Mittuniversitetet
MID SWEDEN UNIVERSITY

Small Doctoral Education Research Environments in the Swedish Context

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Executive Summary

This report was commissioned by the board for doctoral education in the faculty for Human Sciences at Mid Sweden University with a view to identify and analyze best practices in (small) doctoral research education environments in the Swedish context. The main research question was as follows: What practices do universities in the Swedish context employ in order to run, develop, and quality control research environments with a small number of doctoral students? A further objective of the study was to identify and analyze challenges and successes in disciplines within the social sciences and humanities in order to identify a set of 'best practice' examples. We employed document analysis and interviews in order to distill a set of practices fruitful for larger as well as smaller doctoral research education environments. Taking the perspective of the doctoral student, on the one hand we outline practices that facilitate the student being part of the environment (agency), and on the other, practices that refer more to the structural component of the environment. Based on these practices, small doctoral research education environments are not *de facto* vulnerable. Rather, success is a matter of flexibility and visionary leadership.

Introduction

In 2016, the board for doctoral education in the faculty for Human Sciences at Mid Sweden University commissioned a study of small doctoral programs in the Swedish context. The study, placed in the broader context of the evaluation of doctoral studies at Swedish institutions of higher education, had a practical focus; its main purpose was to research small doctoral programs in order to identify and analyze best practices. We take a holistic approach in this study and in order to capture the entire gamut of interactions salient to a doctoral program, we concur with the majority of the extant literature and use the term 'doctoral research education environment' instead of 'doctoral program'.

The reason behind the commissioning of the study was that small doctoral research education environments are purported to be facing a very specific set of challenges. For example, seven possible areas are identified for improvement (Mittuniversitetet, 2016):

- Securing the long-term offering of classes within each discipline
- Improving the long-term planning of classes offered jointly by several disciplines in the faculty

- Collaboration within the faculty and the university as well as with external national and international partners has to be built up and followed up within the disciplines
- Better documentation and follow up of the individual student plans
- Earlier planning for quality assurance and evaluation instruments
- Establishing routines for career planning

These themes were corroborated by the first round of internal evaluations conducted at Mid Sweden University in 2015 and 2016. At the same time, strengths identified during these internal evaluations included robust staff collectives and vibrant seminar series.

Statement of purpose

The main research question is as follows: What practices do universities in the Swedish context employ in order to run, develop, and quality control research environments with a small number of doctoral students? A further objective of the study was to identify and analyze challenges and successes in disciplines within the social sciences and humanities in order to identify a set of 'best practice' examples.

This report is structured as follows: we first situate the report in the broader background of the extant literature on doctoral research education environments. We then outline our method and data collection routines before moving to a discussion of best practices. The section that follows is a discussion of these practices vis-à-vis small doctoral education research environments while the report wraps up with some concluding statements and future research avenues.

Perspectives on Doctoral Research Education Environments

The paucity of academic research in the form of peer-reviewed articles on the subject of small doctoral problems and/or small doctoral research education environments is palpable. The importance of doctoral studies for a university is hard to overestimate, as doctoral students present the opportunity to shift the institutional orientation of the university as well as enhance its capacity for research, education and collaboration (Högskoleverket, 2014; Kalman, 2013; Stewart and Drakich, 1995; Walker, Golde, Jones, Conklin Bueschel, and Hutchings, 2008). Shifting the institutional orientation from teaching to research has a larger impact within new universities that might have started

as teaching colleges in comparison to flagship universities which have always been hubs of research.

Broadly speaking, the discussion on doctoral programs in the contexts where higher education is not a public good (for example, the U.S.) is framed in terms of efficiency and effectiveness and is connected to whether the departments offering the programs are able to offset the costs of providing graduate education (Bowen and Rudenstine, 1992; see, however, Walker et al., 2008). Concomitant to this issue are those of ranking and prestige (Baldwin and Trinkle, 2013), both factors affecting the successful recruitment of doctoral students and have broader financial implications for the university. The size of doctoral programs is rarely tackled, and when it is, it is with mixed conclusions (Bowen and Rudenstine, 1992; Caffarella, 1999; McCloskey, 1993; Scott and Anstine, 2002). Indeed, what constitutes a small doctoral program and by extension a small doctoral research education environment is rather relative and very much contingent on the discipline (Scott and Anstine, 2002). In other words, what is considered small in physics might be deemed as large in economics.

Generally speaking, a small doctoral program is one that graduates from 0 to 5 students per year. A related concept emerging in the literature is that of "critical mass" (Bowen and Rudestine, 1992; Scott and Anstine, 2002). Admittedly the metaphor of critical mass is underdeveloped as it does not seem to go any further than the number of doctoral students (Scott and Anstine, 2002). This has been the case in the UK, for example, where Delamont, Atkinson, and Parry (1997) note the restrictive and blunt nature of such measures for evaluation as number-of-students and argue that such thinking contributes to a rationalization of higher education increasingly subject to external scrutiny. Indeed, viewing doctoral programs as degree programs and evaluating them by counting the number of enrolled students and time-to-degree is both an unproblematic and an unproblematized way to measure and evaluate, while the purpose of such evaluation remains opaque. Doctoral programs are pushed towards centralization even though the administrative unit remains the discipline. Delamont, Atkinson, and Parry (1997) note that such evaluation models are based on departments of natural sciences, thus disregarding the sensibilities of social sciences and humanities.

The focus on effectiveness and efficiency largely translates in time-to-degree and sidesteps the qualitative dimensions of doctoral education (McCloskey, 1993). Even at that, however, McCloskey (1993) points out advantages of small programs. First, time-to-degree is actually shorter, which could be attributed to a more rigorous and selective recruitment process. What is more, smaller programs treat their students better since the ratio of students to faculty decreases. Finally, larger programs tend to be in larger urban areas that have the possibility of attracting part time, less committed students.

Though it is helpful to have an international perspective in mind, the discourse in the Nordic countries in general and in Sweden in particular has taken (until recently in any case) a different trajectory, partly because of the structure and economics of higher education. Indeed, in this context doctoral studies are more commonly seen as a community rather simply as a doctoral (degree) program. The term *doctoral research education environments* (forskarutbildningsmiljöer) refers to "the processes and requirements that safeguard and support postgraduate education" (Kalman, 2013, p.7, authors' translation). Conceptualizing a doctoral program as a milieu is indicative of the need to "combat the isolation of doctoral research", enhance the quality of knowledge production and reduce attrition rates (Bowen and Rudenstine quoted in McCloskey, 1993, p. 361; Walker et al., 2008). It is also at the heart of dialectic nature of learning and the development of the student towards a researcher. Social isolation, especially in the beginning of one's studies can be disorienting and depressing and is viewed as loneliness (Hockey, 1991). In any event, the model of the "lone scholar" has been shifting towards a more collaborative model. Pilbeam and Denyer (2009) find that doctoral students in a UK management school tend to form cohesive groups. Strong ties within these groups facilitate the flow of both instrumental and expressive knowledge.

Taking a collaborative approach to doctoral education necessarily focuses on the qualitative contingencies of processes such as student supervision, courses, seminar attendance, as well as structures such as institutional rules and norms and the larger bureaucracies in which these communities find themselves operating. A focus on the community perspective of doctoral programs emphasizes the participation of the doctoral student in the postgraduate research milieu: that they not only be able to participate in the community, but also constitute a part of it (Kalman, 2013). Walker et al. (2008) remark that very few individuals flourish by working in isolation and emphasize the salient role of intellectual community as a vehicle for the development of scholars.

Having said this, the concepts of "(intellectual) community" (Walker et al., 2008) and "(research) environment" (for example, Kalman, 2013) are slippery and multidimensional and thus defy a facile definition. These notions have also been expressed in the literature as "contexts" and also "networks" (Baker and Lattuca, 2010). Our own research has shown that at least one Swedish university (Linnaeus) differentiates between "(research) environments" and "(research) groups"; the latter are smaller than the former (Broberg, personal communication/interview March 3, 2017).

In this report, we focus on the concept of environment, which we relate to the concept of community. We view both of them as dynamic and powerful heuristics, indeed lenses that when applied to doctoral education may reveal the multiple dimensions that

remain opaque when the emphasis is on doctoral education components such as number-of-students or time-to-degree.

We view environments as the collection of informal and formal arrangements in the doctoral research education setting that allow individual scholars to work together towards the production of knowledge. The environment encompasses actors and structures that is, doctoral students, junior and senior researchers embedded in the institutional contingencies, rules, regulations and resources of the universities in which they study and work. Environments are collections of practices and meeting places in which knowledge, information and mentoring as a reciprocal process take place. Furthermore, 'complete' environments are considered to integrate research, education, and external relations (Linnéuniversitetet, 2017). In practical terms, doctoral research education environments may be the disciplines (which are the administrative units responsible for the degree programs) or even research centers or fora which may be the umbrella structures under which doctoral students conduct research.

We understand environment to be a concept related to that of (intellectual) community in substance, but a broader one in the sense that an environment may consist of several intellectual communities. Whereas an environment includes all the different components of doctoral education, a community has a distinct focus on the social interactions that bind the inhabitants of the environment together. Both are relational, network-like concepts, and like networks, they are not *a priori* defined. Like networks, they are more than the sum of their parts.

In partly adapting the characteristics of "intellectual community" outlined by Walker et al. (2008), we argue that regardless of the discipline or institution of higher education, doctoral research education environments share certain attributes. First, they have a shared purpose, defined as a shared "commitment to help students develop into the best scholars possible so that they, in turn, may contribute to the growth and creation of knowledge" (Walker et al., p. 125). Delamont, Atkinson and Parry (1997) further argue that beyond the production of knowledge, the pedagogic continuity occurring in doctoral education ensures the production of normal science and thus enhances the stability of science. Notably, the authors argue that in social sciences, the groups in which academic knowledge is transmitted are as a rule much smaller than those in natural sciences.

Second, the environment is diverse and multigenerational. On the one hand, recruiting scholars from diverse backgrounds encourages the emergence of multifaceted perspectives and ideas (Walker et al., 2008). On the other hand, a multigenerational milieu ensures sustainability through research continuity. This means that the entire chain of

researchers, from students, to junior, senior researchers and up to professors is uninterrupted (Olsson, 2016). Environments with a few doctoral students and a couple of professors close to retirement age would face a challenge in sustaining a research dialogue. This in turn would have repercussions for recruitment of doctoral students and staff, creating a vicious circle. Delamont, Atkinson, and Parry (1997) point to the idea of this chain of succession and sequential continuity as a factor more salient to a discipline than critical mass that is, sheer number-of-doctoral-students.

A third attribute of doctoral education research environments is flexibility and forgiveness. Walker et al. (2008) argue that doctoral students must have the literal and figurative space to reflect on and try new ideas. The physical (and part of the figurative) space is part of the infrastructure of Swedish institutions of higher education as employers. Doctoral students are employees with a regular salary for a guaranteed period of time so research is not something that one does on the side. What is more, the communal meeting spaces (break rooms and kitchens) common in all workplaces in Sweden, provide informal meeting places for doctoral students and faculty members to meet and (perhaps unexpectedly as well as) organically exchange ideas, knowledge, and information. A possible outcome of trying a new idea might be failure, and doctoral students must feel safe enough to take intellectual risks and perhaps fail.

The fourth attribute of a doctoral research education environment is generosity. Walker et al. (2008) argue that a vibrant intellectual context is characterized by civility, respect, and generosity. It is only in an atmosphere of civility and respect that doctoral students feel safe to express and develop their ideas. Finally, the generosity extended to doctoral students and junior researchers by more senior researchers in terms of contacts, opportunities, and networks plays an important role to the transition between a student and a scholar. What is more, it fosters a sense of belonging and togetherness.

To these four attributes outlined by Walker et al. (2008), we add leadership, a crosscutting aspect of doctoral education research environments. The decentralized administrative practices in Sweden coupled with the extreme collective decision making mean that decisions affecting the four aspects of the doctoral research education environment are made within the environment itself. A successful intellectual leader, be it head of discipline or center director, must necessarily foster inclusiveness and intellectual freedom while promoting a shared purpose and a sense of togetherness.

Method and Data Collection

With these attributes as a departure point, we developed a set of practices that ideally would be followed by doctoral research education environments in order to be dynamic

and vibrant scholarly communities. We then considered the implications of these practices for small environments. The data we collected in order to arrive to this set of practices consisted of document analysis supplemented by interviews.

Documents included internal evaluations; material from the Swedish Higher Education Authority and the Swedish Council for Higher Education (legal framework, guidelines for evaluation, completed evaluations); university web sites, and peer-reviewed articles. The latter emerged through searches in Primo, Google Scholar, Scopus, SwePub and ProQuest social science (ERIC and sociological abstracts) with key words in English and in Swedish. What is more, we searched *Studies in Higher Education* and *Högre Utbildning* by hand for relevant articles. Extant research provided the background and the theoretical anchor of our study. We then analyzed the remainder of the material — which was of a decidedly more empirical nature — for themes from which we could glean and synthesize a set of (best) practices.

Based on the objectives of doctoral education set forth by the Swedish Council for Higher Education (UHR) and outlined in the next session of this report; the evaluations conducted so far by UKÄ, and extant literature we have summarized several practices in table 1 below. We utilized this table as a guide when conducting interviews. We also used these interviews to test, adjust, and add features to this table.

The sampling of our interviewees was purposeful rather than random. This is due to the fact that random sampling techniques would not serve the purpose of this report, which was to identify best practices rather than conduct a statistical analysis. What is more, the interviews were meant to supplement the document analysis. The selection process was nonetheless systematic. First, we used the evaluations by UKÄ to identify any successful small environments. As a result, we interviewed the discipline of history of religion at Lund University. Small though that research environment might have been, it is still operating in a flagship Swedish institution of higher learning. In order to get feedback from environments in newer universities more comparable to Mid Sweden University, we contacted individuals via email. A list is as follows:

- Mid Sweden University, the Faculty of Human Sciences (all personnel)
- Swedish Higher Education Authority (Evaluations Department)
- The Association of Swedish Higher Education (Central office, Evaluators)
- The Swedish Association of University Teachers and Researchers
- The Union for Professionals
- The Young Academy of Sweden
- Personal and professional contacts at universities around Sweden as well as University in Stavanger (Norway) and University of Eastern Finland
- Directors of Studies in Social Sciences Departments at

- o Stockholm University
- o Gothenburg university
- o Linköping University
- o Lund University
- o Uppsala University
- o Halmstad University
- o Karlstad University
- o Kristianstad University
- o Mälardalen University
- o Dalarna University
- o Umeå University
- o Luleå University of Technology
- o Örebro University
- o Södertörn University

The result was a dynamic communication process that belies the total number of interviews we conducted. Some universities (for example Stockholm University) replied to say that they really did not have any small environments. As a result of another email response, we interviewed the Director of Doctoral Studies at Malmö University. This allowed us to capture the state of doctoral education in a nascent context and juxtapose it to Lund University, though both institutions are located in the south. In order to have the view point of a university similar to Mid Sweden University, we reached out to Karlstad and Linnaeus Universities, and as a result we interviewed the doctoral education administrator at Linnaeus. We also had email exchange with the University of Eastern Finland, which is a multi-campus university much like Mid Sweden and Linnaeus. The interviews with Lund and Malmö Universities were face-to-face at Lund and Malmö respectively. We interviewed the respondent at Linnaeus on the phone, while the communication with the University of Eastern Finland was carried out through email with a doctoral student in environmental politics in the department of historical and geographical studies. The interviews were semi-structured and recorded. In subsequent email exchanges, respondents sent further textual material they deemed important to the writing of this report.

The document analysis and the interviews partly resulted in Table 1, which is the synthesis of best practices for doctoral education research environments in general, regardless of size. We present these in the next section while we continue our discussion by taking up challenges specific to small environments.

Best Practices

Bergnéhr (2013) reports that institutionalized support in the research milieu and particularly when it comes to supervision of doctoral students enhances the quality of studies and increases possibility that the doctoral student fulfils the degree requirements, which is the criterion for quality assurance together with the relative satisfaction of the doctoral student with the program. The objectives of the doctoral research education according to the Swedish Council for Higher Education's *Qualification Ordinance* are:

- Demonstrate the capacity for scholarly analysis and synthesis as well as to review and assess new and complex phenomena, issues and situations autonomously and critically
- Demonstrate the ability to identify and formulate issues with scholarly precision critically, autonomously and creatively, and to plan and use appropriate methods to undertake research and other qualified tasks within predetermined time frames and to review and evaluate such work
- Demonstrate through a dissertation the ability to make a significant contribution to the formation of knowledge through his or her own research
- Demonstrate the ability in both national and international contexts to present and discuss research and research findings authoritatively in speech and writing and in dialogue with the academic community and society in general
- Demonstrate the ability to identify the need for further knowledge and
- Demonstrate the capacity to contribute to social development and support the learning of others both through research and education and in some other qualified professional capacity (2014, n.p.)

These objectives are not uncontroversial. For example, Hägerland (2011) finds that three different supervisors in Humanities at Lund University had three different opinions regarding the objective according which doctoral students must be able to contribute to the international research debate through participation in conferences. One advisor considered it an unrealistic requirement; a second a necessary strategy while the third thought it was an evident feature.

The set of practices towards a dynamic (i.e. not static) doctoral research education environment from the perspective of the doctoral student. We broadly identify practices that enhance the student's being a part of the environment on the one hand, and on the

other, practices that enhance the experience of the student's participation in the environment. The difference between these two categories is the degree of influence the student may have on the execution and success of these practices.

The value of collaborations, internal and external is hard to overestimate. A doctoral student is not only encouraged, but also expected to work with other faculty members within the university, but also be part of the democratic decision making processes and structures by serving on various committees. The latter was emphasized by the professors of history of religion in Lund (Hornborg and Qvarnström, personal communication/interview, February 21, 2017) as way to socialize the student into the broader operations of the university. This and the sense of community within the discipline are facilitated by the doctoral students (as well their supervisors) living in the area and contributing to the everyday life at the office (Svensson, 2016).

Having an active seminar series is a salient factor for the fundamental operations of a research environment because they provide an outlet for the discussion and debate of research results. (J Hermansson in I-B Hermansson, 2006). The flexibility of seminars in terms of forum and format is considered an advantage and the criterion becomes student needs. Olsson (2016) reports transdisciplinary seminars under a center umbrella as a positive feature of the history of religion doctoral education at Lund University. A sense of community may further be fostered through the mentoring of junior students by more senior ones (Walker et al., 2008). At the same time, doctoral students are expected to participate in international conferences, as well as professional and networks and ideally spend a period of time at a university abroad or at least be able to take classes at another university. When the pool of disciplinary funds is not adequate to cover this, the doctoral students are expected to apply for university or even external funds (see for example, Johansson, 2016). Finally, an important component of doctoral education is the dissemination of research through outreach activities (Olsson, 2016; Hornborg, personal communitcation /interview, 21 February, 2017).

The aforementioned practices constitute activities which enhance the interaction between the doctoral students and their environments, providing channels for them to be active part of these environments. The doctoral students with their agency in this practices have the potential to influence and shape their milieu; the milieu may be (to a certain extent) molded by the actions of the PhD students.

Conversely, the next set of practices are more a structural part of the environment and the doctoral student becomes the recipient, a participant in the milieu, rather than having the ability to directly affect it through these practices. Having said this, these set of practices are crucial for the success of the doctoral student. These issues come up in the evaluations conducted by UKÄ (see for example Johansson, 2016; Olsson, 2016;

Svensson, 2016; Söderström, 2016) as well as in the interviews we conducted with Lund, Malmö and Linnaeus Universities. Namely, time-to-degree tends to be within the prescribed limits when there is enough time allocated for student advising as well as formalized routines for the follow-up of the individual plan of study, change of supervisor, the guidelines on independent studies (läskurs) and the coordination of faculty-wide classes. Malmö University has treated PhD students as a cohort in the past in an attempt to coordinate PhD classes for all incoming students with a clear schedule.

What is more, life after the defense is important as well, whether the doctoral student will work in academe or elsewhere. Formalized routines when it comes to career opportunities and clear promotion can facilitate the job hunting process, as will clear guidelines regarding the pedagogy course. Because it is a prerequisite in order to teach at higher education, there must be a mechanism to integrate it into doctoral education.

Finally, for a doctoral research education research environment to be successful, it must be sustainable. In order for it to be sustainable, there must be research continuity that is, there must exist a chain from doctoral students up to professors. Research discontinuity is harmful not only to the department in the present tense but it also creates a vicious circle which weakens the ability of the environment to recruit qualified researchers.

From the documentary evidence and the interviews, we further conclude that the intellectual leadership of the environment is of particular salience. A balance between micromanagement and nonchalance is important to create an environment in which doctoral students are allowed to express themselves, are allowed to fail and flourish, while at the same time are supported in the pursuit of knowledge production.

Table 1 Practices for a dynamic doctoral research education environment

Being part of the environment		Participating in the environment		
Internal Collaborations	**External Collaborations**	**Time-to-degree**	**Life after the defense**	**Sustainability**
Being an active member of networks within the university	Cultivating relationships outside the university	Formalized routines: • follow-up of plan of studies; • change of supervisor; • independent studies (läskurs); • formalized coordination of faculty-wide PhD classes	Being aware of, and prepared for, career opportunities after the defence; support in career planning and portfolio building	Research continuity
Applying for internal funds	Taking part in (international) conferences, professional organizations and networks	Enough time allocated to supervisors, regular supervision	The ability to take a course in pedagogy and established routines on whether it is obligatory or not.	Balanced leadership
Cooperating with adjunct disciplines	Inviting international researchers		Clear promotion guidelines	
Being active in the discipline's (or research center's) seminar series (doctoral student and other faculty members)	The ability to study as an exchange PhD student at a university abroad			
Being around: living in the area and being at the office regularly (doctoral student and supervisor)	Ability to take classes at other universities			
Serving on committees	Dissemination of research to the society at large: outreach and external relations			
Mentoring more junior students				

Small Doctoral Research Education Environments: Does Size Matter?

It is not uncommon for doctoral programs in several disciplines to be small in the Nordic countries. Grevholm (2011) states that in mathematics education, programs may run with one or two faculty members and one student. Several factors contribute to the small size of postgraduate research environments in general and in Sweden in particular. Notably, financing for the bulk of doctoral studies is provided the university. This means that only very few doctoral students can be admitted every year after a very competitive selection process. This financing scheme disproportionately affects disciplines without industry connections or research application possibilities compared to disciplines which might be able to attract external financing of doctoral students. Since the funding sources are generally internal, the ranking of the university underpinning access to resources is salient to the recruitment of doctoral students. Even though Swedish universities are not explicitly ranked in the fashion of universities elsewhere, there are implicit tiers, mainly drawn along the broad lines of the older, flagship establishments and the newer universities.

The factor of critical mass (Bowen and Rudenstine, 1992; Scott and Anstine, 2002) is one that, we argue, should refer to elements beyond just the number of doctoral students in any one discipline. The metaphor of critical mass can be envisioned as a network of road systems on which knowledge flows. This image takes into account the broader infrastructure of not only the discipline, which is the administrative unit where postgraduate studies take place, but also the department as well as the university as a whole. This is because institutionalized routines, established know-how, tacit knowledge, norms and rules-in-use, and even monetary resources can be tapped into and support the doctoral students. For example, doctoral students in psychology in the University of Gothenburg can apply for one of the many funds the university has in its disposal in order to finance their conference studies (Johansson, 2016). Consequently, doctoral education research environments should not be considered in a vacuum, but rather as a part of the university as whole. Therefore, the discussion of size should be, at least partly, conducted concomitantly with that of the ranking of the university in which they operate.

At the same time, the practices outlined in Table 1.1 hold regardless of the size of the doctoral education research environment. Carrying out these practices in small doctoral research education environments may be more a matter of shifting responsibility rather than anything else. For example, in larger doctoral programs the students may take advantage of networks already established whereas in smaller ones they may have to do

more of the legwork themselves. This is something, however, that may be advantageous to an active doctoral student as, *ceteris paribus,* it may be easier to make a difference in a smaller environment, where everyone's networks matter. Large structures and stablished institutional rules and norms, commonly tend to restrict individual agency.

These practices, especially the ones referring to the level of agency among doctoral students, are not wholly unproblematic. It would seem that the doctoral student is expected to be "the finished product" right from the beginning of their doctoral education. Having an established academic network presupposes that the doctoral student has published, has attended conferences, and has forged academic relationships prior to the onset of their studies. The implications are twofold. First, this would appear to disqualify a less academically mature student from being recruited in doctoral studies. Second, the amount of expectations universities lay on the feet of doctoral students seems to constantly increase in amount and broaden in scope while they may lack clear articulation and attention in doctoral supervision.

A diverse offering of classes at the doctoral level is facilitated by a large doctoral program with enough students to run such classes (within the discipline or across disciplines) on a regular and predictable fashion. This does not mean that students of small doctoral research education environments have to rely on independent studies for their coursework. Strategies used to combat this malaise have ranged from coordinating recruitment of doctoral students so that they form a cohort (Malmö and Linnaeus Universities) to transdisciplinary cooperation within the university as well as external cooperation with other universities. One issue that came up in the interviews was the fact that certain universities offered classes at a fee for external students and that drained the resources of small environments.

Indeed, the issue of financial resources is at the heart of any discussion regarding vulnerability of small doctoral research education environments. Not surprisingly, lack of funding has negative effects from the recruitment of doctoral students, to their studies, their successful completion and the survival of the environment. To combat this, the single overarching strategy that emerges is the pooling of intellectual, relational, and monetary resources. For example, students of small doctoral programs need the intellectual debate with adjacent disciplines in the umbrella of a center (Holmborg and Qvarnström, personal communication/interview, 2017). This becomes a way to broaden the research environment without recruiting more students. Such activities as career advice or seminars or workshops focused on topics like publishing or job searching are suitable to be run as collaborative events under the aegis of more than one discipline.

Attempts to artificially force growth to doctoral research education environments by consolidating them in one administrative does not seem to be the answer, though we

do not have sufficient data to assess this. An email interview with a doctoral student at Easter Finland reveals loss of identity of the doctoral student and disengaged supervisors (Donner-Amnell, personal communication /email, 2017).

Conclusions and Future Research Possibilities

Clearly, bigger is not necessarily better, or rather, a small doctoral research education environment is not necessarily a bad one. Visionary leadership, flexibility, and pooling of resources can imbue quality to doctoral education regardless of the sheer number of doctoral students enrolled in the program. The practices we identified in the research conducted for this report apply to doctoral education, regardless of the size of the environment. It is the case, however, that collaborative arrangements and relational aspects are even more pronounced in small environments in comparison to larger ones. We argue that a formal social network analysis of small doctoral research education environments might reveal strengths and weaknesses in collaborations as well as map extant collaboration constellations within these environments.

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