Minerva (2019) 57:23–46
https://doi.org/10.1007/s11024-018-9361-5

Strategically Unclear? Organising Interdisciplinarity in an Excellence Programme of Interdisciplinary Research in Denmark

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Published online: 15 October 2018
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Abstract While interdisciplinarity is not a new concept, the political and discursive mobilisation of interdisciplinarity is. Since the 1990s, this movement has intensified, and this has affected central funding bodies so that interdisciplinarity is now a de facto requirement in successful grant application. As a result, the literature is ripe with definitions, taxonomies, discussions and other attempts to grasp and define the concept of interdisciplinarity. In this paper, we explore how strategic demands for interdisciplinarity meet, interact with and change local research practices and results of higher education and research. Our aim is to question and trace the consequences of applying the slippery and difficult term interdisciplinarity in research. The paper is based on ethnographic fieldwork in a Danish interdisciplinary research programme, where we observed and analysed practices of writing, publishing, collaboration and educational development in five different research projects. We show how the call for interdisciplinarity was mobilised in a way that rendered the incentives and motives behind the programme unclear. Furthermore, we argue that the absence of clear definitions and assessment criteria produced a dominant, all-inclusive, but vague, configuration of interdisciplinarity that affected the research outcome, and ultimately, promoted and reproduced the existing monodisciplinary research and power structures.

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Keywords Interdisciplinarity · Strategic funding · Research programme · Research evaluation · Higher education · Denmark · Ethnographic research · Policy concepts

Introduction

> People do not talk about making interdisciplinary practices accountable. I have not come across *measures* of interdisciplinary success. (Strathern 2004: 78)

In 2013, the University of Copenhagen (UCPH) launched an 'Excellence Programme for Interdisciplinary Research' (hereafter the Programme), and granted 18 interdisciplinary research projects across the university a total of €64 million. The 18 projects touched on a wide range of themes, including obesity, climate change, genetic engineering, big data and ageing. The 18 research projects became an extra, non-physical space at UCPH, referred to as the '2016-projects'. Once a year, the PI's from all the projects met in the distinguished buildings of the Carlsberg foundation to present and discuss their projects. In this setting, interdisciplinarity was vaguely defined as integration of disciplines, as crosscutting collaborations, accompanied by appraisals of the importance of interdisciplinarity in 'solving society's grand challenges'. Meanwhile, in offices and labs around the university, the researchers involved in the projects would argue that this image of interdisciplinarity had very little to do with their everyday work, and did not reflect their individual experiences. Some of the junior researchers in the projects had even been advised against taking up interdisciplinarity.

We, a medical anthropologist and an educational ethnographer, worked on projects in the Programme, and experienced first-hand the ambiguity linked to the term interdisciplinarity; not least because our specific task in the Programme was to study interdisciplinarity in various constellations. Although the Programme was titled interdisciplinary and by the university management was presented to the outside world as an ambitious and strategic push for interdisciplinarity, the practical operationalisation of interdisciplinarity, nevertheless, lacked both definition and engagement. While the researchers knew that they would be measured on their interdisciplinary efforts, they did not know how. The starting point for our investigation was therefore to explore how strategic statements at policy and management level affected local research practices.

While interdisciplinarity is not novel, the political and discursive mobilisation of interdisciplinarity is. The increased focus on interdisciplinarity could be seen as a result of the fact that research agendas, now more than ever, are influenced by public concerns (Gibbons 1994; Nowotny 2013; Flink and Peter 2018; Kaldewey 2018). The same agendas have also been called politically enforced (Jasanoff 2010), and the push for interdisciplinarity has been interpreted as a new way to secure accountability of research (Barry and Born 2013; Brint 2005; Strathern 2004). Kaldewey and colleagues unfold the genealogy of research policy concepts and show how the multiplication of new concepts equip and shape the future roles and imaginaries taken on by researchers and institutional settings (Kaldewey and Schauz 2018). Since the

1990s, this movement has intensified and affected central funding bodies to such a degree that successful grant applications now often showcase interdisciplinarity and include research teams from across disciplines, faculties and industries (FP7; Horizon2020, NSF, IGERT). The presentation of interdisciplinarity in these programmes as the means to solve society's 'grand challenges' (Frodeman et al. 2010) by creating so-called 'synergies'(Bruce et al. 2004; Lyall 2013) has transformed contemporary academic practice, and sparked off new actors and activities (cf. Fisher et al. 2001).

Barry and Born discuss predominant narratives of interdisciplinarity, and find that the contemporary discourse of interdisciplinarity has left the whole field with a notion of interdisciplinarity as a 'unity' (Barry and Born 2013: 5). This unity provides a common language and reflects a particular interpretive flexibility of the concept of interdisciplinarity and similar strategic research concepts (Calvert 2006; Calvert 2004; Flink and Kaldewey 2018). Meanwhile, these all-inclusive categories present a challenge in research leadership and practice as they need to be filled with meaning. The symbolic unity of interdisciplinarity not only obscures local heterogeneities, but it also makes the term interdisciplinarity appear the same in each case (Nersessian and Newstetter 2014: 714). The layered meanings and properties combined in the 'unity' of interdisciplinarity thus render the concept even more ambiguous and nonspecific (cf. Flink and Peter 2018).

This paper is a response to the contemporary discourse on interdisciplinarity and investigates how unclear definitions of interdisciplinarity affect local practices of writing, collaborating and educating. Based on ethnographic fieldwork across five selected projects within this programme, we add to the limited, though steadily increasing, number of accounts (Barry and Born 2013; Callard and Fitzgerald 2015; Fitzgerald et al. 2014; Rabinow 2012) of everyday experiences and work practices affected by strategic calls for interdisciplinarity.

Thus, the aim with this paper is not to show the discrepancies between managerial decisions, and mundane, local research practices; rather, it is to show that the ways in which interdisciplinarity is performed in local research practices and collaborations could be considered a direct result of the unclear definitions of interdisciplinarity at the upper management levels.

Setting

The University of Copenhagen (UCPH) currently has 6 faculties (Science, Health, Humanities, Social Science, Law and Theology) of very different size. Science and Health each make up about a third of the university budget, while the entire faculty of Theology is smaller than any department at Science or Health.

UCPH is a research-intensive university with an organisational structure primarily developed on the basis of disciplines. However, the merger with two other universities in 2007 added research and teaching environments aimed more directly at professions and industries with a need for collaboration across disciplines. In the past few decades, departments have continuously grown, which means that most departments at the faculties of the Humanities, Science and Health now comprise a

number of different disciplines. Despite this development, interdisciplinarity did not enter the official agenda before 2012, with the launch of the UCPH 'Strategy 2016'.

The Excellence Programme for Interdisciplinary Research was set up as part of Strategy 2016, in order to support and encourage interdisciplinary research at the university, not least in order to prepare the university for the calls in the EU Research and Innovation programme 'Horizon 2020'. The Programme call was published in late June 2012, and the deadline for submission of statements of interest was two months later, followed by the deadline for the final project applications by the deadline for the final project applications two months after. In total, it took a mere eight months from the first call for applications to the announcement of the 18 funded projects.

In a survey conducted by the National Academy of Sciences, the three most widely accepted ways to enhance interdisciplinary research are 'fostering a collaborative environment', 'providing faculty incentives including hiring and tenure policies', and 'providing seed money for interdisciplinary research projects', respectively (National Academy of Sciences 2004: 86). Of these three, fostering collaborative environments and providing faculty incentives are the most commonly used measures to promote interdisciplinary research at individual institutions (Jeffrey 2003; Kezar 2006, 2012; Townsend et al. 2015). However, this was not the case with the Programme, which was referred to as 'seed money by the university management, and was aimed to lead to new interdisciplinary research projects that would attract massive amounts of external funding' (Bock et al. 2016: 1). This makes the Programme somewhat different from other interdisciplinary institutional initiatives—and similar to major national and international research programmes, such as previous European Framework Programmes (Bruce et al. 2004), NSF and the UK Research Councils (Strathern 2004).

Although nothing changed in the institutional structures or the hiring policy to accommodate interdisciplinary research, inclusion across faculties was still a stated aim of the Programme: since the funding for the Programme only included researchers from the University of Copenhagen, the Programme was, among other things, an attempt to consolidate the university as one institution in the wake of two significant institutional mergers. To facilitate this consolidation, projects that included researchers from all six faculties were preferred, even over projects with the largest variety of disciplines. As a result, a relatively small faculty such as Law was involved in 16 of the 18 projects. Moreover, of the 18 projects selected from the 37 submitted proposals, only very few included researchers from departments of (interdisciplinary) applied sciences (e.g. forestry studies or development studies) represented in the projects. All of the projects included researchers in different faculties from the Primary Investigator, and only a few projects managed to set up facilities for the researchers to sit physically together.

In the Danish version of the call, the word 'interdisciplinary' was never mentioned; in its place was the term 'tværgående', which translates as 'crosscutting'. Furthermore, the university management made no special arrangements to embed the research projects in the existing organisation; instead, it was up to the faculties where the PI's were employed to decide whatever afterlife the research projects should have when the funding ran out (University of Copenhagen 2012). Thus,

while the aim was to facilitate interaction and collaboration across the university, the Programme did not instigate major changes to the structure of the university. This unclear definition of interdisciplinarity and vague evaluation criteria raises a question about expectations, both to the projects themselves and to their outcome.

Methods and Analytical Framework

As part of the 'Strategy 2016', the University of Copenhagen also launched an initiative to improve education and teaching across the university. Eight projects were granted a total of €6 million and ran until June 2017. One of these projects aimed to improve interdisciplinary- and cross-faculty education, and Katrine Lindvig (author) was enrolled as a PhD student in this project, partly because of Lindvig's participation in a pilot project that mapped interdisciplinary research and education initiatives at the university. Since the results from this project became the cornerstone in the new application for the project on interdisciplinary education, Lindvig was an obvious candidate for a PhD position. For a long time, however, Lindvig's enrolment was considered a bit of a backroom deal, as these projects were named 'educational development projects', and thus not considered 'real' research by the university management.

Line Hillersdal (author) landed a postdoc on interdisciplinarity in the Excellence Programme as a result of her participation in a large project on lifestyle diseases in which she did her PhD. Part of her fieldwork on the lived experience of eating involved close collaboration with a nutritional physiologist and an endocrinologist on gastric bypass patients in an attempt to understand the variations in weight loss after surgery (Hillersdal et al. 2016, 2017). This experience led her to pursue new opportunities for collaborating on biosocial phenomena connected to obesity, and she contributed to a project application, which was eventually granted money and became one of the 18 research projects in the Programme.

That project involved researchers from biomedicine, the social sciences and the humanities. Figure 1 illustrates how the project was structured and organised into five interdisciplinary work packages (WPs), in which different aspects of the problem of obesity were addressed. Hillersdal's WP is shown off to one side, and not as integrated (symbolically at least) with the other work packages. It was also different in size, since Hillersdal was the only full time researcher in the work package, whereas the other WPs included up to 10 researchers each. The assignment of interdisciplinarity into its own WP was intended to boost the interdisciplinarity in the project, but the externalisation became excluding in that Hillersdal eventually found herself to be more of an observer of research than a collaborator. This also meant that responsibility for the anchoring and commitment to her work was vague and ambiguous among the other WPs. We emphasise our own recruitment and positioning in the projects because these situations and experiences made us interested in exploring how interdisciplinarity becomes organised, both socially and materially.

The analyses in this paper are based on empirical material collected in the projects, and the views and examples naturally reflect the access we have been granted in and to the projects, as 'double insiders' (Adriansen and Madsen 2009). Our

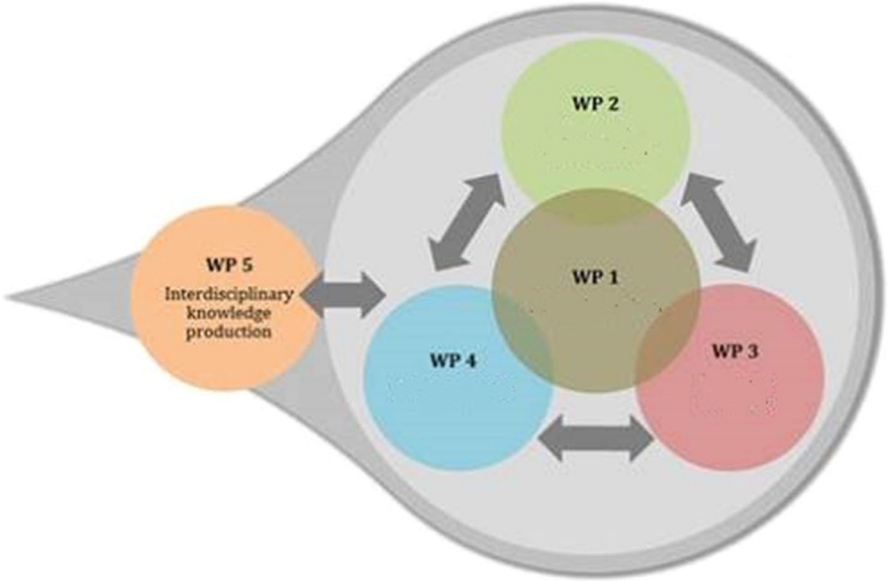

Fig. 1 Example of work packages and project structure

positions have given us a unique opportunity to follow several research projects simultaneously, and to study how the same overall framework and conditions led to very different results.

The analysis in this paper therefore builds on individually collected empirical material (see Table 1), collected using ethnographic methods (Marcus 1995; Willis 2000) across five selected case projects in the Programme (one of which Hillersdal took part in). In Hillersdal's fieldwork, she followed meetings in the project's work packages to understand how the researchers from different disciplinary fields found ways to collaborate, i.e., how they made their data comprehensible and relevant to each other. She also studied the concrete formats of communication developed in the course of the projects to support the interdisciplinary exchange. Lindvig followed the development of educational activities, such as elective courses and summer schools, in her five case projects. She observed staff meetings and teaching, interviewed course managers, teachers and students, and collected course material, student assignments and course evaluations. As part of the trailing and following interdisciplinarity in empirical data across the projects, informants were asked to describe how interdisciplinarity was named, took place or experienced in the projects. This was done to ensure that attention was given to spaces or practices not reflected in documents, reports or through our primary observations.

Similar to Svendsen et al. (2017), who have collaborated and integrated empirical data from different field sites, we draw on material from our own individual fieldwork in our joint analysis. Through our situated perspectives on the question of interdisciplinary, we have attempted to achieve what Svendsen et al. denote "thickness by comparison" (op. cit. 2017: 205). This refers to the richness in the material,

Table 1 Empirical data

Level	Description	Case project 1	Case project 2	Case project 3	Case project 4	Case project 5	Total
Management	Interviews	3 Project leaders 1 Educational manager (interviewed twice)	1 Project leader 1 Project manager (interviewed twice)	1 Project leader	1 Project leader (interviewed twice) 1 Project-manager (interviewed twice)	1 Project leader 1 Project-manager	15 interviews
	Documents	Mail correspondences, timelines, description of work packages, intended educational activities and self- reports for the mid -term evaluation.					
Junior researchers	Interviews Conducted as: - Single (S) - Focus-group (FG)	10 students/7 post docs 8 interviews (S=1, FG=7)	3 students 2 interviews (S=1, FG=1)	5 students 3 interviews (S=2, FG=1)	4 students 4 interviews (S)	4 students 1 interview (FG)	26 PhD students 7 post docs 18 interviews
Master's students	Interviews Conducted as: - Single (S) - Focus-group (FG)	11 students 3 interviews (FG)	4 students 2 interviews (FG)	4 students 1 interview (FG)	2 students 2 interviews (S)	2 students 1 interview (FG)	23 students 9 interviews
		5 teachers 3 course-planners	3 teachers /course-planners	2 teachers /course-planners	2 teachers 2 course -planners	3 teachers	18 teachers 18 interviews
	Documents	Material for 1 MA elective course and 2 summer school courses	Material for 2 MA elective courses and research apprentice-ships	Material for 1 MA elective course	Material for 2 MA elective courses and student-driven, voluntary group sessions	Material for 2 MA elective courses	Material from 8 MA elective courses, 2 Summer School courses, research apprenticeships and student sessions
All case-project levels	Participatory observation	Classroom observation Meetings in educational planning group Meetings with all WP groups	Classroom observation Workshop for young researchers	Meetings in educational planning group Young Investigator network meeting	-	Annual research meeting in project	
Pro-gramme level	Interviews	Interviews with members of the Programme management team					
	Participatory Observation	Observations of annual network meetings for all 18 projects in the Excellence Programme					
	Documents	Mail correspondences with members of the Programme management team. Background documents on the Programme e.g. calls in Danish and English, timelines, decision papers Written sections on educational elements from 18 research applications and midterm evaluations, these 5 cases included. The access to and use of the written sections was approved by the project PI's and provided by the university research section, led by the Pro-Rector of research.					

but most importantly to the opportunity, derived from the difference in perspective, to question taken-for-granted notions in an academic culture, which we ourselves are part of. The difference in perspective is apparent in the analysis, as some examples are based on accounts from research groups, whereas others draw on a cross-section of details from all five research projects. As part of projects within the same Programme we have interviewed or observed some of the same persons and collaborations. Therefore, we have anonymised all shared material in the analytical process, in order not to compromise the trust shown us by our interlocutors.[1]

In this study, where we have followed processes and products of interdisciplinary efforts in a specific set-up, we have not applied the term 'interdisciplinarity' as a category belonging to a specific taxonomic ordering of degrees and versions of inter-, multi or transdisciplinarity. While we acknowledge the need to specify and define such a complex concept, we would argue that the multiple taxonomies and definitions are closely linked to certain disciplines and thus represent particular and limited ways of

[1] Throughout the paper, the excerpts from our empirical material are thus only referenced with context and position level.

studying interdisciplinarity (see Jeffrey 2003; Strathern 2004). In order to bridge disciplinary fields and boundaries, and with an emphasis on exploring interdisciplinarity as a particular contemporary space for research (Callard and Fitzgerald 2015: 4), we therefore adopt the very inclusive definition of interdisciplinarity by Moran (2010) covering "any form of dialogue or interaction between two or more disciplines". This wide definition allows us to revisit interdisciplinarity in the making and to explore the pragmatics and situated concerns as it unfolds in research practices.

The role of social scientists working across scientific fields has led researchers to analyse the socialites of collaboration as 'trading zones' (Gorman 2002), 'boundary objects' (Star and Griesemer 1989), 'boundary work' (Gieryn 1983), and to attribute roles such as (cultural) 'brokers' and 'mediators' (Suchmann in Barry and Born 2013). Researchers involved in collaboration between disciplines and explorative interdisciplinary projects have emphasised the personal implications and emotional aspects of partaking in collaborations consisting of, often unequal, power relations (Calvert and Schyfter 2017; Fitzgerald et al. 2014; Rabinow 2012).

Reflecting on collaboration in a transdisciplinary project, Fitzgerald et al. (2014) conclude that the mundane pragmatics of collaboration took place within a "rather less transparent, rather less unified and rather less propitious sphere of interaction and exchange" (ibid., p. 703). Based on this realization, they suggest an ethics of 'equivocal speech' as a way to constructively work and 'work out' collaborations in interdisciplinary projects. When Fitzgerald et al. suggest an ethics of equivocal speech, they not only contradict Rabinow and Bennett's (2012) call for clarity and frankness, but also express the differences between ideal descriptions of interdisciplinary collaboration and the mundane practices of interdisciplinary research projects (Fitzgerald et al. 2014:703).

Whereas Rabinow and Bennett discuss processes at the local level, in order to understand the outcomes of research collaboration, we explore how the incentives, i.e., policy agendas, funding calls and evaluation practices, defined by management, affect local practices (cf. Flink and Peter 2018; Kaldewey 2018). And while Fitzgerald and colleagues conclude that they succeeded in the project not despite, but because of, 'equivocal speech' among the peers at the local level (ibid, p. 716), we would rather discuss the local outcomes of ambiguous 'speech' at the managerial levels of an institution-wide initiative.

In the following, we analyse how the management's articulations of interdisciplinarity affected local and mundane practices of writing, publishing, educating and collaborating. We explore objectives and aims set forth in the Programme call (including the requirement of interdisciplinarity), and how these objectives have materialised into certain practices and products.

Processing Strategic Aims and Local Achievements

Writing and Publishing

Writing articles and planning a publishing strategy are central success criteria in research. Publishing in research teams, with multiple authors on a single paper has

become something of a general trend within academia, and furthered within interdisciplinary projects (Hicks and Katz 1996; Lewis et al. 2016). In the Programme midterm evaluation, publications were ranked second in importance, just below scientific discoveries.

In the projects that we followed, writing and publishing played a significant role as a hotbed for experiencing and showcasing interdisciplinarity, which could indicate that co-authorships has become a measuring stick for research collaboration (Iglič et al. 2017). In our fieldwork, we witnessed a number of attempts by project managers to motivate shared writing and co-authoring across disciplines.

Across the projects, one particular article template was applied repeatedly to accommodate interdisciplinary writing. This was the traditional *material and methods article;* a well-established format, at least to researchers from the natural and life sciences. It was originally designed to ensure the rigor and validity of (mainly clinical) trials by publishing the descriptions in a comparable and replicable format (Elsevier.com 2017). The format contains a description of the project intervention or trail, the main hypothesis and expected outcomes. In our case projects, the interdisciplinary writing processes were not planned differently from other types of writing processes, and the assumption was that, by bringing different disciplines together to collaborate on an already specified problem, interdisciplinary articles would eventually ensue. By means of the materials and methods format, researchers from the humanities and social sciences were included, and were given a paragraph similar to their project colleagues from the natural sciences to state their research aims for the project. When asked about writing with other disciplines, a junior researcher from the social sciences who collaborated with biomedical researchers on a large trial on cardiovascular disease, had the following to say:

> R: At our first meeting [in the work package] 'interdisciplinary publications' was listed as the last point on the agenda - that was years ago. Then, at the meeting held recently, the interdisciplinary publication came up again.
> I: So it had been on the very first [agenda]?
> R: (…) and was only taken up two-three years later. I think that is quite telling of the way it's prioritised, right? Then, the way it was raised, it just made me think 'What the Hell? Are you serious?' The interdisciplinary product that they were suggesting was the type of paper you would define as a 'material and methods'- paper within their field - an article where you describe the intervention, and then say "Well, the intervention is about such and such, there were these three groups and we applied these methods"…
> I: Was that the interdisciplinary publication?
> R: Yes, and you know, everything was already stated in the project description and in their individual project descriptions, so it was really just a matter of cut and paste.
> (Interview, junior researcher, translated by the authors)

In the quote above, the junior researcher describes how the interdisciplinary paper was produced in the shape of the material and methods article. Whereas this, to the junior researcher at least, seemed unambitious and haphazard, it appeared to be a common strategy in the research projects.

While the management encouraged interdisciplinary publications, the issue of organising and structuring an interdisciplinary writing process was left to the individual researchers to decide. Another approach to interdisciplinary writing was evident in a project where the co-PI took lead on the writing and handed out writing tasks to the other project colleagues.

One of the junior researchers, who had been asked to write a section for this article, commented on the process in the following way:

> It was a bit difficult in the beginning, because every one of us were actually doing different things. I remember how, at the first meeting, we were put together with other disciplines and were asked to define the project seen from our individual perspective. We were actually working in small clusters. And then we discussed one thing, what we could actually see from our different backgrounds that we could combine. I mean, we managed to produce one publication, which combined everyone.
> (Interview, junior researcher)

The article aimed to demonstrate the range of disciplinary perspectives in a shared research object as the main outcome.

In a third example, the writing was structured and driven by personal motivation. In this particular project, the researchers had worked on a concept article, but when the PI was asked by Lindvig whether this had been part of an interdisciplinary publication strategy, and something he had demanded or orchestrated, he laughed and said:

> No - I think it was more like a plan b - that if they didn't do it, then maybe I would go in and set up some strategic co-authorship. But really, what I have done is just to insist that I would only be listed as author on papers where I had actually done a substantial part of the writing, and you know, if you come from the natural sciences you will find that a bit odd, because as PI in these fields, your name is on everything. And another challenge is that this setup is not really normal in the Social Sciences or Humanities either - but I just thought that this was a way to get people vested in the writing; that you wouldn't have all these passive senior researchers hovering on all the papers.
> (Interview, senior researcher, translated by the authors)

The quote shows a PI, who is willing to let the output and results follow personal interest and initiative. What was eventually published was a result of the efforts of individual researchers, who gained something by taking on responsibility. This was an example of expectations aimed towards the level of participation instead of the outcome. While this was an example of expectations met and of a joint product, we often found that the call for interdisciplinary writing involved major discrepancies between the intentions aired by the project management and the actual practices and ambitions of publishing across disciplines. In the interviews, we learned that many of the younger researchers in the projects were in fact advised against collaborative writing, and that their supervisors would sometimes

undercut any effort in that direction, as evidenced in this group discussion with junior researchers on interdisciplinary writing:

> R1: If I were to be totally selfish, and you have to be like that sometimes, it would just make no sense to do that.
> R2: And it doesn't matter where you'd like to go afterwards; whether you want to work in the private sector or continue here, then that's just not something we are being measured on.
> I: But is it because it [interdisciplinary articles] doesn't fit the journals?
> R3: It just doesn't count.
> R2: Yeah - but I still think that, if you'd have to sit down and write together with someone else, then you would spend a lot of hours on it (R1: yes) compared to what you get in return, I think. And I actually don't think we really ever had the choice (R1: no we didn't get the choice). Of course we could choose to write it "Thursday after work" but it was really just shut down (…).
> R3: But I do think that those types of articles will be written, I just don't think that it will be our time spent on it (R1: No it won't be our time), so I actually think it's the right decision the higher-ups have taken, that it is not for us to do.
> (Interview, junior researchers, translated by the authors)

While the production of interdisciplinary articles was a recurring topic in the interviews with PI's and junior researchers, consensus was that the lack of time in the projects left little time to focus on these joint publications. Moreover, the lack of systematic support from senior researchers, aside from intermittent encouragement, was mentioned by junior researchers as something that would hold them back from even trying, as expressed by the two junior researchers in the following quote:

> R1: I think they have encouraged us, but still, my supervisors are like "Remember that you will only succeed with this project if you put yourself first" - and, "Remember what your aims are for your own project, and then you can kind of expand from there".
> R2: I don't know how open they really are, I mean I feel that they are very focused on writing together, whereas they have never really – it sounds really negative, and I don't mean any negative about it – but I've never really felt like my input was solicited for anything.
> (Interview, junior researchers)

Though co-writing and publishing across disciplines was among the stated aims for the research projects, the actual framing and organisation was left to the individual researchers. Writing interdisciplinary articles was seen as something on top of all the other tasks in the projects. The core practices of writing and publishing were not adjusted to fit the interdisciplinary character of the research project. Instead, interdisciplinarity was squeezed into existing structures and frameworks, or added to the to-do list of on-going practices. While some researchers used the conventional output formats from their respective disciplines and adapted them to the task, others wanted to invent new ways to work with shared data, and developed new methods in the collaborative processes to tell a new story about the joint research object.

Collaboration

With the increased call for interdisciplinarity, science has grown gradually more collaborative (Andersen 2016). In most calls for interdisciplinarity, the collaboration between different disciplines is emphasised as crucial in order to achieve 'innovation' and 'problem solving' of some of society's complex problems (Lee and Bozeman 2005). Internal collaboration was thus one of the three main focus areas in the University of Copenhagen's 'Strategy 2016'. In the Excellence Programme call, collaboration was also emphasised as a specific aim, based on the argument that 'such collaborations could be important and innovative facilitators for the exploration of societal, social and human challenges' (University of Copenhagen 2012). The aim was thus put forward by the PI's in the case projects. In each of the five case-projects, the various work packages involved researchers from life sciences, social sciences and humanities. The organisation of collaboration was a central activity in these work packages. In the following, we shall explore some of the activities and products emanating from this call for collaboration.

The annual meetings and other major project gatherings were one of the ways to encourage interdisciplinary collaboration and showcase interdisciplinarity. These gatherings would often be organised as small conferences where the work packages presented their research. One typical range of themes, taken from one of the projects, reads: 'Children's rights and food marketing in the digital age', 'Infant formula feeding in Denmark and the US 1890–2000', 'Genetics of obesity and physical activity in children' and 'How does gastric bypass affect eating behaviour?' The presentations were thus often very different, detailed and specialised, leaving only a few discussants able to pose questions. As one student explains in the following quote, the joint meetings in the projects could feel somewhat detached from the daily work, and the purpose and effects of these meetings could therefore be difficult to understand.

> You know, you collaborate interdisciplinarily, but you can still do your own research, and then suddenly you need to meet up, and participate in an interdisciplinary talk or meeting, and, so – it can sometimes feel like you are just a guest, when your main work is something else and then you collaborate on a smaller project, and with other disciplines. We just had a young investigator network Monday, where we discussed a paper, and it was very interesting to see when people from different fields try to understand a different approach. How we actually do feel like, I guess, in a different discipline. And, it's still like on the same topic, but it's such a different approach that, yeah you just feel like you check in to a hotel and then – go home afterwards, but you don't really leave any traces, or whatever, it's just come and go.
> (Interview, junior researcher)

Whereas this organisation of collaboration was common to the senior researchers in the projects, some of the junior researchers were less experienced in talking with colleagues from a different discipline, as evident in this excerpt from an interview with a PhD student, who were talking about a recent annual meeting held in the project:

> My recollection of interdisciplinarity was on an overnight course in the beginning of the project. It was really nice - that was where we kind of got to know the point of it all. Though, I didn't really see it as interdisciplinary. It was more about understanding the various parts of the project, when the co-PI's from the different groups presented their perspectives and contributions. You know, everything was explained. And there was just so much group work, and again - that is really not something we are good at, that "and now you have to sit down and talk together"-thing. And then we sat down and we were just sitting there. And you could clearly tell the natural scientists from the crowd - the scientists were the ones with the arms crossed, sceptically glancing around at the others [laughing]. I think actually, that is the only 'inter', you know – where we kind of were in touch with the others.
> (Interview, junior researcher, translated by the authors)

In the quote, the PhD student talked about how interdisciplinarity was reflected in the project. While she was not really able to assess it, she identified the annual meeting and the group work as examples of interdisciplinarity. To her and other researchers in the project, interdisciplinary collaboration was nested in special types of activities, such as group work, and in special occasions, such as full day meetings with accommodation. This echoes findings from Repko and Szostak (Repko and Szostak 2017:222), who explain that interdisciplinarity is often used interchangeably with teamwork.

In the researchers' daily work in the projects, shared ambition and dedication was central to collaboration. In one of the work packages, which included researchers from both the social and natural sciences, collaboration developed as the group of researchers searched for different ways to share the data produced in the project. One central idea involved integration of all their data, but required that their data were comparable. This involved a lot of work to clarify how each of the disciplines worked with data, whether it was data in numbers or words, and a discussion to determine whether it was even possible to align all the data.

That particular group worked on the multiple factors behind the large variation of weight loss after bariatric surgery. The researchers wanted to share data and write together across their disciplines. To this end, the group developed an extensive spreadsheet, named the "hypothesis chart", in which all their various data collection units and measures were gathered. Vast amounts of data, ranging from measurements of 'body composition' and 'food insecurity' to 'gut microbiota' and 'food addiction' were included. One of the recurring issues in this collaboration was how to accommodate all the methodologies of the involved disciplines. This issue was partly solved by entering ethnographic interviews into 'ad hoc categories' that were scalable in the statistical model. The group told Hillersdal that the adoption of a statistical methodology allowed them to publish in a high-ranking journal. Showcasing "the fully integrated data" was also a way to demonstrate their interdisciplinary collaboration. This finding aligns with studies of metadata used as a way to create interoperability and to secure common ground (Edwards et al. 2011). While statistical modelling in itself does represent a specific type of complexity that can be conveyed in high-ranking journals, statistics were chosen

as the common denominator despite the fact that several researchers in the group were not familiar with, or would even have considered using, statistics as the most appropriate way to handle the data - if they had been working within their own discipline.

Collaboration was central to what both management and project colleagues thought of as interdisciplinarity. In the various projects, collaboration has been perceived equally as a means to reach interdisciplinary results and to meet the objectives of the Programme call. Across the projects, we have found collaboration to be located in highly dynamic local practices, completely detached from any plans for formalising it methodologically (cf., e.g., Jeffrey 2003). Hence, the cases presented above did not always lead to genuine collaboration, nor to interdisciplinarity.

Research-Based Education

> To ensure and strengthen links between research and education, all applications for research initiatives must include a description of how the project will contribute to the education dimension (…) The educational dimension of research initiatives may include how students are involved in the research process or how the results apply to education in the form of courses and seminars etc.
> (UCPH 2016-projects funds call)

In addition to the aims of achieving new scientific discoveries, of publishing a number of articles, and of strengthening interdisciplinary collaboration, the Programme call also included a requirement to contribute to the 'education dimension'. The funded projects were to create educational activities for both Bachelor's and Master's students, and to specify students' involvement in the projects (cf. the call). This element set the Programme apart from other funding initiatives, because private research foundations rarely support educational activities (Lyall 2013; Wichmann-Hansen and Herrmann 2017). For the recipients of the research funds, the lack of support for education can be a problem when the money are granted to specific projects, because the projects of a temporary nature are inherently difficult to align and embed in existing higher education structures.

In the Programme, the call for educational activities was aimed to improve the connection between research and education, and specifically to strengthen research-based education at UCPH. This resulted in a range of different activities (c.f. Lindvig et al. 2017): Across all five case-projects, both Bachelor's and Master's students were actively involved in the projects. In some of the projects, the students took part in the data production and the lab-work, and eventually used the research data in their theses. In other projects, the students enrolled for 3–6 months as apprentice researchers, to learn the craft of research while they helped the researchers with their data-production and daily project management. There were also examples of students who participated in the projects as volunteers. This engagement by the students was recognised as an asset in the projects, because the students added to the research and data-production with no strings attached:

> To us, the students are super important. No doubt about it. When we meet in the steering committee, we make fun of it, but of course we all know that in reality we are completely dependent on them, well not only are we depending on them, when it comes to the research project, they are the ones deeply entrenched in the practical data work. So in that sense I think we all have a pretty strong idea of them playing the key roles in this.
> (Interview, senior researcher, translated by the authors)

The fact that the educational activities were a requirement, and could be evaluated, added a different level of goodwill towards the students. It also created an incentive to highlight educational activities that otherwise might not have been perceived as connected to the projects.

One of the projects included a summer school that involved a number of the project's researchers. While the summer school might have taken place regardless, it took on a more central role than anticipated due to the requirement that educational activities had to be tied into the projects' other activities. The setup and the course plan were both changed several times according to changes in what was seen as the burning issues of the research topic. And although the student evaluations showed limited signs of integration between the disciplines and the researchers present, it became an important validation and sign of belonging in the project for the researchers.

In some of the other projects, summer schools and courses served to educate and train the PhD students affiliated with the projects. Whereas the educational elements were a requirement in the Programme, it also became a way to consolidate and strengthen collaboration in the research projects. A common thread running through these activities was, however, the limited amount of repetitions. The courses and summer schools occurred once or twice and then disappeared. As such, the projects have had little long-term impact on research-based education (cf. Augsburg and Henry 2009).

It is interesting to note that, while there were no demands for interdisciplinarity in the educational activities, these activities in fact supported interdisciplinarity the most in the research projects. Not because they were interdisciplinary; on the contrary, they were often perceived as just the opposite by the students, but rather because the course-planning promoted a sharing of methods, knowledge and ideas from the various disciplines involved (cf. Olson and Brosnan 2017). The development of educational activities caused the researchers to see a value in other activities than expected, and thus added different criteria to assess the collaboration in, and the outcomes of, the project.

While the type and amount of educational activities varied a lot from project to project, one particular item, however, occurred throughout the projects, and that was the high number of PhD students that were affiliated to the projects. PhD students played a number of roles in the projects: they wrote and published across disciplines; they participated actively in various interdisciplinary collaborations, and they represented the primary educational element in the five case-projects. Perhaps not surprisingly, the many roles assigned to the students did create some confusion in the projects:

> There isn't really a consensus, or, I mean, it's different among the different domains whether you believe interdisciplinarity should rest with the senior or junior researchers, but, everyone I talk to says that it is really important that the young researchers write a PhD within their own discipline, and that their theses will then be assessed based on the official regulations of their respective PhD schools.
> (Interview, senior researcher, translated by the authors)

On the one hand, the students had to complete their education and be recognised as proper PhDs by the ordinary system, as the quote above refers to. On the other hand, they also occasionally played the role as 'boundary spanners' (Lyall et al. 2011) between the different work-packages and disciplines present in the projects, not least because they moved physically about from one group to another. The educational requirement thus created equal opportunities and dilemmas: it allowed the projects to enrol a higher number of PhD students than they otherwise might have. On the other hand, they also had to treat the PhD students as students and not as workers, since the PI's did not have the final say over the PhD students, due to the institutional set-up of the projects (Lindvig 2018). While this was frustrating for the PI's, who had less control than usual over the PhD students' work, it also made for a confusing set-up for the students:

> I probably should have integrated my fieldwork more clearly in the project, from the beginning, to sort of lay the foundation for interdisciplinarity; but again that really isn't my job, as a PhD student, being assessed as monodisciplinary and not as someone who is good at interdisciplinary collaboration - people don't care about that at all. Because I will be assessed based on one discipline, I won't be assessed as an interdisciplinary researcher and neither will they, so of course it is of no interest to them - I mean what is the point?
> (Interview, junior researcher, translated by the authors)

While the educational activities and the students were not assessed as interdisciplinary, they did, however, become part of the work of performing interdisciplinarity to external evaluators and critics of the project.

Evaluation

When the evaluation of the Programme was due three years after the launch of the Programme, the evaluation criteria were discussed intensely. The criteria had not been defined beforehand, and the criteria for evaluating interdisciplinarity were especially unclear, not least because of differences in the wording in the Danish and English versions of the Programme calls. Meanwhile, it was clear that some sort of interdisciplinarity had to be evaluated (cf. the name of the Programme). Thus, in order to focus on interdisciplinary aspects together with monodisciplinary excellence, one additional member was added to the review panel otherwise comprised solely of monodisciplinary researchers. Interdisciplinarity was subsequently added to the self-evaluation as bullet points below the main criteria. One example of this was as follows:

2.3 Publications
Please list the five most important publications derived from the project to date and explain briefly why these are the most important publications. Please also describe the publication strategy of the project and publications in pipeline.
Please enclose a list of the publications produced as a result of the project to date.

- To what extent have you been able to publish interdisciplinarily within the project?
- In what way, if any, has the interdisciplinary approach strengthened publications within the team?
- What are the challenges and opportunities in relation to publication outputs?

(Section from project evaluation; Bock et al. 2016)

Tinkering to comply with the intensions of the programme is described by Calvert as the boundary work of tailoring (Calvert 2006). In her example, the researchers wrote their proposals to suit new emerging concepts and agendas of funding bodies. But, whereas the adjustment work of these researchers did not affect how they did their research (ibid), this was not the experience in the Excellence Programme. To fulfil the evaluation criteria, the researchers in the projects had to define concrete interdisciplinary deliverables and the inaccuracy of what interdisciplinary deliverables might be, were then brought to the fore by the evaluation process itself. Tailoring activities took place, but neither easily achieved, nor without affecting the local research practices.

In the above section from the project evaluation, the wording meant that the projects were to primarily focus on their 'excellent' monodisciplinary work and then add reflections of the interdisciplinary research, publications, collaboration, respectively. When the evaluations of the 18 projects were complete, a paper presenting the overall findings was written. In this, the panel stressed that:

> [T]he mid-term review has not been based just on the excellence of the individual researchers involved in the projects, but on an aggregated assessment of the interdisciplinary excellence of the clustered groups. In several instances, components of the funded project are outstanding and world leading, while the consortium as a group still lacks integration.
> (Bock et al. 2016).

In their summary, the evaluation panel criticised the lack of synergy (collaboration, exchange) between the different disciplines and research fields. This led to discussions among the projects' PIs, who felt they had lived up to the criteria of excellent research.

Evaluation was dealt with very superficially in the Excellence Programme. In the background paper and timeline of the project, the Programme evaluation was only mentioned in one sentence, as 'taking place after three years', i.e. not as a midterm or final evaluation. While evaluation of interdisciplinary work is considered difficult

(Boix Mansilla 2006; Hackett in Weingart and Stehr 2000), the lack of specific criteria left both leadership and project researchers in the dark about how interdisciplinarity would be assessed. The slow pace in producing actual interdisciplinary products could therefore be partly attributed to the vague definitions of the assessment criteria. Thus, the guiding principle became that of ticking boxes to render the projects accountable, rather than trying to explore or experiment.

As shown above, the project assessment focus was on publishing, collaboration and educational development. It is evident from our material that the projects were preoccupied with meeting the agendas and goals, including interdisciplinarity, described in the call. As a result, interdisciplinarity was invoked at the annual gatherings and at seminars as well as in the project meetings in the work packages in the different projects; however, this was often addressed in a superficial manner. As described in the section on publishing, interdisciplinary publication was on the agenda from the beginning of the project, however, was not prioritised until three years into the project. At this point, most of the staff working in the project had either ran out of funding, were about to defend their PhDs or move on to new projects. As such, the choice of the materials and method article as the interdisciplinary effort was a way to fit interdisciplinary writing into a conventional format instead of allocating time to reflect on, or develop strategies or methodologies for, collaborative writing. In our observations of collaborative practices, we found a similar lack of coordinated vision and action for developing and sustaining interdisciplinary efforts. People were brought together, but without any intentions of securing the outcome of the collaborations. Those who tried to experiment with data integration and shared analysis by themselves received insufficient support from senior researchers and lacked competencies within their own group to actually achieve what they had set out to do. Development of educational activities was fruitful, but mostly in terms of 'educating' the researchers involved in the development. While the researchers did reflect and collaborate on what interdisciplinary education might entail, and how it might be organised, this was not reflected in the classroom teaching and for the students involved.

This continuous performativity and showcasing of interdisciplinarity also affected the role of the Scientific Advisory Boards (SAB). Formally, a SAB comprises a group of researchers appointed as critical and constructive advisors to a project. In the case projects, the SABs were invited to participate in special events such as annual meetings and seminars. When asked about the role of their SAB in relation to interdisciplinarity, two researchers replied:

> R1: I have to admit that I really see interdisciplinarity as situated in our SAB, which we, unfortunately, are not using the way we ought to. You know, the board is meant to be supervising the project, to help us, but that is not how we use them. We use them as a way to continuously seek approval of what we are doing.
> R2: That's true, and the SABs, of course they have all sorts of ideas, just like any other supervisor would, and they also form their own images about the project from the material we send them, and, you know, that's fine. But instead of engaging in a dialogue with them - you know, it's not like they have the

> power to fire anyone, and it is not in their interest either to punish anyone by giving bad reviews - but instead of having a dialogue with them, they are just being pandered to, in order to get these stupid positive reports.
> R1: It's just really difficult to maintain this narrative that you wish to pioneer interdisciplinarity, when half of the project staff comes from the other side of the world, and are like 'Hello, my name is…', and to whom this is a completely different reality, and particularly when there is no real interest in having this dialogue in the project. You are really only interested in aligning with what the SAB is saying - something about the 'truth being interdisciplinary', whatever that means. That is what the managers of this project really would like to match, one way or another.
> (Interview, junior researchers, translated by the authors)

As shown in this quote, the SAB was assigned the role of 'authorising' interdisciplinarity. By effectively serving as evaluating unit for interdisciplinarity, the roles as advisors and sounding board to the project management were downplayed. This was also highlighted in interviews with SAB members: some of the SAB members were elected because of their experience with interdisciplinary collaboration, but these competencies were rarely drawn upon; rather, the members experienced being used as "figureheads securing interdisciplinarity without much action behind it".

In this section, we have attempted to unfold what the evaluation practices comprised - practices that sought to underline, render or showcase interdisciplinarity. Furthermore, we have shown that the researchers in the program did not approach interdisciplinarity in the same ways, nor did they share a vision of what interdisciplinarity might imply, which testifies to the multiplicity of needs and logics driving research work (Barry and Born 2013; Barry, Born, and Weszkalnys 2008). The outcome of these evaluation practices was that interdisciplinarity remained superficially and poorly defined in the projects, but drawn forward to represent the projects.

In the above, we have shown how the lack of evaluation criteria affected the daily research practices. The pressure of unclear evaluation is powerful. Strathern compares auditing in academia to a panopticon in which every "individual is acutely aware of their own conduct and performance is under constant scrutiny" (Strathern 2000: 77). Poor research assessment has pervasive consequences, both individually and institutional, so noncompliance is not an option.

Discussion and Concluding Remarks

> Perhaps one reason why people do not talk much about making interdisciplinary objects accountable is precisely this - interdisciplinarity is itself an index of accountability: an evaluator rather than the subject of evaluation. I do not mean in any formal sense, but simply that it often serves in this capacity in people's thinking about projects (Strathern 2004: 79).

One of the most obvious interpretations of interdisciplinarity at play in our study was the strategic interpretation found in policy statements such as "integration of

information, data, tools etc. to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or field of research practice" (National Academy 2004). This understanding of interdisciplinarity was reinforced and referred to in the official project settings: in applications, official meetings, evaluations and seminars. Although this notion of interdisciplinarity, through the policy statements, may influence a wide range of forms and practices, it is treated as though these practices were all alike (Nersessian and Newstetter 2014: 714). Tracing this kind of interdisciplinarity led us down numerous blind alleys. Only a few informants (all of them project managers) would insist that the project had actually delivered products or involved practices responding to this strategic notion of interdisciplinarity. This view was confirmed in the midterm evaluation. In our study we have found that the effects of this strategic understanding of interdisciplinarity resembles what Suchmann (2013: 26) calls "the weakness of plans": The particular interpretation of, and focus on, interdisciplinarity has systematically filtered out the particularity of detail that characterises situated actions in favour of those aspects of the actions that can be seen according to the plan (ibid). We would argue that the lack of clarity in defining and evaluating interdisciplinarity became a way of organising research that produced a dominant, but vague, configuration of interdisciplinarity.

What did become apparent was the overlap between the venues for showcasing interdisciplinary collaboration and for evaluations of the projects. The tension around evaluation meant that the projects' members were eager to perform or live up to criteria of interdisciplinarity that they could not know about in detail. This led to insecurity in the projects about how to allocate time and resources, and about whether and how to try out new things and experiment, because the researchers had no way of knowing that the products they delivered would be assessable. Procedures of assessment have social consequences, as Strathern writes in her work on audit cultures in academia (2010: 2). Our cases show that procedures of assessment have wide-ranging social and practical consequences, even when they are present merely as *expectations* of future assessment.

Our findings point to the general trait of large strategic projects to solve a range of tasks, and interdisciplinary calls in particular seem to be "fuelled by competing and often contradictory sources and commitments" (Weingart and Stehr 2000: 270). Weingart points out that while interdisciplinarity has been prominent in the rhetoric of organisational innovation in science, its identification with innovation is, nonetheless, often contrasted by "very vague mechanisms, if any, of implementation" (2000: 27). Interdisciplinarity can be used strategically to showcase an institutional initiative as something new and different compared to the existing (Weingart and Stehr 2000) and to promote administrative reforms in disciplinary-based structures (Moran 2006). This points to Flink and Kaldewey's notion that concepts are powerful, not necessarily due to their analytical accuracy, but rather due to their symbolic function in policymaking (2018: 15).

Instead of promoting interdisciplinarity at the University of Copenhagen, the lack of clarity consolidated the existing monodisciplinary structures as stable and safe unlike the new and interdisciplinary (cf. Augsburg and Henry 2009; Weingart and Stehr 2000). The terms used in the Danish call were 'cross-cutting' and

'cross-faculty', which were translated into 'interdisciplinary' in the English version, and then picked up by all projects in the Programme. As we have shown, the 'unity' of the concept of interdisciplinarity not only reduced the acknowledgement of the diversity of practises and products of the projects. It also created a norm of accountability, which did not support initiatives that could not immediately be valued.

In the Programme, the lack of clear definitions and criteria for interdisciplinarity enabled a range of different research practices and collaborations across the university, meanwhile working as a reinforcement of existing (monodisciplinary) structures and products.

As we moved around in this field of study, we found that, while objects of study related to interdisciplinarity might differ from one research field to another, and while interdisciplinary efforts and practices might be isolated, scrutinised and analysed very differently from field to field, the mundane practices of interdisciplinarity cannot meaningfully be understood isolated from the strategic framework in which it is created. If the overall framing of interdisciplinarity is unclear, then the practices at the ground level will reflect this.

Now, as the last 2016-projects have rounded up, a new university management with a new strategy has been launched at the University of Copenhagen. *Talent* and *collaboration* are the concepts replacing *interdisciplinarity* on the agenda, and it will be interesting to see how these concepts travel, how they will be defined and how flexible an interpretation will be allowed. Moving forward, it would also be interesting to explore how individuals (administrators, evaluators, researchers of different career status within universities) at other universities and in wider international contexts cope with concepts introduced at policy level. As has been discussed in this paper, researchers have so far looked at concepts such as *interdisciplinarity, innovation* and *excellence* at "safe" distance, e.g. from a higher level policy perspective and away from the mundane research practices. Further (empirically based) research is thus needed in order to understand the connections and disconnections between higher level management strategies and knowledge production at the micro-levels of research.

Acknowledgements This article is based on ethnographic fieldwork that was made possible by grants from the University of Copenhagen's Excellence Programme for Interdisciplinary Research. We gratefully acknowledge the assistance of the members of the research projects involved, and of the individual respondents who contributed to the research. Thanks also to Professor Catherine Lyall and Dr Erika Szymanski for sharing ideas, comments and suggestions throughout the writing process. Finally, we would like to thank the anonymous reviewers for constructively engaging with our work.

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