

Department of Science and Technology Studies

Ulrike Felt

Making and taking time

Work, funding and assessment infrastructures in inter- and transdisciplinary research

July 2021



Copyright

This online paper is a preprint of a book chapter. It might slightly differ from the final version.

You may download this paper for your own personal use only. This report must not be published elsewhere without the authors' explicit permission. The paper must not be used for any commercial purposes.

You should cite this report in the following way:

Felt, U. (2021), "Making and taking time: Work, funding and assessment infrastructures in inter- and trans-disciplinary research". In Bianca Vienni Baptista and Julie Thompson Klein (eds.) Dynamics of inter- and trans-disciplinarity within institutions: Cultures and communities, spaces, and timeframes.

Address for correspondence:

Ulrike Felt Department of Science and Technology Studies University of Vienna Universitätsstrasse 7/II/6 (NIG) A-1010 Vienna, Austria T: ++43 1 4277 49611 E-Mail: ulrike.felt@univie.ac.at http://sts.univie.ac.at

Making and taking time: Work, funding and assessment infrastructures in inter- and trans-disciplinary research

Ulrike Felt

This chapter examines discrepancies between visions and realities in inter- and trans-disciplinary research (ITDR), by focusing on the role of temporal imaginaries, structures, and practices prevalent in contemporary academia. Using epistemic living spaces as a sensitizing concept draws attention to entanglement of the lives that researchers can live and the kinds of questions they want to/can address. Building on data from interviews and discussion groups with researchers in a major Austrian university, the chapter zooms into their narratives about how they deal with personal and professional challenges of ITDR, inspirational moments they live when engaging in cross-border collaborations, specific value regimes they encounter, and epistemic and organizational factors that open up or close down possibilities. Three dimensions offer insights into how time matters in ITDR: 'the project' as key organizing principle; careers, socialization and identity work; and value(s) and evaluation practices. The conclusions then argue that making impact of temporal orders invisible and leaving them unaddressed limits the potential of ITDR and leaves in particular younger researchers in a quite vulnerable position when wanting to engage with societal concerns.

Introduction

On February 4, 2020, the renowned journal Nature published in their news-blog a contribution entitled, "What are fake interdisciplinary collaborations and why do they occur? (Dai, 2020)" This question spells out an often only tacitly acknowledged phenomenon: while the list of coauthors on a publication might imply interdisciplinary collaboration, "no knowledge integration occurs", and researchers actually simply "end up working on their individual and mono-disciplinary research separately (Dai, 2020)." The contribution thus points at a tension. Policymakers on the European and national levels, funding agencies, and many academic institutions increasingly call for more inter- and trans-disciplinary research (ITDR) in order to address complex societal challenges and have even instituted often normatively defined new funding lines (see e.g., Vienni Baptista et al., 2020). However, simultaneously, we also have dense empirical evidence that many key features of the academic system-such as career structures, evaluation schemes, and reward structures-have not really adapted to accommodate multiple ITDR realities. As a result, exhortations to work across disciplinary boundaries (interdisciplinarity) or to integrate societal actors into research (transdisciplinarity) are unevenly distributed, differing by fields, institutions, funding agencies, and countries. We thus witness creation of multiple, situated, and often only temporally available "knowing spaces," which "set more or less permeable boundaries to the possible and the accessible" (Law, 2017: 47). These spaces are framed by locally specific historical developments as well as wider contemporary imaginaries of the university and its place in society. Thus, while internationally research and teaching systems seem to converge towards neoliberal models of academic governance, we also witness important divergences and local specificities (Felt, 2009).

This chapter focuses on these discrepancies between visions and realities in ITDR, specifically on the role of temporal imaginaries, structures, and practices prevalent in contemporary academia. It draws our attention to how historical and geographical contexts shape institutional possibilities, to how the needs of ITDR potentially clashes with dominant temporal orders and, finally, points to necessary rearrangements of contemporary academia is needed to make space for ITDR. My analysis thus joins a growing body of literature, which critically investigates temporal regimes that govern contemporary research and higher education (e.g., Gibbs et al., 2015; Felt, 2009; Vostal, 2021). The notion of regime aims at capturing how institutions and their leadership, their visions and ideological orientations, the aims they define as worth attaining, and the policies they put in place come together to bring to life specific temporalities. In doing so, I embrace an actor-centered perspective, by analyzing researchers' narratives about ITDR collected in a number of research projects. I am thus investigating narratives dealing with personal and professional challenges, as well as inspirational moments of engaging in ITDR collaborations, epistemic and organizational factors that come to matter in these environments, and ways that institutions open up or close down possibilities and which value regimes they encounter. The stories might differ considerably in details according to the stage of career of a researcher, if we speak not only of inter- or trans-disciplinary research, but also moving to different research traditions and fields. However, my analysis will remain on an aggregated level in order to make readers more aware of the importance of embracing a time-sensitive perspective than to show the detailed dynamic of any specific tensions I will point at.

A time-sensitive perspective to study ITDR

In his seminal book on *Time Wars*, Jeremy Rifkin (1987) draws attention to the fact that "every culture has its unique set of temporal fingerprints" and that knowing "a people [...] is to know the time values they live by." This is also true for research cultures and research communities. To know them is to know the time values they live by, i.e., to know how time is expressed through diverse arrangements in work, organisations, structures and lives of scientists. It is of particular salience at a moment in time when we are witnessing a battle involving advocates of speed and efficiency: more specifically between researchers who have been successfully transformed into competitive "entrepreneurial managers of their own careers, publications, and grant portfolios" (Fochler, 2016: 924) and those who stress temporalities of academia need to be brought in line with needs of researchers. This tension is especially apparent in the

ITDR domain. However, as Barbara Adam (1998: 9) argues, time often remains invisible for us "work[ing] outside and beyond the reach of our senses." We take time for granted and treat it as a straightforward physical entity that can be managed. Thus, both its multidimensionality and its performativity often escape thorough attention. The temporal regimes governing contemporary academia could thus be compared to an invisible infrastructure that frames ways in which researchers can know and defines the kinds of academic lives that they can live. This infrastructure also fosters or hinders creating and sustaining feelings of community and belonging (Felt, 2009; 2017a). Conceptualizing time as a basic infrastructure of any research system draws attention not only to a specific form of political and institutional rationality but also to affective dimensions embedded in and performed through it (Larkin, 2013).

Where do these academic temporalities emerge from? The historian of time, Rinderspacher (1988), points to the role of what he calls "time generators." These are key sites and processes (e.g., evaluative rhythms, steps in careers, workpackages in projects) that create binding, standardized, and homogenized temporal requirements and regulations, imposing rhythm and speed on a specific system. Indeed, when investigating more recent academic reforms-e.g. regarding funding, assessment processes, and careers-we can observe that each reform also involved crucial temporal reorderings. Together, these retimings fundamentally reshape academic "time cultures." As they often remain tacit, they escape closer scrutiny and are rarely subject to questions of responsibility. Indeed, these time generators are key agents in opening up or closing down potential ITDR engagements. The ways in which trajectories and rhythms of academic lives, careers, and projects have to be aligned, implementation of 'output per time unit' as a proxy for performance and quality, or asynchronicities between different temporal demands on researchers, are but some of the aspects that constitute challenges to ITDR. Embracing a time-sensitive approach is thus a window to a deeper understanding of some of the less visible dynamics fostering or hindering ITDR.

Knowing and living in academic research

To fully understand the role of time in inter- and trans-disciplinary research, two entangled sensitizing concepts underpin analysis and methodological approach in this chapter: *epistemic living spaces* (Felt, 2009) and *narrative infrastructures* (Felt, 2017b). My focus is not so much formal rules and regulations that govern research and teaching in Austrian universities, but more on how researchers perceive their lives in these academic institutions. I thus put researchers' narratives at the center of analysis to gain insights into how they make sense of contemporary research environments. This focus means embracing a narrative approach (Czarniawska, 2004) towards time in academic lives to better assess how temporalities matter in ITDR practice. Narratives are key to grasping constitution of researchers' broader sense of direction and purpose, reconfiguring of individual and institutional identities, and enabling and constraining of researchers' actions. "Narrative infrastructures" in particular draws attention to the "network of temporally stabilised

narratives through which meanings and values of academic knowledge/work and its relation to society can be articulated, circulated and exchanged" (Felt, 2017b: 54). Repeated, seemingly stable narrative performances of time constitute the ambient discursive environment into which researchers grow, and which, in turn, potentially enables or limits ITDR. These narratives can circulate on the institutional level, but also be specific for subcommunities and assume different forms, some future-oriented so encoding hopes and expectations, and others expressing justifications for actions (not) taken and, yet others, voicing goals to be achieved or experienced frustrations.

This definition and functions of narrative infrastructures are closely tied to the second sensitizing concept-epistemic living space (Felt, 2009). It draws attention to the co-productive relation between potential lives in academia and the knowledge that can be produced. The concept sensitizes the analyst to the entanglements of institutional rationales, epistemic work, life course decisions, and wider research and teaching politics. Taking such a perspective then alerts us to how researchers perceive their own room for maneuvering within ITDR, how they coordinate the different demands they are confronted with, how they relate to the sometimes contradictory sets of values relevant to their work and identity, and, finally, how all this relates to the constant tacit and explicit evaluations they encounter. ITDR, for example, demands time-intensive engagements with other epistemic environments, which often standa in tension with the expectation to be productive in terms of countable achievements such as publications in top journals. Epistemic living spaces are not fixed but fluid. They differ based on career stage, fields, institutional culture and the direct work environment, in addition to the formal and informal networks that support a researcher (Felt, 2017b). To be sensitive to these different pushes and pulls is especially important when looking into ITDR, as relevant value registers differ and so do work practices and epistemic problems.

Material and method

My analysis is situated in the history and current policies of the Austrian university system. In a nutshell, four perspectives are essential. First, in Austria, access to higher education is open. Only proof of successfully completing secondary education is needed, there are no admission examinations for the most part, and there are little to no tuition fees depending on the student's nationality. This policy leads to high student numbers and student-teacher ratios that are imbalanced across fields and institutions. Second, while the university finances the basic research infrastructure, actual research and a considerable share of PhDs and Post-Docs, must be financed via competitive third-party funding. As a result, the number of earlystage researchers on time-limited, often part-time, contracts has grown disproportionally. This imbalance creates considerable tensions when it comes to ITDR. Third, a number of institutions and funding agencies have launched ITDR program lines highlighting the importance of this knowledge generation practice. The University of Vienna, for example, currently fosters interdisciplinary research through funding of temporary interfaculty research platforms for 4 years, and the Austrian funding agency for basic research (FWF) has launched the #ConnectingMinds program supporting transdisciplinary research in areas "of high current and future social relevance in which possible solutions are sought to complex challenges."ⁱ Fourth, since the turn of the century, universities have witnessed the growing importance of international competitiveness and research excellence (e.g., measured by European Research Council grants), regular reference to indicators (e.g., publications in high ranking journals) and the university's place in international rankings, as well as formalization of career procedures including highlighting staff mobility.

However, a broader debate about how these changes have transformed contemporary research cultures has not occurred, including what these conditions mean for who can and wants to build a career in science, as well as ways reward systems would need to be adapted to support ITDR. Toward that end, this chapter builds on data gathered from more than 100 interviews, as well as 11 group discussions with 97 researchers in different stages of their careers in the Austrian academic context. Interviews and group discussions took place between 2006 and 2018 as part of three major European and Austrian research projects as well as of collaborative work in the research platform "Responsible research and Innovation in Academic Practice." "With one exception, the projects did not explicitly study ITDR, rather changes in the academic research system more generally. However, the topic of ITDR regularly came up when interviewees reflected on contemporary academic working conditions and on demands to become more open towards societal concerns. Analysis of the interviews yielded dominant clusters of narratives (Czarniawska, 2004) connecting academic temporalities and ITDR. Three of these clusters are discussed in this chapter, exemplifying how researchers narrate, conceptualize, and experience temporalities and how they matter for their work in ITDR projects.

'The project' as key time-generator in ITDR

One of the most prominent time generators in contemporary Austrian academia is third-party funded research projects. The idea that production of knowledge can be organized into discrete temporal units of time, such as a few years, has become a "blueprint for the way in which whole communities should do science" (Leonelli and Ankeny, 2015: 705). It shapes institutional rhythms and lives of researchers. A project is, in the first place, nothing more than an elaborate form of a promise which identifies a relevant problem to be solved; outlines knowledges, experiences and competencies that are needed; and justifies how much time and resources are required to develop solutions/answers. Lives in science have thus been colonized by "project-related principles, rules, techniques and procedures, aspiring to form a new iron cage of project rationality" (Maylor et al., 2006: 664). The project introduces a knowledge/time equivalence (often expressed in person months), supports the ideal of maximizing efficiency, and creates an illusion of control (such as defining work packages and deliverables). The project, however, is much more than a clearly delineated unit of funding

aiming to answer a specific question. It is a qualitatively new and different form of social organisation of research (e.g., Grabher, 2004).

What, then, does temporal rationality tied to projectification of research mean for ITDR (e.g., Ylijoki, 2015)? Many interviewees believed ITDR is more time-intensive than classical disciplinary work: including time for building trust, learning each other's languages, and developing a shared thought style (Fleck, 1935/1979) for seeing a problem and developing solutions. Researchers thus spoke of "a different temporal logic," and generally described the research "process as slower," or as a "slow but, very productive, way" of finding solutions for complex problems. They also frequently pondered how much more "time [they] would need to invest" to achieve their goals. This concern is frequently tied to justificatory narratives (Boltanski & Thévenot, 2006) that underline the worth of investing time in socially relevant research and the hope ITDR would assure "a broadening of horizons and an improvement" for research. These observations illustrate additional "registers of worth that [our informants working in ITDR] draw on to inform, orient and justify their actions" (Fochler, 2016: 929). Some informants, for instance, underlined their readiness to invest required time first, hoping positive impact would become visible later. At the same time, virtually all interviewees believed this ideal stands in stark tension to demands of an output-oriented science system and capitalist logics of accumulation that govern academia (Fochler, 2016; Felt, 2017c). An increasing number of tasks have to be accomplished concurrently despite the limited life cycle of projects-including engaging in collaborative modes of cross-border knowledge production and delivering output in the format and rhythms academic institutions expect and reward. Instead of re-timing research in the case of ITDR projects, researchers testified they "squeeze inter- and transdisciplinary engagements into the already tight schedule."

The tension time demands create then leads to weighing options, a debate reflected in the following two quotes by researchers working in transdisciplinary projects. For one:

"if I invest the time I spend in the field with my [non-academic research] partners into method development, probably two or three more publications would have been possible";

Or the other way round, if it were possible to disregard the need for more formal output:

"we could have designed the research process with the community quite differently; with more participation, different participation, more intensive interaction, really thinking together."

The phrase "*really thinking together*" nicely captures the sentiment of the *Nature* news-blog cited in the beginning of this chapter—engagement with researchers from other disciplines or with non-scientific partners runs the danger of being conceptualized as an add-on; as "*additional work*" that in reality often gets confined to very short and specifically defined moments and events that keep time investment under control during a project (Felt et al., 2012).

Of the two remaining temporal narratives, the second project-related one gravitates around time needed to collectively formulate a research question. Although interdisciplinary researchers describe collective problem definition as time-intensive yet feasible, in transdisciplinary projects researchers alone typically performed this work. In-depth engagement with non-academic partners was viewed as too time-consuming given that chances to receive funding were considered notoriously low. This reluctance was further justified by highlighting the need for a societal problem to be transformed into a scientific problem first in order to be successfully validated within the academic reward system. However, those who hold the power to define the problem and render it a taken-for-granted starting point, also pre-shape any potential solutions (Jasanoff, 2003).

The third major temporal narrative, in turn, is that of epistemic and social fragmentation due to the time-limited character of projectified research. Even if a project team would invest time in building a thought collective and developing a corresponding thought style within the project (Fleck, 1935/1979), virtually all interviewees in transdisciplinary projects reported they would not have further collaborative relations with non-academic partners after the project ended. Moreover, they would not have temporal resources to sustain this relational network either before or afterwards This challenge leads not only to a lack of temporal continuity but also to loss of know-how achieved during a project. Researchers typically move on to the next project and are often already engaging in securing its funding while the first project is still running. Partners outside the academy would also typically remain in their life-worlds. Thus, integration at best would happen only during project time, and at worst never really take place.

Career, socialization, and identity work temporalized

In their reflections on the nature of interdisciplinarity, Barry and Born (2013: 1) remind us of the core role of disciplinarity: "Disciplines, discipline, disciples." They speak specifically of shared commitment not only to methods, concepts and practices, but, above all, to the aim of ruling out "undisciplined and undisciplinary objects, methods and concepts." Consequently, moving into ITDR is often accompanied by stressing the need to move out of *"the comfort zone of my own discipline,"* as one interviewee called it, and engaging with a different cultural environment. This need then also means to get to know another culture's temporal fingerprints, in the sense of its prevailing temporal imaginaries and orders. This move has been often described as difficult, in particular by younger researchers. It is cast as a risky navigation of unknown territories, underscored by statements that life would be easier if they would simply remain disciplined: they would know what to expect from a field and anticipate, to a certain degree, their trajectory through space and time; and, they would become socialized into the rhythm of disciplinary work and delivery of output.

Compared to ITDR, disciplines are also generally depicted as stable territories with clear internal structures and widely recognized boundaries. They are seen as having a canonical history, traditions and accompanying myths, and as having a clear set of core journals and conferences where researchers present their work. Yet, in keeping with this chapter, disciplines as knowledge communities also perform specific "time values" (Rifkin, 1987) researchers have to live by, such as how long one could remain in a specific position,

how fast to publish, or how many published papers would be expected at a specific point in an academic career. Disciplines are perceived as offering a narrative infrastructure (Felt, 2017b), which young scholars can tap into and contribute to stabilizing it by telling their personal stories about being part of a field. In the context of transdisciplinary research, they also point to their lack of resources available to storify their lives and describe their struggles to identify what could be regarded as an adequate rhythm of knowledge production or what kind of career trajectory they could expect (Felt et al., 2013). Thus, they describe processes of socialization as fragmented, unclear and always somewhat limited through the temporality of a project that represented the sole institutional attachment for many young researchers. At the same time socialization is an essential part of learning to engage with specific value repertoires that characterize a field (Fochler et al., 2016), which explains why balancing the complex relation between invested time and expected value are at the core when these young scholars try to figure out who they want to be and how they could describe their emerging identities.

Temporalities, value(s) and evaluation in ITDR work

As we have seen, then, time matters here on many levels. It takes time and extra work to develop and care for attachments to different knowledge communities, without knowing if this investment will be rewarded and how long these configurations will last. Furthermore a clear collective which would define the orders of worth to which ITD researchers can subscribe is lacking, as well as which could at least support the hope for a decent career trajectory. In particular young researchers thus describe the need to engage in constant positioning work, which demands considerable temporal resources and mental strength. Several questions follow. First, how then can an individual craft an interdisciplinary or transdisciplinary CV that allows one to successfully remain engaged in research? And, how is it possible to reconcile values ITDR stands for, such as sensitivity towards societal concerns or readiness to engage with diverse knowledge communities, with evaluation schemes of academic institutions? Both questions open up a related question asked over and over again, even though not always explicitly: Do I simply describe myself as doing ITDR or as being an inter-/transdisciplinary researcher? While the former is tied to the idea that ITDR is simply a temporarily embraced mode of doing a specific project, the latter points to a long-term commitment to this kind of research.

This invites to look into the *value ecology* ITD researchers are navigating, i.e., into the multiple, fluid and situated relationships between values, valuing practices and identity work, deeply ingrained in research environments our informants are part of, including institutions, labs, groups, funding and policy discourses. It points to spatio-temporal patterns of research and lives in academia that shape researchers' epistemic living spaces (Felt, 2009), thereby sensitizing us to be attentive to the diversity of experiences, justifications, and value orders at work.

Researchers actually tap into four different value regimes that are part of the value ecology, all coming with specific temporal imaginaries. On the one hand they relate to the *academic value regime*, with its ideas of how a career should look, how long each step should take, how many publications can be expected, or how long one should stay in a particular place. At the same time, they nourish self-assessments from the *value regime of Science*, which is often related to producing novel insights, no matter the time it takes. Here, value is about long-term and persistent commitments to questions and concerns, as well as to a specific knowledge community. Yet, researchers also encounter the mundane *value regime of research practice* prevalent in everyday life, as a member of a lab, a department, a subfield. These values are expressed through explicit expectations and smaller everyday conversations including about feedback on work progress and achievements. Working in ITDR, however, has an additional *societal value regime* related to the ideal of addressing complex real-world problems through cross-border engagements. This value demands different kinds of qualities, such as wanting to get to know different knowledge communities, being open to their concerns and problem perceptions, and understanding their time culture.

Conflicts with regard to the latter value regime become palpable when ITD researchers tell their stories about how much long it takes to produce output that counts in the academic value regime or about concerns that methodological purity ascribed to the value regime of Science might be compromised if social actors outside the academy produce research input. This concern is then closely tied to questions of how CVs get scrutinized along temporal norms prevalent in academic institutions (de Rijcke et al., 2021). Having been part of many review panels throughout my career, I frequently encountered assessments of the kind: 'for a person x years after the PhD, one can legitimately expect y as an output'. Such argumentative strategies of reviewers to comparatively assess qualifications of a candidate use "time as a judgement device" (Müller, 2021: 197). Scientific evaluation processes thus become the locus of generating values (Fochler et al., 2016), making them a key time generator in academia. Being able to craft a CV that meets the temporal expectation then becomes an existential question of whether or not one can have an ITD career. As inter- and even stronger so, transdisciplinarity, are ill-supported by preexisting frameworks and well-defined collectives, it becomes harder to assess whether or not the life-course of a person fits situated assessments. While we already witness dissent within disciplines, temporal dimensions of assessment become even more fuzzy in ITD work (Lamont, 2009).

Indeed, this fuzziness created considerable tensions between enthusiasm with which young researchers wanted to engage in ITDR, because they saw this as a very relevant and caring approach to deal with complex problems, and their realization that if they wanted to stay in academia they would have to comply with temporal expectations of disciplined academic structures. The latter pressure then meant prioritizing classical publications over ITD engagements (Müller and Kaltenbrunner, 2019). Yet, doing so does not go without consequences. In one transdisciplinary program we observed the following publication strategy: in higher impact journals, which were generally disciplinary organized, researchers would publish their findings with hardly any mention of transdisciplinarity, while they would publish their transdisciplinary engagement experiences, and less on results, in other more interdisciplinary journals often with lower impact factors.

To summarize, reflections on the temporalization of careers and CVs have opened up the question of how values, evaluations, and temporalities relate to each other. The very idea of opening up research and innovation to a broader range of societal actors and values as well as pluralizing expertise (Nowotny et al., 2001) appears promising; however, if taken seriously, it would demand a radical rethinking of some of the very practices and values that are deeply entrenched in contemporary research cultures. The temporal reflections on careers, socialization and identity already point to the importance of the nexus time/(e)valuation. While much of the classical valuation and accountability structures are currently focused on publication numbers as key indicator (Fochler & de Rijcke, 2017), this relates to a specific kind of temporality (Felt, 2017c) not welcoming to ITDR.

Concluding remarks

In this chapter I have argued for the importance of a time-sensitive approach to studying possibilities and limits of inter- and trans-disciplinary research within academic institutions and have shown how this approach is reflected in researchers' lives. I close with three reflections.

First, to return to the initial question, why is it important to look at temporal structures and reflect on trans-/interdisciplinarity from this perspective? As demonstrated by the prior examples and analysis, temporal structures that govern research are rarely made visible but rather constitute a taken-for-granted infrastructure. Throughout all of the narratives collected from researchers, we saw that they had to perform quite intensive temporal care work to realign their research and their lives with often-contradictory temporal demands in order to create cohesion in an environment that seems fragmented. Yet, a few traces of institutional response to these challenges also appeared. While some special funding schemes supporting ITDR have been created, they remain what I call 'island solutions'. They are conceptualized as separated from the academic mainland because the different temporalities in these domains are not acknowledged when it comes to career and reward systems. The often-diagnosed emergence of a more problem-driven research (Gibbons et al., 1994; Nowotny et al., 2001) thus cannot develop its full potential as it represents a challenge for individual researchers. Leaving the importance of temporalities unacknowledged, reinforces tacitly the territorial imaginary of science (Klein, 1990) as formed by disciplines. This reality means that creating project structures that support ITDR alone will not be sufficient. What is needed is a more profound rethinking of the institutional value ecologies. This is much in line with what has been called the paradox of interdisciplinarity (Weingart, 2000; Klein, 1990), which could be easily extended to the transdisciplinary research discussed in this chapter.

Second, it is essential to take the many smaller narratives of researchers and the temporal inconsistencies they encounter seriously. Researchers experience different speeds and rhythms of knowledge communities, be they academic or not. They realize pressure from

societal actors to solve a problem while wanting to take the time to develop solutions fitting with quality criteria of science, or they see the value of engagement and the need to produce measurable output. It is, however, critical to attend to these inconsistencies. Certain temporal routines, including the pace and rhythms of developments and institutional responses, are adequate or at least acceptable contributions to creating a feeling of belonging (Edensor, 2006). Therefore, if we want ITDR to flourish and young researchers to engage in the field, making these inconsistencies visible and better aligning different time generators within academic institutions must be the basis for creating attachments and a feeling of community.

Third, as researchers describe their intense time investments needed in "*making the transdisciplinary machinery work*" as phrased by one interviewee, it is essential to move from focusing so much on project time towards putting process time at the center of institutional considerations (Yliyoki, 2015). While the former is defined by the inherent logic of the project combined with academic expectations, process time would draw our attention to the needs and internal logic of research activities. As the focus on the former is already described as problematic for disciplinary research, this is even more detrimental in ITDR projects. This calls for policy makers in universities and funding agencies to not only make proclamations and cast the idea of ITDR into funding programs, but to actually engage with the valuation and the corresponding evaluation practices that govern the reality of researchers' careers and lives.

To conclude, if the temporal tensions identified in this chapter remain unaddressed, uncertainties and risks related to inter- and trans-disciplinary academic work are made invisible as well. However, these risks and uncertainties are unevenly distributed and they particularly impact the most vulnerable members of the research community, young scholars working in a projectified and highly temporalized academic environment and in this study contributing in essential ways to the research produced in Austrian universities. Their epistemic living spaces are under threat, and they often ask the question whether or not they find them worth inhabiting. If ITDR is to be an attractive option for the next generation of researchers, it is then essential to engage in a re-timing of research to make place for the realities of inter- and trans-disciplinary work. This means going beyond lip service and allowing different value ecologies to develop, with different temporalities that govern contemporary lives in research.

References

- Adam, B. (1998) *Timescapes of Modernity. The Environment & Invisible Hazards*. London/New York: Routledge.
- Barry, A. and Born, G. (eds) (2013) *Interdisciplinarity: reconfigurations of the social and natural sciences*. London/New York: Routledge.
- Boltanski, L. and Thevenot, L. (2006) *On Justification: Economies of Worth*. Princeton: Princeton University Press.
- Czarniawska, B. (2004) Narratives in Social Science Research. London: Sage Publications.

- Edensor, T. (2006) 'Reconsidering National Temporalities: Institutional Times, Everyday Routines, Serial Spaces and Synchronicities', *European Journal of Social Theory*, 9(4), pp. 525-545.
- Dai, L. (2020) 'What are fake interdisciplinary collaborations and why do they occur?' https://www.natureindex.com/news-blog/what-are-fake-interdisciplinarycollaborations-and-why-do-they-occur#.XmNoJEurTX8.mailto, accessed 14 June 2020.
- Felt, U. (2009) 'Knowing and Living in Academic Research' in Felt, U. (ed) *Knowing and Living in Academic Research. Convergence and heterogeneity in Research Cultures in the European Context.* Prague: Academy of Sciences of the Czech Republic, pp. 17-39.
- Felt, U. (2017a) 'Of timescapes and knowledgescapes: Retiming Research and Higher Education' in Scott, P., Gallacher, J. and Parry, G. (eds) *New Landscapes and Languages in Higher Education*. Oxford: Oxford University Press, pp. 129-148.
- Felt, U. (2017b) "Response-able Practices" or "New Bureaucracies of Virtue": The Challenges of Making RRI Work in Academic Environments' in Asveld, L., van Dam-Mieras, R., Swierstra, T., Lavrijssen, S., Linse, K. and van den Hoven, J. (eds) *Responsible Innovation 3: A European Agenda?*, Cham: Springer International Publishing, pp. 49-68.
- Felt, U. (2017c) 'Under the Shadow of Time: Where Indicators and Academic Values Meet', *Engaging Science, Technology, and Society*, 3, 53.
- Felt, U., Igelsböck, J., Schikowitz, A. and Völker, T. (2012) 'Challenging Participation in Sustainability Research', *International Journal of Deliberative Mechanisms in Science*, 1(1), pp. 4-34.
- Felt, U., Igelsböck, J., Schikowitz, A. and Völker, T. (2013) 'Growing into what? The (un-)disciplined socialisation of early stage researchers in transdisciplinary research', *Higher Education*, 65(4), pp. 511-524.
- Fleck, L. (1935/1979) *Genesis and Development of a Scientific Fact*. Chicago: The University of Chicago Press.
- Fochler, M. (2016) 'Variants of Epistemic Capitalism: Knowledge Production and the Accumulation of Worth in Commercial Biotechnology and the Academic Life Sciences', *Science, Technology & Human Values*, 41(5), pp. 922-948.
- Fochler, M., Felt, U. and Müller, R. (2016) 'Unsustainable Growth, Hyper-competition, and Worth in Life Science Research: Narrowing Evaluative Repertoires in Doctoral and Postdoctoral Scientists' Work and Lives', *Minerva*, 54(2), pp 175-200.
- Fochler, M. and de Rijcke, S. (2017) 'Implicated in the indicator game? An experimental debate', Engaging Science, Technology, and Society, 3, pp. 21-40.
- Gibbons, M., Limoges, C., Nowotny, H., Schwarzman, S., Scott, P. and Trow, M. (1994) *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies*. London: SAGE.
- Gibbs, P., Ylijoki, O.-H., Guzmán-Valenzuela, C. and Barnett, R., (eds) (2015) *Universities in The Flux of Time. An exploration of time and temporality in university life.* London: Routledge.
- Grabher, G. (2004) 'Temporary Architectures of Learning: Knowledge Governance in Project Ecologies', *Organization Studies*, 25(9), pp 1491-1514.
- Jasanoff, S. (2003) 'Technologies of Humility: Citizen Participation in Governing Science', *Minerva*, 41(3), pp 223-244.

- Kaltenbrunner, W., de Rijcke, S., Müller, R. and Burner-Fritsch, I. (2021) 'On the Chronopolitics of Academic CVs in Peer Review' in Vostal, F. (ed) *Inquiring into Academic Timescapes*. Bingley: Emerald Publishing, pp.249-266.
- Klein, J. T. (2010) Creating Interdisciplinary Campus Cultures. A Model for Strength and Sustainability, San Francisco: Jossey-Bass.
- Larkin, B. (2013) 'The Politics and Poetics of Infrastructure', Annual Review of Anthropology, 42(1), 327-343.
- Lamont, M. (2009) *How Professors Think. Inside the Curious World of Academic Judgment,* Cambridge, MA: Harvard University Press.
- Law, J. (2017) 'STS as Method' in Felt, U., Fouché, R., Miller, C. A. and Smith-Doerr, L., (eds), Handbook of Science and Technology Studies, MIT Press, Cambridge, MA, pp. 31-58.
- Leonelli, S. and Ankeny, R. A. (2015) 'Repertoires: How to Transform a Project into a Research Community', *BioScience*, 65(7), 701-708.
- Maylor, H., Brady, T., Cooke-Davies, T. and Hodgson, D. (2006) 'From projectification to programmification', *International Journal of Project Management*, 24(8), pp. 663-674.
- Müller, R. (2021) 'Time as a Judgement Device: How Time Matters When Reviewers Assess Applicants for ERC Starting and Consolidator Grants' in Vostal, F. (ed) *Inquiring into Academic Timescapes*, Bingley: Emerald Publishing, pp. 197-211.
- Müller, R. and Kaltenbrunner, W. (2019) 'Re-disciplining Academic Careers? Interdisciplinary Practice and Career Development in a Swedish Environmental Sciences Research Center', *Minerva*, 57(4), pp. 479-499.
- Rifkin, J. (1987) *Time Wars: The Primary Conflict In Human History*. New York: Henry Holt & Co.
- Rinderspacher, J. P. (1988) 'Wege der Verzeitlichung' in Henckel, D., ed. Arbeitszeit, Betriebszeit, Freizeit. Stuttgart: Kohlhammer, pp. 23-66.
- Ylijoki, O.-H. (2015) 'Conquered by project time? Conflicting temporalities in university research' in Gibbs, P., Ylijoki, O.-H., Guzmán-Valenzuela, C. and Barnett, R. (eds) Universities in the Flux of Time. An exploration of time and temporality in university life. London/New York: Routledge, pp. 94-107.
- Vienni Baptista, B., Fletcher, I., Maryl, M., Wciślik, P., Buchner, A., Lyall, C., Spaapen, J. and Pohl, C. (2020) Final Report on Understandings of Interdisciplinary and Transdisciplinary Research and Factors of Success and Failure. DOI: 10.5281/zenodo.3824838 (Accessed: 14 June 2021).
- Vostal, F. (ed) (2021) Inquiring into Academic Timescapes. Emerald Publishing, Bingley.
- Weingart, P. and Stehr, N. (eds) (2000) *Practising Interdisciplinarity*. Toronto: University of Toronto Press.

ⁱ https://www.fwf.ac.at/en/research-funding/fwf-programmes/connectingminds

ⁱⁱ These projects were: Knowledge, Institutions and Gender. An East-West Comparative Study (2006-2009, EU/FP6); Living Changes in the Life Sciences (2007-2010; BMWF/GEN-AU/ELSA); Transdisciplinarity as Culture & Practice (2009-2013; BMWF/proVISION).

Thanks to all who have worked with me on these projects and to the researchers that have given their time and shared their visions. For more information see: http://sts.univie.ac.at/ en/research/completed-projects/ and http://rri.univie.ac.at/.