capture, the necessity to come up with a convincing master narrative. Directed outwards, it has nevertheless affected the team and influenced how team members could and would conceive of their own research questions.

The presentation so far does not claim objectivity; it is as true a depiction of my own viewpoint as I can give. At the IFF, we tend to see disciplines as silos, engaging in ossified research agendas with little innovation while the interdisciplinary turf is the space of innovation, relevance and intellectual adventure. How else could I justify engaging in what I described as challenging and prone to 'capture'?

However, the empirical evidence for such a view is not unequivocal. In a recently published, insightful edited collection offering a wealth of empirical research, Canadian scholars have suggested, 'that interdisciplinary policies may not erase divisions between fields so much as redraw them in different places, for example, between research that is valued by policy makers and funding agencies and research that is not' (Ref. 5, p. 14). Interdisciplinarity is to some extent a top-down interest, and is privileged enough to become a rhetorical device for stakeholders to grant legitimacy to their agendas that have to do more with politics of knowledge than with making inroads into interstitial territories (Ref. 5, p. 17). The shorthand 'ID' comes to denote research that funding agencies (being to some extent representative of policy makers) value as legitimate (i.e. innovative, rigorous, timely, relevant,…). So instead of breaking down siloes and eliminating orthodoxies, the rhetoric helps to establish new ones.

The need for such devices and for incentives to boost interaction can be understood as a side-effect of a defining quality of the field of science, namely that it is distinguished from other societal pursuits by the necessity for scientists to seek recognition from peers who have the greatest incentive to withhold that recognition. In analysing ID's institutional challenges, Light and Adams (Ref. 6, p. 130) have suggested a dynamic, multidimensional model of knowledge production. In trying to understand how boundary work is creating distinctions, they distinguish 'projects' and 'actors' and develop a four-field panel with the 'interest in crossing disciplinary boundaries' as 'high' or 'low' on the perpendicular axis. The four fields have different relations to boundary work. 'Interdisciplinary' and 'Transdisciplinary' are characterized by high boundary crossing, transdisciplinarity is possible when a high interest on boundary crossing on project and actor sides coincide, whereas ID needs high willingness only on the actor side. The two fields with low boundary crossing are 'disciplinary', with two lows and 'multi-disciplinary' with actors in low mode, but projects scoring high on boundary crossing.

In addition, this analysis shows how intellectual endeavours might be conceptualized as processes going through phases dominated by one of the four constellations. Many paths across this landscape can be envisaged, 'a knowledge project can move from interdisciplinary research towards becoming a disciplinary structure. Alternatively, we can observe projects that were solved and/or abandoned prior to the establishment of an organizational structure' (Ref. 5, p. 133).

How can IFF's demise be understood using these insights? IFF chose its identity not as a particular interdisciplinary field (such as, for example, biomechanics or social studies of religion), but as a flexible umbrella held together by a structuring principle and by the imperative of *not* moving along any trajectory out of the quadrant of 'interdisciplinarity'. This, I suggest, was decisive for its fate. While IFF pursued a

problem-driven research agenda, its institutes were creating a certain inflexibility, aided by the perceived animosity of the environment. Over time, however, innovation was needed or could no longer be suppressed. IFF first evolved towards becoming more transdisciplinary, which was accepted by the in-group, even lauded as a positive development. But this move jeopardized its existence as a (peripheral, because interdisciplinary) university department. An outside observer would likely consider IFF being inconsistent in this phase. At the same time as IFF members lauded TD, they made use of disciplinary structures within the university, e.g. granting the '*venia docendi*' to members of the staff in fields without precedent, thereby engaging in disciplinary closure of their own thematic domains. The tension thus created made the university administration increasingly uneasy. IFF's 'solution' to codify practices and methods in an edited volume brought some relief, but funding structures in- and outside of the university and the hiring of new chairs for key institutes pulled the IFF project into a space of lower incentives for boundary crossing. The support of key actors within IFF for the thematically open ID agenda finally gave way under increasing pressure by the administration. A heavily disputed habilitation case would only be the first instance showing the university management's irritability by the transdisciplinary agenda. The resulting pursuit of finding new institutional structures is now underway. Within other universities and departments, the imperative to stay in the ID quadrant could be less of a pressure; it might even become an interesting feature of non-threatening distinction in thematically congenial knowledge environments.

In the already mentioned edited collection, Frickel and Ilhan,[7] offer another set of analytical tools to interpret IFF's demise. They present empirical data comparing the long-term development of three disciplines with those of three related inter-disciplinary fields in the social sciences (sociology, political science, geography with criminology, international relations and urban studies). They show that the fates of these differ little. Rather, the strongest consistent predictor of the presence of a social science department or ID programme is size – the total number of degree-active fields at the university or college housing the social scientists. The number of degrees granted per department and the (US) state population come in second and third as highly positively correlated (Ref. 7, p. 161). The more populous the state and the bigger the university, the more likely it is to have social science departments and programmes. Size, say the authors, typically equates greater wealth, larger resource pools and subsequently more influence on shaping administrative decisions.

The decision to embed IFF at a small university, in Austria's poorest province with a negative population balance may hence have been decisive for its eventual demise, as all IFF institutes can be considered as belonging to the social sciences. An administration with relatively little negotiating power, at a university so small that IFF would be highly visible (thus inviting criticism) would likely have to rely on specific personal commitment by top administrators to continue. Such commitment was shown by the rector who invited IFF to be upgraded to a faculty from being merely an institute (the medievalist Günter Hödl), but his successors had less of an incentive to continue such commitment. IFF may have sealed its fate in 2002, when the decision to join this university was made. On the other hand, we benefitted from being a faculty. The possibility to grant degrees

on master, doctoral and even post-doctoral (*venia docendi*) level was very advantageous. It created disciplining incentives that ended – and one must emphasize, after a two-year fight for survival as IFF – with centrifugal forces taking over. Engaging in counter-factual speculation, one could ask which trajectory we might have taken at a large university in a richer province.

2.2. Othering and Likening as Processes of Boundary Work

I would like to offer yet another approach towards analysing IFF's fate. Further developing the ideas of Light and Adams, interdisciplinarity and disciplinarity could be understood not as domains, but as dynamic relations, as processes of co-creating one *and* the other as entangled mirror images. What could be the nature of that process?

Every autopoetic system, or 'non-trivial machine', faces decisions with unknown consequences and has to employ defendable heuristics to deal with this problem. Every autopoetic system, by definition, needs to invest into boundary work, creating and maintaining a distinction between self and environment. 'Othering' could be the defining process that, by distinguishing disciplines from interdisciplinary endeavours, holds them together. Othering, I shall try to argue, is inevitable. More so, it is the main tool to navigate the contested terrain of the boundary spaces in negotiating the day-to-day business of 'being-in-academia'.

My interpretation rests on Lajos Brons' analysis of othering.[8] Brons references Hegel, but also reviews Davidson, de Beauvoir, Derrida and, inevitably, Edward Said. He distinguishes between crude and sophisticated othering. Crude othering is a derogatory distantiation between self and other, as in sexist myths of the male gender being more rational and therefore, superior, or as in Orientalist arguments. Sophis-ticated othering is a two-stage process, which first draws a rather neutral distinction, but in a second stage, by adding an argument, achieves a derogatory aim. This can be done, for example, by first observing a difference between self (as having faith in God) and other (as being atheist) and thereafter equating atheism with immoral behaviour, which in combination becomes derogatory against 'immoral atheists'.

Brons suggests that othering is inevitable and ubiquitous, but that the 'other' can be 'inferior' or 'radically alien'. Inevitable othering can become 'malign' if irrationality is ascribed to the other. A second important characteristic is that the process of othering must be hidden, so that the hierarchies created can be assumed as inherent in the nature of the phenomena rather than as being a contingent construction (Ref. 8, p. 75).

If the process of establishing and stabilizing distinctions by othering between disciplinary and interdisciplinary scholarship is inevitable, the coexistence of dis-ciplinary and 'other' research depends on avoiding malign othering. In sophisticated othering, scholars do not crudely distance themselves from others but instead make claims about the ontological properties of knowledge. This is exactly what Brister describes, referring to contested epistemological claims:[4] What is a fact? What counts as high evidentiary standard? What are legitimate constructions of causality? What are academic goals to be pursued? These questions ultimately allow making claims about the rationality of the other's knowledge. Arguments for sophisticated othering

by those wanting to legitimize interdisciplinary programmes comprise knowledge qualities such as 'robustness', applicability, and adequacy to the 'real-life' or 'wicked' problems at hand. As in the case of the amoral atheists, by first defining differences and then making claims about knowledge, both camps engage in sophisticated othering as a tool for creating identity and reputation, and for attracting funding and offering career possibilities, and thus to do what every autopoetic system necessarily aims at: perpetuating itself. Figure 1 presents a four-field table depicting the different domains or phases. (Rhetorical) likening as opposed to othering has been inserted, as this process is also relevant.

Can 'othering' and 'likening' be used to understand the two cases of IFF and environmental history? By defining itself as interdisciplinary from the late 1970s onwards (Phase A), the group calling itself IFF engaged in seeking its own identity, but had incentives to liken itself (when it came to valuation) to disciplinary research. With increased funding, reputation-poor IFF was a welcome offer to disciplinary structures as a pole to chafe on. This allowed moving from precarious to uncontested, the process of othering being benign and reciprocal, as both worlds profited (Phase B). But a side-effect occurred when funding agencies started to value inter-disciplinarity. They created an incentive for using ID as a rhetorical device to grant legitimacy to research and get funding (Phase C). This, paradoxically, increased the social capital of ID and TD knowledge. With social capital and funding being high for ID and TD research, disciplinary scholars began to engage in malign othering to
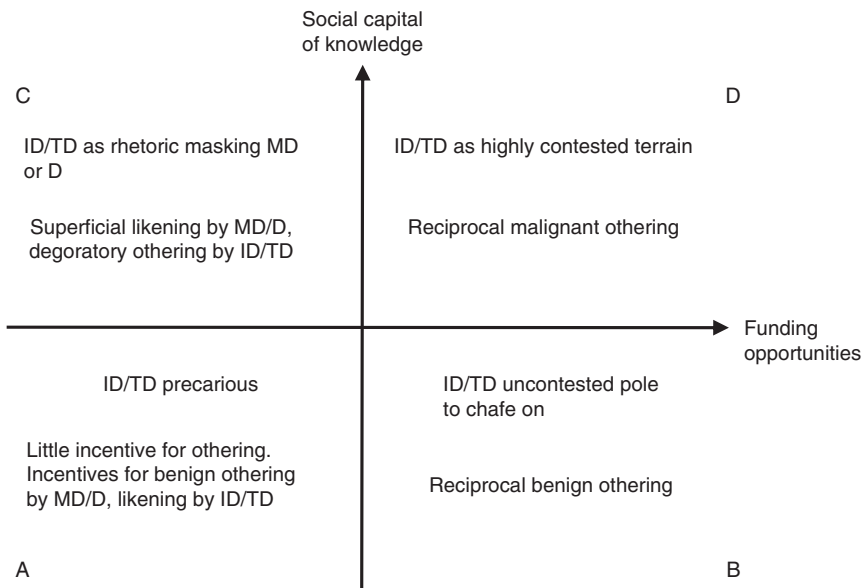

Figure 1. The relationships between the social capital of knowledge within peer groups and external resources presenting different incentive structures for inter- and transdisciplinary othering and likening. See text for Phases A–D. © Verena Winiwarter, 2017.

seek ways to perpetuate themselves, their funds, identities and mechanisms of inter-generational information transfer by hiring from their in-group (Phase D). As long as it had been of no considerable value to be interdisciplinary, IFF was of service. As soon as important actors jumped the bandwagon, it became a competitor. Another side effect is due to IFF being a university department. This created incentives to increasing its academic status, which in turn increased the incentives for disciplinary scholars to engage in malign othering.

Because IFF sought substantial interdisciplinarity, and this means added complexity, scholars published differently or less, took longer for publications, did not use high-level outlets and thus were disadvantaged in comparison with those who called multidisciplinary, or even thinly veiled disciplinary projects 'interdisciplinary' to attract funding (C). As these groups did not face the same challenges, they became the 'more productive interdisciplinary groups' in the eyes of some observers who did not evaluate outcomes in detail, and their social status was high because they never were radically alien.

At the same time, a growing group of social scientists, philosophers and others started to study the phenomena of ID and TD, a social-studies-of-science endeavour. In teaching and later even in handbooks, a community of scholars reflecting about methods, concepts and the practice of ID, without necessarily conducting ID research themselves, formed. IFF did not engage much with this community, probably because the perceived gain from such an engagement was considered small – scholars already 'knew how to do it' and profited from their tacit knowledge. The way IFF was designed, with each unit aimed at intervening into one societal field, and the growing reliance on third-party funding that came with this, meant in addition that resources for contributing to such reflection were scarce. It might have been through active engagement with the Anglo-Saxon literature and the groups writing it that IFF could have attained the status of a pioneer in a new disciplinary world, but as it stands, IFF teams are known mostly in the fields in which they intervene. Again, an opportunity to become a unit of value for the university had not been used.

And what about Environmental History (EH)? The field might be mature enough to be at a crossroads. With more and more historians including it into their curricula, with textbooks and journals, with conferences and associations, it might be up for malign othering soon. Within the landscape of fields, there are two options: EH can engage in sophisticated, perhaps even benign othering and distinguish itself from historical ecology, cultural ecology, and perhaps more fields with which it shares a lot. Thus, EH would engage in processes of discussing evidentiary standards, what counts as facts etc. EH would become a historical sub-discipline (and might then end up in C in Figure 1). On the other hand, EH might choose to become more transdisciplinary (which would be a return to its roots), e.g. engaging in oral histories on the boundary of advocacy in conservation battles for which historical research might prove decisive. EH would become more of a radically alien other, which would not preclude benign (or less malign) forms of othering, as long as EH would be marginal enough (A). But when funding schemes became available privileging just what EH does, B or even D might be reached. That might be the

paradoxical result of the desired increased recognition of EH at the science–policy interface.

The described phases of institutional change allow creating reflexive knowledge, which can be summarized as follows: Othering, by allowing a sense of self, plays a pivotal role both for stabilization and for change. Changes in institutional and incentive structures, both inside academia and in the funding or policy environment will continue to dynamize academia. Contrary to its claim for innovation, academia has to do what all autopoetic systems do, engage in the erection and maintenance of boundaries to achieve closure, thus allowing it to exclude a large part of the complexity of the environment. The process by which this is achieved in the inward-looking, peer-driven academic world, a process of othering, can easily become malign. This undesired outcome may be inevitable, unless it is curbed by self-reflexion, particularly about the side-effects of incentives for social capital and funding. Otherwise, what Jacques Mallet du Pan said in 1793 will remain true: The revolution devours its children.

Acknowledgements

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