DURE15

Dalarna University
Research Evaluation
2015

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DALARNA
UNIVERSITY

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Preface

Dalarna University (DU) is located in a region with a high gross regional product and the fourth highest export value per inhabitant in Sweden. The University plays an important role in providing well-educated co-workers for the core businesses of the region as well as for its infrastructure. The research profiles at DU are critical, both as the scientific basis of our degree programmes as well as for developing knowledge that is essential for the success of the public, private and non-profit sectors in Dalarna.

A university's constant striving for high quality in all its operations must include systematic work on continuous improvement. One important tool in this quest is a system evaluation aimed both to identify areas of strength and to help us prioritize areas that we need to develop further. DU has evaluated its research with the help of external experts before and intends to do so regularly in the future. The results of the present evaluation (DURE) will be discussed and form a vital part of our future development strategies.

DU has recently adopted a new vision: We create open pathways to knowledge for a good society. In the Vision we also state that we pursue research in close collaboration with our world, thus collaboration with external partners is an essential element in DU's vision. We have therefore emphasized the assessment of these collaborations in the present evaluation along with the research environment and infrastructure, research networks, productivity, quality impact and relevance as well as the vision and future plans of the research profile.

DURE was carried out by six expert panels, one for each research profile. All the panels had either one or two international panelists. We were deeply impressed by the commitment of all the experts and are grateful for their generosity in sharing their advice and recommendations.

Finally I would like to thank all colleagues, external partners and other contributors for the hard work they have put into this evaluation. It has been inspiring to see the results. This evaluation is essential for the progress and development of our university.

Marita Hilliges
Vice-Chancellor
Dalarna University

Introduction

The present research strategy at Dalarna University (DU) concludes in 2015, and a new strategy based on the University's new vision will be decided by the University Governing Board. An important part in the development of a research strategy is the evaluation of the six research profiles which form the basis of the present-day strategy. The idea behind this more comprehensive assessment of our research was initiated at the same time as the strategy was approved. The decision was made that a yearly evaluation would take place in conjunction with the annual report, and that after two years a more comprehensive evaluation would be conducted that involved external experts. Evaluation of research has become more important within Swedish universities over the last couple of years. The reasons for this may differ between universities, but an important factor has been the focus on evaluation within Swedish higher education and the clear intention by the Government to assign financial resources based on quality, as assessed by external examiners.

Background Information About Research in Higher Education[1]

In Sweden, there are nearly 50 institutions that offer higher education in various forms; of these, 12 are 'old' universities and just over 20 are 'new' universities.[2] The majority of these 50 institutions are public authorities, subject both to the same legislation and regulations as other public authorities in Sweden, as well as to the particular statutes, ordinances and regulations relevant to the higher education sector.

Research and third-cycle courses and programmes receive substantial funding directly from the Government and by way of contributions and revenues from external resources. In addition to the direct funding, the Government also channels resources through research councils and other public agencies that fund research. Since the end of the 1990s, the proportion of external sources has increased, while the proportion of direct government funding has decreased. For DU, the proportion of external sources for the financing of research and third-cycle courses and programmes is about 50 percent (2014).

There are major differences in terms of research funding between the 'old' and the 'new' (post 1977) universities. About 67 percent of the revenues of the old universities are used for research and third-cycle courses and programmes, while for the new universities it is about 27 percent (DU 2014, 17 percent).

1 Based on *Higher education in Sweden – 2014 status report*. Swedish Higher Education Authority, 2014 (http://english.uka.se/statisticsfollowup/annualstatisticsonhighereducationinsweden.4.7ff11ece146297d1aa652b.html)

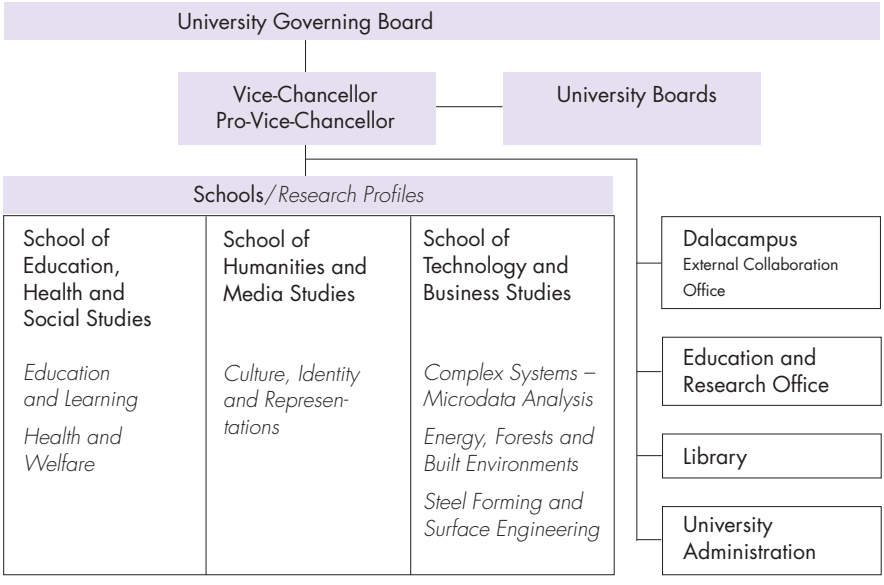
2 There are also three independent higher education institutions (two old and one new) and a number of small independent education providers that have the right to award first-cycle degrees.

Dalarna University

Figures (2014)

- Dalarna University was formally founded in 1977. At present there are three Schools – the School of Education, Health and Social Studies; the School of Humanities and Media Studies; and the School of Technology and Business Studies.
- In total there are 71 programmes including 22 at the second-cycle level. In addition there are some 1 000 single-subject courses.
- There are 16 500 undergraduate and graduate students corresponding to 6 085 full-time students. Around 12 000 students are enrolled in web-based courses. Just fewer than 900 are international students.
- There are 800 employees, including 86 professors and associate professors.
- The annual turnover is 600 million SEK, 17 percent of which is allocated for research.
- External funding accounts for 46 percent of the total funding for research.
- Postgraduate education includes 96 doctoral students.

Organization



Research at Dalarna University

Organized research was initiated in the mid-1980s in the fields of Materials Science and Solar Energy. Research in Social Sciences, with particular focus on Transport Studies, began in the 1990s, and among other outcomes led to the formation of a highly qualified research team in Economics. By the end of the 1990s, systematic work was in place to build up research in conjunction with the degree programmes that lead to a professional qualification. Research in Educational Sciences in conjunction with the Teacher Training programmes also stimulated the development of research in the Humanities. With the integration of the University College of Health Sciences at the turn of the millennium, research in the fields of Health Sciences, Sport Sciences and Welfare was able to develop and expand.

To begin with, the research was mostly initiated by solitary researchers or loosely composed research groups. This changed radically with the implementation of the *Research Strategy 2009–2011*, which brought together many of the researchers into a limited number of multidisciplinary research areas with a clear focus, a long-term research agenda and financial strategy, major significance for the university's courses and programmes and not least well-developed collaboration with external partners. The *Research Strategy 2011–2015* emphasized this turn even more, with the intention to establish six Research Profiles, all with the potential to produce excellence in research.

Research profiles

The research involves researchers from many different disciplines at the University as well as researchers from other higher education institutions at both the national and international levels. The research profiles maintain a high level of collaboration with private business and industry as well as with public institutions.

Each of the research profiles is hosted by a specific School at the University and is led by a research leader appointed by the Vice-Chancellor. The research leaders are responsible for their own budget. They organize the research within their profile and apply for internal funding based on the annual operational plan and the annual report.

The University's strategy has proven to be difficult for some researchers – prioritizing a particular profile may result in less funding for those researchers who cannot or will not adapt. However, the strategy has been very successful in terms of scholarly productivity and the opportunity to finance research projects from external sources.

The six multidisciplinary research profiles at Dalarna University 2015:

Complex Systems – Microdata Analysis
Culture, Identity and Representations
Education and Learning
Energy, Forests and Built Environments
Health and Welfare
Steel Forming and Surface Engineering

About DURE

The primary goal of DURE was to support further development and strengthening of the research profiles; it was also to assess activities and quality from a national and international perspective. A further goal was to use the evaluation as part of a learning process for future national evaluations including assessment of both relevance and impact. In the previous research strategy (2009–2011), a similar evaluation was conducted but with only one external expert. One expert was not enough for an evaluation of the total profile, which led to the suggestion that future panels comprise at least three experts. Visits to Mälardalen University and Halmstad University were important from an inspirational standpoint and their evaluations have served as models for DURE.

The evaluation included the first two years of the present research strategy (2012–2013). However, in order to incorporate the publication production in that evaluation, the bibliometric analyses include three previous years – in total five years, from 2009 to 2013.

Project organization

A steering group was appointed in March 2014 that included:

Kerstin Öhrn, Vice Rector (Chair)
Thomas Sedelius, Dean of the Faculty Board
Lars Pettersson, Professor in History and Immediate Past Dean
Lars Rönnegård, Professor in Statistics
Dick Åhman, Development Coordinator
Kristina Lönn, Bibliometric Coordinator
Karin Dahlgren, Librarian (September–November)

Project support:
Håkan Attius, Panel Coordinator, University of Gävle
Mandy Bengts, English Text Reviewer
Märet Brunnstedt, Event Coordinator
Peter Sjögårde, Bibliometric Support, Royal Institute of Technology
Jan Svärdhagen, Web Coordinator
Eva Kvarnström, Graphic Designer and Final Report Editor

Method of evaluation

The evaluation was conducted with six expert panels, one for each research profile. All panels consisted of three experts, both women and men, and at least one person from outside of Sweden. Because all documents were written in Swedish, all international experts came from the Nordic countries. In addition there was a panel coordinator who participated to some degree in all panels. The panelists were provided with written background materials and made a three-day visit to the University, where they

interviewed staff, doctoral students, undergraduate students and external partners and where they also visited the different research facilities.

The review should consider the different circumstances, background and requirements that are particular to each profile. The structure for assessment included one part that was common for all profiles and one part that was profile-specific. The profile-specific part was determined in collaboration with the research leaders. The profiles are very different and there was no intention to compare them.

Background materials

Some of the background materials made available to the panels were compiled from existing documents. These included annual operational plans, annual reports and a list of published articles, books and conference reports by all researchers in the profile. These documents are produced on a yearly basis and are discussed with members of the faculty in conjunction with applications for internal funding. In addition, the research leaders formed a vision for the future and a description of the collaboration with one partner, who was also available for discussion during the visits to the University. A bibliometric analysis was performed in collaboration with the Royal Institute of Technology. All necessary documents were sent in advance by both email and regular post. In addition, an internet portal was created for each panel.

Expert panels

A panel of three was considered to be sufficient and cost-effective. The research profiles were asked to nominate external experts in dialogue with the steering committee. The chair of the steering committee sent invitations to the nominated external experts asking them to take part: when an external expert was unable to accept the invitation, new panelists were suggested until all panels had been established. The steering committee proposed and then also invited a chair for the panel. The panels consisted of seven women and eleven men: four from Norway, three from Denmark, one from Finland and ten from Sweden.

The six expert panels are presented on the following pages.

Complex Systems – Microdata Analysis
Stina Algotson, Chief Executive Officer, The R&D Fund of the Swedish Tourism & Hospitality Industry
Lars Hultkrantz, Professor, Örebro University (Chair)
Christer Carlsson, Professor, Åbo Akademi University

Culture, Identity and Representations
Karen Risager, Professor Emerita, Roskilde University
Jonas Stier, Professor, Mälardalen University (Chair)
Ingemar Elander, Senior Professor, Örebro University

Education and Learning
Owe Lindberg, PhD, Örebro University (Chair)
Ingegerd Tallberg-Broman, Professor, Malmö University
Svein Lorentzen, Professor, Norwegian University of Science and Technology

Energy, Forests and Built Environments
Anne Grete Hestnes, Professor, Norwegian University of Science and Technology
Svend Svendsen, Professor, Technical University of Denmark (Chair)
Bengt Hillring, Professor, Hedmark University College

Health and Welfare
Marit Kirkevold, Professor, University of Oslo
Per-Olof Sandman, Visiting Professor, Karolinska Institute
Stina Johansson, Professor Emerita, Umeå University (Chair)

Steel Forming and Surface Engineering
Uta Klement, Professor, Chalmers University of Technology
Christer Persson, Professor, Chalmers University of Technology (Chair)
Niels Bay, Professor, Technical University of Denmark

University visits

The panels made a three-day visit to the University – two panels in December and four panels in January (table 1). Two panels visited during the same week; otherwise, visits took place on different occasions. The visits started with an informal dinner on Monday night to ensure that everyone had received all necessary information. On Tuesday morning, the first meeting included an information session about higher education in Sweden. This was hosted by the Vice-Chancellor or the Pro-Vice-Chancellor and was followed by an introduction to DURE by the chair of the steering committee. The research leaders provided an overview of the profile, and finally there was a joint lunch for all participants. Each profile organized a detailed schedule for the afternoon and the upcoming two days for the panels in collaboration with the panelists. The visit was to include interviews with the Pro-Vice-Chancellor (responsible for research at the University), the Dean and the Head of the respective School as well as a meeting with one external partner. The visit could include meetings with researchers, doctoral students and undergraduate students. A visit to laboratories of interest was included. Specific times for the panels' internal meeting and work were reserved. Tuesday night was reserved for a formal dinner with the Vice-Chancellor. On Thursday afternoon before leaving, the panels gave an oral report to the steering committee. The panels then had three weeks to finalize their written report.

December 9–11	December 16–18	January 13–15	January 20–22	January 27–29
Complex Systems – Microdata Analysis	Steel Forming and Surface Engineering	Culture, Identity and Representations	Health and Welfare Education and Learning	Energy, Forests and Built Environments

Table 1. Time schedule for the University visit

Bibliometric studies

A bibliometric analysis was performed as a basis for the assessment of research production. There are shortcomings associated with bibliometrics because of the different traditions of the publications in the research profiles. However, the analyses were conducted according to other bibliometric studies, and the panel experts are familiar with the traditions of their respective publications.

The data sources used for the analysis were DiVA, Web of Science (Science Citation Index Expanded [SCIE]), Social Sciences Citation Index (SSCI), Arts & Humanities Citation Index (AHCI), Conference Proceedings Citation Index - Sciences (CPCI-S) and Conference Proceedings Citation Index - Social Sciences & Humanities (CPCI -SSH), SCIE, SSCI, AHCI from 1980 and CPCI-S and CPCI-SSH from 1990.

DiVA is a publishing system for research and an open digital archive for publications produced by researchers and students at DU. It is mandatory for researchers employed at DU to register any publications in DiVA.

Web of Science is a bibliographic database from Thomson Reuters, Inc.

Norwegian list documents publication channels such as book publishers, academic journals and series to estimate scientific impact. Each channel is evaluated according to certain criteria established by the Norwegian Association of Higher Education Institutions. It is divided into two levels: level 1 contains 80 percent of the publication channels in a given field; level 2 contains, approximately, the top 20 percent publication channels in the same field.

The statistics include both *full counts,* i.e. each publication/citation is counted as 1 regardless of the number of authors co-authoring the publication, and as *fractional counts*, i.e. the author's fraction of each publication/citation is counted (1/number of authors). A unit's fraction is then calculated by dividing the number of authors affiliated to the unit by the total number of authors. In this analysis the researchers who belong to more than one research profile have been fractionalized so that each profile is counted for a part of the publication. Field normalized citation rate and journal's field normalized citation rate are presented as full counts and fractional counts. Co-publishing indicators are presented as full counts.

Field normalized citation was used to compensate for the different publication patterns in the profiles. It normalizes for the variation in citation pattern. Each publication is compared with a reference group of publications, i.e. publications within the same Web of Science subject category, published the same year and of the same document type (article or review). This is done by dividing the number of citations to each publication with the average number of citations for the reference group of publications, which results in a normalized citation rate. The indicator expresses the average citation rate of the unit's publications. According to this definition the average normalized citation rate of all records in the Web of Science database is 1. A citation rate above 1 indicates that the set of publications is cited above world average, e.g. a citation rate of 1.2 indicates that the publications are cited 20 percent above world average.

Journals' average field normalized citation rate. This indicator shows the citation impact for the journals in which the unit has published. It is calculated as an average of the field normalized citation rate of the set of journals in which the analyzed unit has published. If the unit has published multiple articles in the same journal, then the journal's citation rate is counted multiple times. The journal indicator is normalized for field differences by the same principles as the field normalized citation rate. For a publication published in the year x, the value of the journal is based on the years x–7 to x–2.

It should be noted that in the citation study, the number of documents is sometimes below the mark for statistical certainty. Despite this, the results are included as an indicator of size.

Self-citations and citation window: For all citation statistics, self-citations have been excluded and are defined as citations where any of the authors' names are the same in the citing and cited document. Citations have been counted with an open window until June 2014; hence, all citations from documents registered in the database at this point in time have been counted.

Time period and publication types: For the count of publications and citations, the years 2009-2013 have been included in the statistics and publications of the document types "Article", "Proceedings paper", "Letter" and "Review".

The field normalized citation statistics include "Article" and Review" from 2009-2012.

The journals' average field normalized citation rate and international co-publishing include "Article" and "Review" from 2009-2013.

Panel report template

The panel reports are not summarized because no attempt has been made to compare the different profiles. The review should focus on the quality and production within each profile, the environment available for each researcher, and the requirements or prerequisites for research activities. The written report should include:

1 **Summary**
   A brief executive summary
2 **Environment/Infrastructure**
   Assessment of the conditions for the profile including the working environment for the researchers and the doctoral students, the relations to the University's programmes and courses, the Head of School and the University Board
3 **Research Network**
   Assessment of the profile's national and international networks
4 **Third-Stream Activities**
   Assessment of the profile's collaboration with external partners
5 **Productivity**
   Assessment of the profile's scientific production
6 **Quality of Research**
   Assessment of the quality in a comparative perspective and the capacity to attract external funding

7 **Impact and Relevance**
Assessment of the impact and relevance in a broad perspective within the discipline, in relation to the programmes/courses as well as to external partners

8 **Vision for the Future**
Assessment of the profile's vision and the opportunities to achieve the goals as defined in the profile's vision

9 **Other Issues**
Assessment of any other issues the panel wants to highlight

10 **Overall Assessment**
A summary of all aspects above according to a three-graded scale: low, medium, high

11 **Recommendations for the Future**
Suggestions for action to develop the profile

COMPLEX SYSTEMS – MICRODATA ANALYSIS

The main focus of research is the study of complex processes both in business and in industry, as well as in social constructions. The main thematic focus is on transport, infrastructure, and retail and tourism.

Central to this research profile are the creation and adaptation of tools that can analyse these processes through the development of advanced microdata analysis methods and techniques. Microdata analysis is a multidisciplinary field that includes artificial intelligence, decision support systems, resource allocation, data modelling, experimental design, focus groups, geographic information systems, visualization, measurement techniques, optimization, prognoses, simulation and statistical inference.

Research is conducted in close collaboration with regional and national companies and organizations. This collaboration, along with the competence of personnel within the research profile, forms the foundation of research-level courses in microdata analysis and the Master's in Business Intelligence, the aims of which are to educate students so that they have the specialist skills for work with decision support at the managerial level within companies and other organizations.

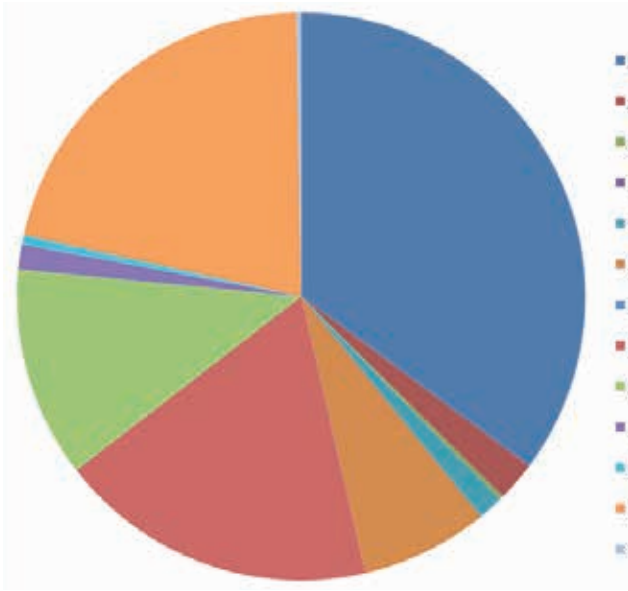
Complex Systems – Microdata Analysis Basic Facts

	2012	2013	2014
Professors			
Number of individuals	12	10	9
Number of full-year employees	8.7	7.2	5.3
Female/Male	1/11	1/9	1/8
Visiting Professors			
Number of individuals	0	0	0
Adjunct Professors			
Number of individuals	0	0	0
Associate Professors			
Number of individuals	6	6	7
Number of full-year employees	4.4	6	7
Female/Male	1/5	1/5	1/6
Doctors			
Number of individuals	19	17	19
Number of full-year employees	17.2	15	18.5
Female/Male	6/13	6/11	6/13
Licentiates			
Number of individuals	2	2	1
Number of full-year employees	2	2	1
Female/Male	1/1	1/1	0/1
Doctoral Students			
Number of individuals	28	29	23
Female/Male	13/15	16/13	13/10
Doctoral Theses			
Total number	1	2	6
Licentiate Theses			
Total number	4	5	3
Funding (SEK, millions)			
Internal/External	13/12	12/11	13/8

Complex Systems – Microdata Analysis Bibliometric Profile

Publication Types

Data from DiVA 2009–2013

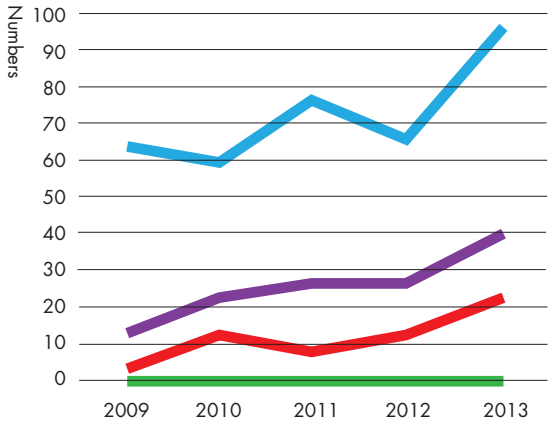


- *Article in journal, peer-reviewed 126*
- *Article in journal, not peer-reviewed 8*
- *Article in journal, review 1*
- *Article in journal, book review 0*
- *Book 5*
- *Chapter in book 26*
- *Edited book 0*
- *Conference paper, peer-reviewed 64*
- *Conference paper, not peer-reviewed 43*
- *Thesis, doctoral 5*
- *Thesis, licentiate 2*
- *Report 76*
- *Other academic publications 1*

Total 360

DiVA is a publishing system for research and an open digital archive for publications produced by researchers and students at DU. It is mandatory for researchers employed at DU to register any publications in DiVA.

Publication Trends



- *Publications in DiVA*
- *Level 1 publ. – Norwegian list*
- *Level 2 publ. – Norwegian list*
- *Articles in journal, peer-reviewed*

Norwegian list documents publication channels such as book publishers, academic journals and series to estimate scientific impact. Each channel is evaluated according to certain criteria established by the Norwegian Association of Higher Education Institutions. It is divided into two levels: level 1 contains 80 percent of the publication channels in a given field, level 2 contains, approximately, the top 20 percent publication channels in the same field.

Key Indicators

The number of publications in DiVA, full counts	360
The number of publications in DiVA, fractionalized	240.23
The mean number of annual publications in DiVA	72
The mean number of authors per publication in DiVA	2.57
The percentage of total publications at DU	16
The number of publications in WoS, full counts/fractional counts	68/33.1
The number of citations in WoS	155
The percentage of publications with at least one citation in WoS	53
The average field normalized citation rate in WoS	0.87 *
The percentage of publications among the top 10 percent most cited within the discipline in WoS	9 *
The percentage of publications among the top 25 percent most cited within the discipline in WoS	25 *
Journals' average field normalized citation rate in WoS	0.9
The percentage of publications that have been published in journals which are among the 20 percent most cited within the discipline in WoS	17
The percentage of internationally co-authored publications in WoS	32

**Based on a small amount of data and should be interpreted with care.*

Web of Science is a bibliographic database from Thomson Reuters, Inc.
The statistics include both full counts, i.e. each publication/citation is counted as 1 regardless of the number of authors co-authoring the publication, and as *fractional counts*, i.e. the author's fraction of each publication/citation is counted (1/number of authors).
Field normalized citation was used to compensate for the different publication patterns in the profiles. It normalizes for the variation of citation pattern.
Journals' average field normalized citation rate. This indicator shows the citation impact for the journals in which the unit has published.

Complex Systems – Microdata Analysis

Panel Report

STINA ALGOTSON, CHIEF EXECUTIVE OFFICER, THE R&D FUND OF THE SWEDISH TOURISM & HOSPITALITY INDUSTRY
CHRISTER CARLSSON, PROFESSOR, ÅBO AKADEMI UNIVERSITY
LARS HULTKRANTZ, PROFESSOR, ÖREBRO UNIVERSITY (CHAIR)

1. Summary

1. We think that Dalarna University (DU) has made a good choice in selecting "Microdata Analysis" (MDA) as its first main research profile.
2. The MDA profile has indeed great potential within DU's overall development strategy, but care should be taken so that it can develop into being a strong research profile; this cannot be achieved in two to three years. As such, a minimum strategic planning horizon of five years should be set. The DURE (Dalarna University Research Evaluation) is probably being conducted much too early.
3. We are concerned that MDA has not developed any clear, succinct methodology framework as a basis for the doctoral programme, for the building of interfaces to other research profiles at DU and as a basis for understanding the necessary skills that should be made part of the undergraduate and graduate programmes in preparation for the postgraduate doctoral programme.
4. We fear that the lack of support within DU poses a hazard to the sustainability of the MDA profile. We think that the main responsibility for better integration of MDA within DU sits with the "line of command" (Vice-Chancellor, Head of School, etc.). We believe that the root of the problem lies in the fact that the role of the MDA profile in DU's undergraduate education is yet unresolved. The extent to which DU can use the strong competence that exists within MDA to provide its students with a competitive edge in whatever profession they aim to pursue needs to be worked out.
5. We notice that MDA has not yet established a strategy that would define the vision and mission of the profile, its domain and its position within the academic community. This should describe what contribution DU wants to make in relation to what others are doing and how others are defining the field. An important part of such a strategy statement should be how DU wants to use the MDA profile to develop undergraduate education.
6. We notice that there is no international contact with other research groups within the MDA research field. It is, however, fair to note that a couple of the key MDA senior researchers have started to offer their research results to some key journals.

Contact with international research groups is essential for several reasons, not least for the development of the MDA research strategy.

7. A central issue that is unclear to us is the extent to which the MDA profile wants to conduct basic methodological research and "not just" apply existing methods; it is actually one of the key requirements of a doctoral programme that the core methodology is worked out and made operational in support of the research expected from the doctoral students.
8. A key element of the profile's potential strength is its collaboration with business, in particular within the three theme areas (Transport, Retail, Tourism). Priority should be given to further develop this.
9. Systematic work is needed to build and strengthen networking among the profile's doctoral students.

2. Environment/Infrastructure

We think that DU has made a good choice in selecting "Microdata Analysis" (MDA) as its first main research profile. In our "information society" and the emerging digital economy, numerous and quite often interacting systems produce "big data". Besides being "big" in terms of the four V's (volume, velocity, variety and veracity), "big data" also offers challenges in terms of being heterogeneous (coming in the form of numbers, text, audio, graphics, photos, streaming video, sensor data, etc.) and of being produced in real time. There are expectations that "big data" could be used for planning, problem-solving, decision-making and management in (almost) real time, which is a tall order for present information technology. Nevertheless, MDA should develop and make operational a methodological base for the proper utilization of "big data", and train both undergraduate and graduate students in the necessary skills to work with the methods for "big data" problems for industry and business. Automated or deliberate methods for gathering "business intelligence" from such data have already become essential for all kinds of operations, business undertakings and scientific analyses; business intelligence (BI) technology is becoming obsolete with the rapid development of "big data" challenges, and MDA should be the platform for developing new methods, better technology and new skills. Society as a whole is being profoundly affected at both national and global levels. As a consequence, universities need to consider how they can best prepare students to make use of these new opportunities. However, big data cuts through traditional academic disciplines and brings non-conventional perspectives to some of them. Old universities are sometimes hampered by organizational barriers and can have difficulty adapting to developing multidisciplinary research and teaching. As a small university with some strong relevant key competences and industrial collaboration (especially in Transport, Tourism and Retail), DU has been able to start building a national leadership with a multi-disciplinary environment for research and education (at all levels) within

the field. At DU, the profile combines some of the University's strongest senior researchers who we feel are devoted to multidisciplinary collaboration. Also, we have seen that the new doctoral programme has started well, and we noticed that the doctoral students are already successfully drawing senior researchers from various disciplines into closer collaboration. The MDA profile offers potential to DU's overall development strategy, but care should be taken so that it can develop into being a strong research profile; this cannot be achieved in two to three years. A minimum strategic planning horizon of five years should be set. The DURE is probably being conducted much too early.

Internal funding and distribution of budget

The research profile is prioritized in DU's internal research funding. In 2014, the profile received 13 million SEK from the University's total 52-million research grant. The profile itself (or the profile leader) has quite extensive control over the budget and its distribution.

A large portion of the research budget is funding for the doctoral programme. At the outset of the programme, priority was placed on reaching a critical number of doctoral students.

We think that DU should decide on a strategy for the MDA doctoral programme, and then implement it and make sure that the MDA leader is not forced to try to accomplish everything too quickly. There is a specific logic behind the development of a doctoral programme, and this should be defined. If this is to be done properly, then time is required.

The doctoral student and post doc environment

It is too early to evaluate the doctoral programme. Still, it is our impression that the programme has had a good start, that the recruitment of doctoral candidates so far has been successful and that the doctoral candidates have good cross-disciplinary contact with the senior researchers within the profile. We also got the impression that the mandatory four courses in the programme are challenging and useful, but not overly difficult for students from undergraduate programmes in various disciplines. The students that we met were very positive. However, they expressed a wish for measures that would make the doctoral student group of the profile somewhat more cohesive (a meeting day/shared coffee time, etc.) since they work in different parts of the campus.

We further found that the newly graduated post doc employees appreciate the opportunity that the research profile presents for continued collaboration with supervisors and fellow post docs from different disciplines. They find the profile members tight in a positive sense – it is easy to find people and to get advice – and they have a sense of flexibility and freedom to try out different ideas. They are, at the same time, challenged by the fact that only very low levels of internal funding can be allocated to

their research: "After completing the doctoral degree, the spirit of research dies a bit. It's like having a car but no fuel." However, they appreciate the flexibility of being in a group where it is easy to transfer between research and teaching, as there are several individuals who can step in to teach should anyone receive external research funding. On this point, we think that a strong research environment (and a new discipline) needs to make some strategic investments in new graduates and new researchers. To build a strong research environment that can attract and retain strong research talent, DU needs to offer the best doctoral students employment for two to three years as post doc researchers. This is the time that is usually required for the publication of thesis work, for planning new research, for submitting research proposals and for decisions on external funding. Doctoral students who fear unemployment as soon as they graduate are not keen to finish as quickly as they might. Opportunities for post doc positions will give them a competitive advantage and make the doctoral programme at DU more attractive.

Collaboration within the profile and connection to the other programmes

The research profile has built a strong but small "core" collective of senior and junior researchers in different disciplines. We have noticed that some researchers have developed close inter-disciplinary collaboration. However, we have also found that some of the researchers whose publications are reported as MDA-related do not really feel part of the MDA profile. In the presentation material of the profile, a large number of senior and junior researchers and their publications are included in the profile production. This is the case even if these researchers receive a limited amount from internal funding for their own research and do not serve as supervisors in the BI master programme or in the doctoral programme. In particular, most researchers dedicated to Tourism do not seem to have much connection with the doctoral programme. Based on published work, there seems to be two clusters of researchers in the profile: MDA core researchers and MDA supporting researchers.

The research profile is well-connected to the BI master in terms of teachers and supervisors. Students from the BI master can continue to the MDA doctoral programme, and 50 percent of the students in the doctoral programme are recruited from the BI master.

We noticed that students in the newly started magister in Tourism Economics can continue to the BI master programme, although no students have yet done so. We believe that Tourism Analysis has the potential of becoming a more central theme in the BI master programme, as well as in the MDA research profile itself. The contacts that have been taken with regards to strategic collaboration with ETOUR at Mid Sweden University and other institutions specialized in Tourism research can, we hope, generate results.

Meanwhile, the profile faces a challenge with respect to its links and relevance to other undergraduate programmes. The MDA profile could potentially support

several of DU's undergraduate programmes, using BI competence to update curricula and to add to the profile of these programmes.

However, we are concerned by the lack of enthusiasm that we met during our visit among core staff outside the profile's group of researchers and doctoral students. We fear that the lack of support within DU poses a hazard to the sustainability of the MDA profile. Moreover, although the profile leadership acknowledges that the main researchers have so far focused on the profile's internal management and that they now need to participate more actively in the overall management of DU at various levels by sitting on committees and taking on individual duties, we feel that the main responsibility for better integration of MDA within DU lies with the "line of command" (Vice-Chancellor, Head of School, etc.).

We believe that the root of the problem is that the role of the MDA profile in DU's undergraduate programmes and courses is yet unresolved. In our discussions with the managers and teachers of the technical education programmes, we talked about several ways in which these programmes could make use of the competence in MDA at DU (for instance, in construction, energy and transport programmes). Surprisingly, however, these perspectives seemed to be novel – at least to some. When we met teachers and individuals in charge of programmes in the Social Sciences, we got the impression that such discussions have not even started. Instead, these individuals emphasized the high operational costs of the MDA programme (which draws resources that could have been used for funding doctoral students or research by senior lecturers in ways that would strengthen competence and recruitment of teachers for the undergraduate programmes), the methodological gaps (reliance on qualitative methods vs. the profile's focus on big data), and more broadly the profile's isolation from the main themes of the undergraduate programmes. Thus staff responsible for the bread-and-butter activities at DU (in Borlänge) perceive MDA to be a cuckoo's egg. Here it is important that DU management be clear about their strategic priorities, motivate them and also communicate them within the organization.

How some undergraduate students in various programmes qualify for the BI master programme (and the doctoral programme) may be important. However, the central issue that needs to be considered when linking the profile to undergraduate programmes is the extent to which DU can make use of its strong competence to provide students with a competitive edge in whatever profession they are pursuing – for instance, house-construction engineers, marketing economists, personnel managers, managers of tourist facilities, etc.

Participation and cooperation with the faculty bodies (nämndorganizationen)

The MDA profile leader stated that in the initial years, he and the other senior profile researchers prioritized "internal work" in the development of the MDA profile and the doctoral programme instead of taking part in the overall management of the University. However, he acknowledged that there is a cost if that means that

the profile gets separated from other parts of the University. Presence in the faculty bodies gives some power within the University and possibilities to communicate the content and activities of the research profile. We think that DU should make some clear strategy decisions, and then determine a "contract" with the MDA leader on what is expected of him for the next five years so that he can prioritize his work tasks. Currently, he tries to do too many things all at once.

The gender balance

The gender balance among senior faculty in the profile is poor (10 percent female professors, 17 percent female associate professors). Among junior faculty (with 35 percent female post docs), the balance is better, and when it comes to doctoral students, the balance is good with 50–50 gender representation.

3. Research Network

The profile has good, formalized research exchanges with a number of other Swedish universities through the sharing of doctoral students, for instance Örebro and Uppsala. Collaboration has also recently begun with ETOUR at Mid Sweden University regarding Tourism Economics/Tourism Analysis (for the one-year master [magister] programme in Tourism/Events).

The MDA faculty has built international academic networks on an individual basis, and one researcher is engaged in organizing one of the important international conferences in the field. The MDA group also now participates in Horizon 2020 projects. However, we cannot see that the profile has built or formalized any strategic international networks. This is surprising, since this might have been useful for benchmarking purposes and for building relationships that could help in developing a new discipline and a new doctoral programme. Still, the profile has recently published internationally in the field of MDA, which is what is needed when developing international cooperation; still, the volume of publications is nowhere close to what is expected of a doctoral programme. We also noticed that the MDA profile has started to develop international contact by inviting leading researchers to be members of examining committees, etc.

The profile clearly aspires to have further international links but has yet to realize this ambition. We also believe that to do this, MDA would gain from formulating the vision and mission of the programme and from determining what the contributions would be in an international context.

International contact with other research groups is probably necessary for developing the vision and mission statements that are necessary for a doctoral programme (point 8).

We want to point out that it will take time to establish a doctoral programme and

to have it be productive in international research networks – productive in the sense that the researchers are accepted in international research groups, can work in joint research projects, attain results from the projects and have the results published and then cited; in most cases, this will take closer to ten years than five years.

4. Third-Stream Activities

A key element of the profile's potential strength is collaboration with business, in particular within the three theme areas (Transport, Retail, Tourism). These themes are well-represented and relevant for research collaboration with industry in the regional context. Within the *Transport* theme, the profile has well-developed collaboration with, among others, the Swedish Transport Administration, and an extensive network of companies, government agencies and other organizations for developing intelligent transport systems, which is called ITS-Dalarna. ITS-Dalarna provides several important resources for MDA research and innovation, such as physical test sites (along the road), informational infrastructure (trafiken.nu, vägtrafikdatabasen, etc.) and a sample of 250 test households with GPS equipment in their cars. The collaboration between ITS Dalarna and the MDA profile is very close and some MDA researchers are members of the board. In the programme "Styrelseakademien", ITS-Dalarna and Tillväxtverket make efforts to involve doctoral students from the profile in the boards of the (often small) ITS companies in the region. Within the retail theme, the profile has well-developed collaboration with HUI Research through the sharing of personnel. In the *Tourism* theme, contact has been taken with major companies in the business (esp. skiing tourism) and with ETOUR at Mid Sweden University (which is a leading place for Tourism research in Sweden), but this contact has not yet materialized in collaboration. The profile is also planning to offer shared post doc positions in this field together with Region Dalarna.

We think that priority should be given to further develop collaboration within the themes. Collaboration and contact with companies are very important for the BI master students and the doctoral students. They are also crucial for securing extended external funding for MDA research.

5. Productivity

Productivity in this profile has not been high, but it has experienced an upward trend in terms of relevant international journals. A few of the senior researchers are responsible for the majority of the production, which is to be expected when a new research profile is established.

Productivity is usually measured by the number of peer-reviewed publications/researcher/year to which is added the number of citations that the publications

have generated (typically with a time lag of two to five years). Publication outlets are given different weighting depending on the impact they have, typically in terms of the number of citations they generate per year. Journals are given yearly rankings; typically, classes are A+, A, B and C-class journals; senior researchers are expected to have one to two articles published per year in A-class journals and two to four articles published per year in at least B-class journals. Post doc researchers should publish in at least B-class journals and as these researchers are expected to be in an early productive phase of their careers, the expectation is four to six published articles per year (these are quite often worked out with a senior researcher; international research networks can play a major role in this process). Doctoral students normally have problems getting published in journals, but good work is normally accepted for B- and C-class journals; if published with a supervisor, doctoral students can get published in A-class journals; doctoral students should be able to produce one to two publications per year.

Conferences are given international rankings in the same way as the journals based on the quality of the peer review processes. Conferences differ from the journals in that the published contribution is limited to six to ten pages, but some of the conferences have higher rejection rates than some of the journals. Senior researchers should typically get two to four papers accepted per year in the key international conferences; post docs should show four to six papers and doctoral students one to two papers per year.

The numbers shown are standard expectations for MDA-like research programmes in Analytics run by research groups and institutes in Europe.

In the MDA programme, very few doctoral theses have so far been published and defended. A typical thesis should be built on five to six published papers (peer review) of which at least one should be written by a single-author doctoral student. The summary part is short (25–30 pages). This is on the short side if the intention is to provide a state-of-the-art overview of methodology and a synthesis of the research results. The approach is good when compared at an international level.

According to the data sent to us, the total number of publications 2009–2013 from all the researchers listed as part of MDA (as we found out, some of them do not regard themselves as part of MDA) was 360; of these, 35 percent were published in journals with peer review, but only 18 percent in conference proceedings after peer review. A rule of thumb is that around 80 percent of the publications from a research area with a doctoral programme should have been published after peer review; for MDA, about 53 percent of the publications have been through a peer review process.

Very few of the publications are in A- or A+ level journals and as a consequence they are not cited; in fairness, some of the articles have not yet been published long enough to collect a larger number of citations.

There are three to four senior researchers that publish the expected number of articles in quality-level journals; of these, two to three are core contributors to the

MDA programme. Quite a number of researchers have good supporting roles within the MDA programme, but they publish in journals that are not at its core. The post doc researchers in the MDA programme are few and the number of publications is rather small; most doctoral students have not yet reached the stage where they can be expected to get their results published. Still, it appears clear that efforts should be made to get papers published by junior faculty – this is the only viable way for a doctoral programme to be accepted.

The proportion of papers accepted by international conferences after peer review is much too low; efforts should be made to achieve a 50 percent level during a given year.

6. Quality of Research

We have given the profile an overall ranking of *low/medium* and reached this conclusion given the number of publications in leading journals within the MDA research area.

In the MDA profile group, there are a number of refereed journal articles, but many of these are not tied to the discipline MDA (it seems as if only about 10 out of 16 of the senior researchers listed in the profile publish in MDA) but are instead tied to other disciplines, such as Tourism Studies and Economics. The articles tied to the profile's discipline are generally of an applied nature. The MDA group publishes none or rather few papers in the list of top journals. This is principally because MDA is seen as a young field of academic endeavour that is relatively new to DU and marked by several research paradigms across several disciplines. This makes undisputable and straightforward quality rankings a challenge. Consequently, the lack of articles in ranked journals results in few citations.

We have argued that MDA needs to develop its own research methodology at DU for a number of reasons; there is also a good and strong methodological base that has been developed by INFORMS, EURO, IEEE, etc., which is now called *Analytics* – why not "translate" this to the resources and the know-how of MDA at DU? Then adapt the methodology to the needs of the business and regional research partners? There are hundreds of top, good-quality journals that would recognize contributions in *Analytics*, especially if they deal with planning, problem-solving and decision-making in real-world settings. This would be a solution to get the MDA research results on track for a growing number of publications and then a growing number of citations.

A fundamental question is, should MDA develop the subject/methodology or be an applied research programme using microdata analysis? If the main task is development of the discipline MDA, then there seems to be a need to boost the profile/competence in this area. If the profile aims to focus on applied research, then it has a relatively good composition of competences; however, there is a need to bring researchers that are now peripheral more closely into the MDA collaboration.

7. Impact and Relevance

Impact in the research society

Some of the MDA researchers have, by Swedish standards, good publication records, but not all of them (for instance, the two professors in Economics) are closely connected to the core of the MDA profile. The list of publications as a whole is not impressive – but it should be noted that the profile resources have to a large extent been used to recruit doctoral students. Prioritizing post doc researchers would probably have been more productive in this respect in the short-term, but in the long-term it may make sense to initially focus on getting the doctoral programme going. DU should take responsibility for not having a clear strategy and not defining priorities.

The results in terms of citations are not very strong. This is quite normal for a research environment focused on applied research. It is possible that the doctoral students will contribute to an increase in publications in the long run, but then DU should make sure that the post docs are employed for two to three years.

We also notice that contact with international research groups within the MDA research field is lacking – this despite the fact that there are strong international research communities organized in EURO, INFORMS, IEEE, etc. with annual conferences attended by thousands of researchers. It is, however, fair to note that a couple of the key MDA senior researchers have now started to offer their research results to some key journals. We think that contact with international research groups is essential for several reasons, not least for the development of the MDA research strategy.

Impact in society/industry

The profile seems relevant to industry and the region (Municipality of Borlänge, County Administrative Board [of Dalarna] and Region Dalarna).

We see good prospects in terms of future demand, potential and use of MDA analysis in the themes Transport, Retail and Tourism. In particular, MDA profile competence could potentially be used in the provision of knowledge and skills to undergraduate students in all sorts of programmes – knowledge and skills that are needed if better use is to be made of the opportunities that exist in an information society.

8. Vision for the Future

We notice that MDA has not yet worked out a strategy that would define the vision and mission of the profile, as well as its domain and its position within the academic community. It should describe what contribution DU wants to make in relation to what others are doing and how others are defining the field. An important part of such a strategy statement should be how DU wants to use the MDA profile to develop undergraduate education.

The discipline will probably benefit from the planned recruitment process of a professor in MDA. DU should make sure that this professor has a research and publication profile that is at the core of MDA.

The links to (in terms of teaching, research, etc.) and the content of the undergraduate programme have to be developed if the undergraduate programmes are to serve as the base for recruitment to graduate programmes and the research profile.

9. Other Issues

The doctoral programme

It is too early to evaluate the doctoral programme. Still, it is our impression that the doctoral programme has had a very good start and that the doctoral candidates work quite well. The profile has put effort and funding into the recruitment of doctoral students. 50 percent are recruited from DU and 50 percent are externally recruited (Örebro, Uppsala, KTH, Gothenburg). The doctoral students appreciate the environment and the fact the profile is multidisciplinary. They have great appreciation for the research supervision. They have one year of mandatory doctoral studies (Statistics, Computer Engineering, Data Collection, Microeconomics), which they attend as a group. They also attend a bi-weekly seminar. They differ in the courses they find the most challenging because they come from a range of backgrounds. They all believe the courses are of a high and demanding level, but the doctoral students are scattered over the premises and their activities should be better coordinated.

The MDA doctoral students each have a supervisor and an assistant supervisor from various disciplines and traditions. We have the impression that this works well and that students have access to good supervisory skills. The supervisors we met have taken the supervisor programme (in Swedish). This is mandatory for those wishing to act as supervisor and adjunct professor but is not mandatory for an assistant supervisor. It seems as if it takes less time to become a supervisor of several PhD students at DU than it does at larger universities. At the same time, you need entrepreneurial skills (you need a research project) if you are to be a supervisor at DU.

The challenge at the supervisory level lies with the senior researchers who today do not really find themselves "inside" the research profile. This is the case especially for those who have externally funded graduate students who are enrolled at other universities. These researchers do not supervise MDA doctoral students, and they see clusters of students in the postgraduate group that do not work together – those who are in the profile and those who are not.

Connection to undergraduate programmes

The way this new and tightly profiled research discipline interacts with undergraduate education may present challenges. Knowing how the specific expertise established itself within MDA may be useful for the undergraduate programmes and themes

(Retail, Tourism, Transport) and could be better anchored among faculty. The links between research and teaching – in particular within the master/magister programmes – should be worked out and described in detail. The BI master and the doctoral programmes require courses in Statistics, Mathematics and Database Methods. It is not obvious that students from the undergraduate programmes have this foundation. The BA magister programme has recently been revised to include recommended elective courses – Database Methods, Programming, Statistics, Mathematics, Microwave Data (in order to open the options for students to proceed to the BI master). There are also adaptions of a magister programme in BA (Economics), which is planned to start in the autumn of 2015. This has been developed for students who want to continue to the BI master.

There are good links to the undergraduate programmes in Computer Science *(Systemvetenskapliga programmet)* and the Digital and E-Safety programme *(Digitalbrott och e-säkerhetsprogrammet)*, which have been developed due to big changes in the computer technology field: these changes have resulted in difficulties in the recruitment of students. The programme has changed from being a traditional engineering programme to being a computer security (digital police) programme, which is a niche in the field. With this new plan, the researchers in the profile are closely connected to and teach in the programme.

There is an identified potential in the new programme of Building Technology; besides that, however, the other undergraduate programmes (Retail, Tourism, Business Administration and Graphic Design, etc.) have little to no access to MDA today. Probably there is some embedded potential here on which to shine the light in the future. It should, for example, not be very difficult to include BA competences in BI.

An identified challenge is to integrate the Social Sciences further into the profile. A combination/collaboration between quantitative and qualitative skills/methods could, in the long run, strengthen the research profile. As mentioned before, it is not clear to several of the researchers in the Social Sciences whether or not they belong to the research profile. This is a legacy of the merger of two earlier profiles (Microdata Analysis and Regional Development). Researchers involved with regional development do not feel included in a way that should be possible.

Implementation of TKP in the research profile

Due to a lack of background material and interviewees, we have been unable to evaluate how the competences developed in the graduate school TKP *(Teknikbaserade kunskapsprocesser)* can be implemented by MDA.

10. Overall Assessment

Our overall assessment of the research quality/productivity is **Low/Medium.**

A more detailed assessment of various aspects of the quality of the profile is given in the following tables.

LEVEL	Quality	Impact	Options	Infra-structure	Research networks	External relations	Profile within DU
HIGH			x				x (in documents)
MEDIUM	x			x	x (national)	x	x (in reality)
LOW		x			x (international)		

LEVEL	Strategic vision	Comparative strengths	Doctoral programme	Recruitment doctoral students
HIGH				x
MEDIUM		x	x	
LOW	x			

11. Recommendations for the Future

We are concerned that MDA has not developed any clear, succinct methodological framework that can serve as the basis for both the doctoral programme and the building of interfaces for other research profiles at DU, as well as for an understanding of the necessary skills that should be part of the undergraduate and graduate programmes so as to prepare students for the postgraduate doctoral programme. It is surprising that the strong methodology of the *Analytics* movement is not seen in MDA, especially since the *Analytics* programme has long research traditions in Operational Research and Management Science.

However, we are neither at a time when DU is about to select a profile nor at a time when the profile choice can truly be evaluated.

The profile needs to have strong core research competence, and our impression is that DU has already been quite successful in building a good group of researchers. However, further competence building should relate to what the profile wants to be. A central issue that is unclear to us is the extent to which the MDA profile wants to conduct basic methodological research and "not just" apply existing methods; it is actually one of the key requirements of a doctoral programme that the core methodology is worked out and made operational in support of the research expected of the doctoral students.

A key element of the profile's potential strength is its collaboration with business, in particular within the three theme areas (Transport, Retail, Tourism). Priority should be given to further develop this.

More is needed to strengthen contacts among MDA doctoral students. For instance, the profile seminars that are held bi-weekly could be complemented by a doctoral seminar series for discussion of research ideas, unfinished paper drafts, current developments in the microdata field, etc.


HIGH EQ
MID EQ


LITTERATURVETENSKAP
LITERATURE
G

CULTURE, IDENTITY AND REPRESENTATIONS

This research profile examines communication and representations in various types of media, with focus on how social and cultural identities are constructed and presented within the field of tension between the individual and the collective, the minority and the majority, the local and the global, the secular and the religious, and the present and the historic. Here, questions about cultural encounters, conflicts of values as well as identity processes are examined, the focus of study being socio-cultural discourse and forms of representations that define and constantly renegotiate who we are and who we can be.

This research profile comprises a number of research groups working in collaboration, with a base in Humanities and Linguistics, as well as in Social Sciences and Media Studies.

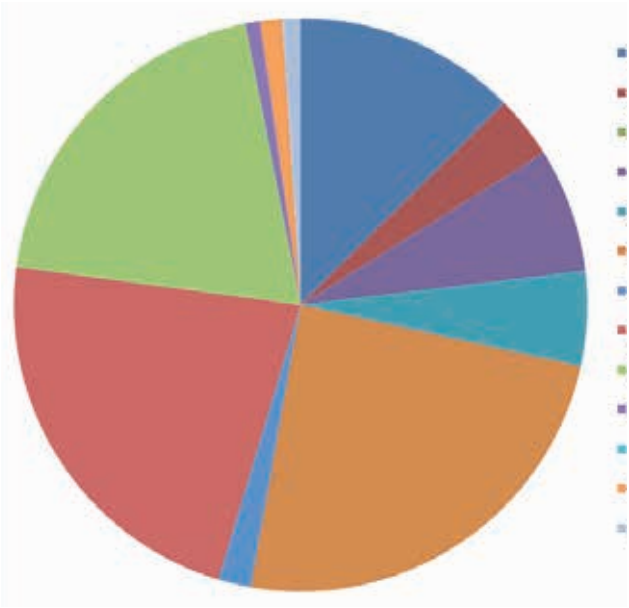
Culture, Identity and Representations Basic Facts

	2012	2013	2014
Professors			
Number of individuals	7	8	9
Number of full-year employees	6.5	7.5	8.5
Female/Male	5/2	5/3	6/3
Visiting Professors			
Number of individuals	3	3	2
Number of full-year employees	1	1	0.75
Female/Male	1/2	1/2	0/2
Adjunct Professors			
Number of individuals	0	0	0
Associate Professors			
Number of individuals	7	8	8
Number of full-year employees	7	8	8
Female/Male	3/4	3/5	3/5
Doctors			
Number of individuals	61	56	53
Number of full-year employees	54	50	48
Female/Male	36/25	34/22	31/22
Licentiates			
Number of individuals	2	3	3
Number of full-year employees	2	3	3
Female/Male	1/1	1/2	1/2
Doctoral Students			
Number of individuals	9	13	13
Female/Male	6/3	9/4	8/5
Doctoral Theses			
Total number	0	2	0
Licentiate Theses			
Total number	1	1	0
Funding (SEK, millions)			
Internal/External	10/8	8/6	9/3

Culture, Identity and Representations Bibliometric Profile

Publication Types

Data from DiVA 2009–2013

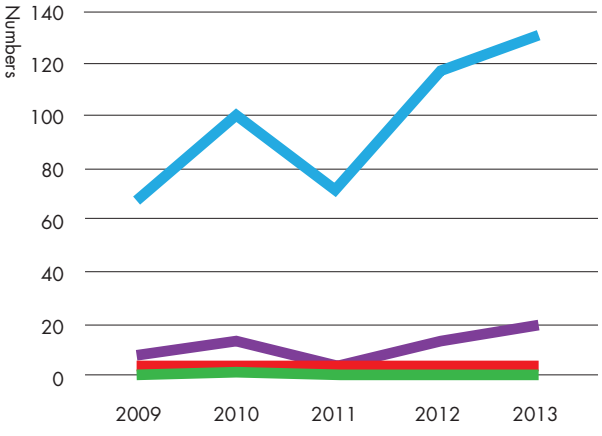


- *Article in journal, peer-reviewed 61*
- *Article in journal, not peer-reviewed 17*
- *Article in journal, review 0*
- *Article in journal, book review 34*
- *Book 26*
- *Chapter in book 118*
- *Edited book 9*
- *Conference paper, peer-reviewed 109*
- *Conference paper, not peer-reviewed 96*
- *Thesis, doctoral 4*
- *Thesis, licentiate 0*
- *Report 6*
- *Other academic publications 5*

Total 486

DiVA is a publishing system for research and an open digital archive for publications produced by researchers and students at DU. It is mandatory for researchers employed at DU to register any publications in DiVA.

Publication Trends



- *Publications in DiVA*
- *Level 1 publ. – Norwegian list*
- *Level 2 publ. – Norwegian list*
- *Articles in journal, peer-reviewed*

Norwegian list documents publication channels such as book publishers, academic journals and series to estimate scientific impact. Each channel is evaluated according to certain criteria established by the Norwegian Association of Higher Education Institutions. It is divided into two levels: level 1 contains 80 percent of the publication channels in a given field, level 2 contains, approximately, the top 20 percent publication channels in the same field.

The number of publications in DiVA, full counts	486
The number of publications in DiVA, fractionalized	356.59
The mean number of annual publications in DiVA	97.2
The mean number of authors per publication in DiVA	1.24
The percentage of total publications at DU	21.5
The number of publications in WoS, full counts/fractional counts	14/5
The number of citations in WoS	15
The percentage of publications with at least one citation in WoS	43
The average field normalized citation rate in WoS	0.83 *
The percentage of publications among the top 10 percent most cited within the discipline in WoS	2 *
The percentage of publications among the top 25 percent most cited within the discipline in WoS	24 *
Journals´ average field normalized citation rate in WoS	0.95
The percentage of publications that have been published in journals which are among the 20 percent most cited within the discipline in WoS	15
The percentage of internationally co-authored publications in WoS	17

**Based on a small amount of data and should be interpreted with care.*

Web of Science is a bibliographic database from Thomson Reuters, Inc.
The statistics include both full counts, i.e. each publication/citation is counted as 1 regardless of the number of authors co-authoring the publication, and as *fractional counts*, i.e. the author´s fraction of each publication/citation is counted (1/number of authors).
Field normalized citation was used to compensate for the different publication patterns in the profiles. It normalizes for the variation of citation pattern.
Journals' average field normalized citation rate. This indicator shows the citation impact for the journals in which the unit has published.

Culture, Identity and Representations

Panel Report

INGEMAR ELANDER, SENIOR PROFESSOR, ÖREBRO UNIVERSITY
KAREN RISAGER, PROFESSOR EMERITA, ROSKILDE UNIVERSITY
JONAS STIER, PROFESSOR, MÄLARDALEN UNIVERSITY (CHAIR)

The CIR evaluation process

The panel wants to acknowledge the scientific commitment, professional receptivity and collegial hospitality of the people within Culture, Identity and Representation (CIR). Our meetings were characterized by an open and respectful atmosphere – and everyone we met was eager and willing to work to create a more coherent, competitive and respected research profile.

Consistent with the panel's instructions, the evaluation focused on both the scientific quality, production and working climate within CIR as well as the contextual characteristics surrounding CIR. Also, the evaluation had a formative orientation. Here it should be noted that grant applications, the scientific quality of individual projects, and the competences at the individual researcher level were *not* the focus. Rather, scientific quality and competence levels were assessed in light of CIR's overall strengths, qualities and foreseeable paths of development. It should also be said that the panel was limited to a synchronic analysis – i.e., an analysis of the state of matters here and now, not the process leading up to the present.

The data used were *written material* (annual operational plans, annual reports, project descriptions, research presentations on the web), a *bibliometric analysis* conducted by the library of Dalarna University (DU) in cooperation with The Royal Institute of Technology (KTH) and *oral presentations* during a three-day panel visit to the University on January 13 to 15. The oral presentations were primarily sessions where information on existing projects and research groups was provided by the CIR researchers and other key people at DU. However, the panel also used them as opportunities to address questions and to provide feedback to the researchers and others, since the interaction between the evaluator and the "evaluatees" is essential in formative evaluations.

A complicating matter has been the "shallowness" of the provided written material, the limited time for interaction with the researchers and the inappropriate structure of the bibliometric material – i.e., it was merely a list of individual researchers' publications, with neither categorization with regard to the CIR research groups nor regard to the different types of publications (e.g., book chapters, monographs, peer-reviewed journal articles).

1. Summary

The assessment of the CIR research profile focused on its scientific quality, organization and working climate, as well as its contextual framework at DU. CIR's strengths, weaknesses and potentials were assessed on the basis of written documents and oral presentations by key people within CIR and DU. During its stay at DU, the panel also had a formative function, addressing questions and providing feedback.

At CIR there is an extensive pool of competent researchers representing more than 20 humanistic and social science disciplines, including 11 languages. Although internal DU money available for research is scarce, some big grants have been received from the prestigious Swedish Research Council, as well as one huge grant from EU funds. The majority of academic staff are heavily involved in teaching and administration, but there is still a great potential to achieve more grants and a higher output of peer-reviewed publications. To realize this potential, the panel proposes a number of improvements concerning scientific quality and coherence, and organization and leadership at CIR, as well as more quality-driven financial and organizational support by DU.

First, there is a need to move away from the vague umbrella concepts now signposting CIR and instead to move more towards an elaborated scientific basis of the profile, as explicated in the report. This way the image and role of intercultural studies will be sharpened and made more visible in an international academic context.

Second, under the leadership of the Research Leader supported by thematic research leaders, this commitment should be put to the entire research collective to implement over a period of one year. Such a concerted effort would imply a crucial move forward towards a coherent, competitive and attractive research profile.

Third, it is too early to initialize an application for the right to grant doctoral degrees in this area. Instead, we propose developing an undergraduate programme in Intercultural Studies. This would become a strong platform on which to develop future master's and PhD programmes. Considering the size of CIR, such a programme, including a number of special courses, would become a great asset for DU as a whole, notably drawing upon and further exploiting its renowned capacity for web-based education.

The panel has also put forward several proposals that aim to position CIR internally and externally – even outside the humanities and social sciences. Examples of these proposals are as follows: make strategic priorities in the internal research budget; create a transparent and effective system for allocating and following up the use of research funding at the individual level; give priority to those who use their research time within the scope of the profile; and formulate action plans for internationalization, co-production, scientific publication and external research funding. There is an urgent need for a tighter managerial team for CIR that meets frequently, adopts a proactive role, and makes strategic and operational decisions. Finally, a firm leadership to implement and ensure the legitimacy of this plan should be set

up. Success relies heavily on the Research Leader and the professors. The scientific leadership must be one that combines ideology, mentorship, and managerial and internal "politics".

The report ends with a number of bullet points suggesting ways to clarify and glue together the research profile.

2. Environment/Infrastructure

Staff numbers and composition

Officially (according to the Annual Operational Plan 2014), CIR houses 74 researchers (42 women and 32 men). About 60 of them are defined as "active" (Annual Report 2013) – an unclear denotation but this probably refers to people who have at least some opportunity to conduct research within their regular work schedule using either internal or external funding. All but three of the researchers have doctoral degrees. A number of international staff are included in the research profile. Several key people are approaching retirement and therefore a strategy for long-term competence provision (*kompetensförsörjning)* is needed. With 11 professors, seven associate professors, 53 other PhDs and three licenciates, the level of formal competence within CIR is high. Our view is that the de facto competence at the aggregate level of researchers at CIR – considering publications and successful research grants – is decent. At the same time, there are great variations within the CIR collective with regard to the volume and quality of research. It is difficult to determine to what extent these variations are the result of real competence or barriers that exist because of a lack of time and finances granted for research. Internal research money is scarce, which results in few research hours. Five professors use 30 percent each, and seven associate professors receive 10 percent each for full-time research (Annual Operational Plan 2014). Nevertheless, our estimation is that there is great potential for achieving more grants and a higher output of publications provided that DU provides CIR with time, and financial and organizational resources.

Research groups

Researchers belong to one or several of CIR's five research groups:

Audiovisual Studies
Intercultural Language Studies
Minority, Identity, Authenticity
Transcultural Identities
Transition, Identity and Civil Society (TICS)

Together with the Research Leader, the scientific leaders of these five groups make up the CIR Steering Committee (*styrgrupp*) that meets only about once per semester – typically to review applications for internal research funding.

Physical infrastructure

The library and localities are adequate. CIR researchers work physically close to each other, although the Audiovisual Studies research group is housed in the former military barracks about one kilometre away from the rest of the University. These localities offer highly modern studios for this research group. In addition, a trademark of the University as a whole is its well-developed infrastructure for web-based education. Next to the University there is a large hotel for visiting researchers.

Virtual infrastructure

The CIR webpage contains fairly extensive information about CIR in both Swedish and English. However, for an outsider (a research colleague, research funder, journalist, curious citizen, etc.) the contents and structure of the web do not reflect or present CIR in a logical and attractive way. Therefore, the webpage needs to be developed – issues to address are how information should be thematically structured, what are its target groups, which are the most important research networks internationally (as well as nationally, regionally and locally), how CIR should be depicted in terms of staff, main focuses, high profile projects and publications, etc.

Financial resources

Annually, CIR receives approximately 9 million SEK of DU's total research grant of about 55 million SEK given by the Swedish state. CIR research funding is allocated annually according to a decision by the Research Director to individual researchers on the basis of their applications. In effect, this means that the majority of academic staff, including professors, are heavily involved in teaching, teaching-related activities and various administrative tasks. Therefore, overall research at DU, as well as the opportunities for individual researchers to be involved in research, relies heavily on the capacity to attract external research funding. It should be noted here that the time allocation per teaching hour is higher at DU than at many other places, a fact which, at least in theory, could mean that there is some leverage in the system.

Overall social climate

The five CIR groups have their own running seminars, all described as lively and all exhibiting a great diversity in terms of empirical focus, theoretical basis and disciplinary orientation. They are, so to speak, the life-nerve of the research profiles, where people can present ideas and participate in academic discussions in a variety of ways. The seminars also revolve around other aspects of scientific work – for example, writing grants and academic writing. This notwithstanding, the panel suggests that seminars, to a higher extent, should also focus on the pros and cons of CIR, highlighting discussions about its strategy in relation to the increasing emphasis on international publication, in particular in scientific journals (as preferred, or complementary to monographs), publications in English (rather than other languages), impact factors and open access.

Overall, people talk about a generous working climate, acclaiming CIR (and DU) as a nice workplace. Some people with experience of older and larger universities point to a greater openness and generosity in the DU research environment. At the same time, and given the limited financial conditions, we could sense an element of resignation. An increasing administrative burden, and the lack of resources and time are constraining and discouraging factors. Additionally, the overall climate at DU is characterized by a "teaching culture" where research is viewed as "icing on the cake" rather than as an integral and self-evident part of one's work. This view, some people claim, diverts attention away from, and deprioritizes, research and related matters.

Conversations with the researchers also reveal a somewhat low self-confidence in the group as less capable and successful than other research profiles. Until now, we were told, CIR had been a place "for those who do not fit in any other research profile" and it is hyper-inclusive when it comes to including colleagues – although this has been with setbacks. Finally, and most importantly when considering the high-flying ambition of establishing a common doctoral degree programme, there has been little research collaboration or exchange of ideas and good practices between CIR's five research groups. However, it does seem that this lack of cross-group collaboration has now been acknowledged by some people who are beginning to look for complementary partners and transversal cooperation within CIR. During our visit, the panel was also keen to point out potential cross-fertilization between the groups.

Study environment for PhD students

Typically, a PhD student at DU pursues her/his research education in a wide variety of academic disciplines representing the humanities, the social sciences or the technological sciences, although most of them are formally attached to other universities in Sweden and elsewhere. This is because at this time, DU offers only one in-house doctoral degree programme (Microdata Analysis). At the same time, PhD students (seven women and two men according to the Annual Operational Plan 2014) linked to CIR have academic supervisors at DU (one main and six assistant supervisors). Overall, the students feel appreciated by their colleagues and by the management at the University. Additionally, they describe the working climate within CIR and their respective research groups as lively, positive and fruitful. In contrast to most other PhD students in Sweden, they profit from scientific discussions at seminars and with informal research contacts both at their "mother departments" in other universities and from the disciplinary diversity at CIR.

Position within and overall cooperation with university administration

Administratively, CIR is housed by the School of Humanities and Media Studies. This is also where the majority of CIR researchers are employed, whereas a few are employed in the School of Education, Health and Social Studies. Overall, the fact that CIR researchers belong to different schools is not seen as a problem.

The everyday cooperation with administration at the university level and school level seems to work satisfactorily. Several people describe a climate of consensus and problem-solving orientation. Continuous dialogue characterizes the relationship between the Research Leader and Heads of Schools (*akademichefer*). Potential disagreements on, for instance, the allocation of time for research between the Research Leader and Heads of Schools are ultimately resolved by the Pro-Vice-Chancellor. Research is also a recurrent topic in the annual follow-up dialogue between middle-level managers (*avdelningschefer*) and individual researchers (*medarbetarsamtal*).

Despite this overall positive aura around the relationship between researchers on the one hand, and the administration and "management" on the other, we were aware of complaints about increasing administrative burdens and harsh financial conditions that were making it difficult for researchers to find time to write applications, articles and other publications, let alone to develop an overriding research programme for a research profile covering several themes and groups (i.e., CIR). Although these worries echo a general problem haunting the humanities and social sciences at Swedish universities, especially outside the circle of historically established giants like Uppsala University and Lund University, the problem is even more demanding for a relatively new, small university like DU. Considering the ambition to create a doctoral degree programme in Intercultural Studies, this predicament certainly raises issues of strategic considerations, financial priorities and skilled leadership in all sectors and at all levels.

Cooperation with the University Faculty Board

Collaboration between CIR and the Faculty Board *(fakultetsnämnd)* seems to work satisfactorily. Issues of potential conflicts are identified and solved through face-to-face deliberation, we were told. Notably, the Dean is a proficient member of CIR.

Research-funding infrastructure

When completing grant applications for the Swedish Research Council, the researchers find the support they obtain to be adequate and sufficient. Yet, there is a need for strategic support if the goal is to complete more extensive research-funding applications, such as applications at the EU level. This is a matter not only of re-routing information about external funding opportunities but also, and more importantly, of providing qualified and proactive administrative support as well as of monitoring external research-funding trends and opportunities (*omvärldsbevakning*).

An elevation of the success rate in attracting external research funding presupposes high-quality administrative support (commonly called "grants office" or the equivalent). Moreover, to increase the visibility of CIR's research, additional and more target-oriented support from a Research Communication Officer is needed. Therefore, the collaboration with Dalacampus should be expanded and refined – this to increase the chances of attracting local and regional funding from municipalities, county councils, voluntary organizations and industry.

CIR's position within and in relation to DU educational programmes

Researchers within CIR are currently involved as teachers in several programmes (e.g., Social Work, International Relations, Social Sciences and the many language programmes). They also think they have a great potential to make additional contributions to other programmes in the technology as well as the health and welfare sciences. Such contributions would be particularly interesting and even unique within a Swedish context if they were to emanate from the field of intercultural studies – e.g., intercultural communication, cross-cultural management, cross-cultural variations in visual or audial representations, differences in conceptions and expressions of health and ill-health, language and cultural translation (interpreters) in the health and welfare sector as well as in overall ICT design.

In a global and multicultural society, engineers, technology designers, film and music producers, and people in business, management and marketing all need intercultural competence (including, but not limited to, language skills). In such areas – and many others at DU – CIR researchers already serve as a pool of teachers with expert competence, i.e., as a research platform for education *(forskningsbas)* at the University. The rich multidisciplinary competences and the intimate exchange of knowledge production between researchers and PhD students within CIR have great potential for further development. However, if this is to be a reality, CIR needs to be more proactive and systematic in approaching other educational programmes. CIR must more clearly verbalize its role as a research platform for the University's educational programmes – especially those outside the realms of the humanities and social sciences. Again, to realize such an ambition underscores the need for strengthening the leadership function of CIR, i.e., this is something that could not, and of course should not, be accomplished during researchers' leisure time.

Cooperation between the research groups

At present, there is limited, mostly ad hoc-like, cooperation between the five research groups when it comes to, for example, writing joint research applications, joint publishing, sharing ideas and good practice, and network-sharing. The exposé of research presented by people during the panel visit at CIR clearly showed a great potential for increasing such cooperation between groups and individuals in different groups.

3. Research Networks and Internationalization

Individual CIR researchers are involved in extensive national and international networks. They frequently arrange and attend conferences; are invited as keynote speakers; serve as reviewers for journals and academic positions; and, occasionally, write joint research applications and publish together. At the same time, the substance, purpose and potential for development of these networks all seem a bit unclear, at least for the research groups individually if not also for CIR as a whole.

Thus, although there is a substantial amount of international cooperation, a coherent and systematic approach to internationalization is lacking for CIR as a whole – arguably, this could and should be remedied through cooperation with the international coordinators (*internationaliseringsansvariga*) at the School of Humanities and Media Studies and the School of Education, Health and Social Studies, respectively. Possible questions to address in the future are as follows: How can we in a more long-term perspective enrich CIR by way of international research mobility? How can such mobility be funded (e.g., Marie Curie-Skłodowska programme, STINT, Swedish Research Council)? Which key institutions do we want to work and "benchmark" with, given CIR's research focuses and overarching vision? One suggestion is to assign one person to take charge of CIR's internationalization.

4. Third-Stream Activities

Within CIR, there are many interesting, productive and highly disparate examples of third-stream activities. The Audiovisual Studies research group in particular works closely with the Falun municipality, museums, and local music and film producers. CIR researchers are active in public debate, and write literary reviews and letters to the editor. Yet, networks to civil society, industry and the public sector (apart from universities) should be developed more extensively by all research groups. Questions to consider could be: With whom do we want to work? Why? What are the foreseeable outcomes of such cooperation? The pros and cons of multidisciplinary research should be a high-priority topic for seminars in the research groups, as well as at the CIR level and above all at the DU-wide level.

By the same token, even if there are examples of successful co-production/co-creation projects and other activities, more can be done in this area for at least four of the five research groups. Given its significance for DU, our impression is that co-production/co-creation is not on the agenda for the majority of CIR researchers.

Thus, more can be done when it comes to third-stream activities pertaining to external research funding – at the regional as well as at the international level. Each group must work more systematically with third-stream activities and also make use of each other as well as of other research profiles. It also seems as if the collaboration with Dalacampus can be developed – perhaps it would be a worthwhile idea to assign a researcher to serve as a liaison between Dalacampus and CIR as a whole.

Over time, an increase in third-stream activities and co-production/co-creation activities is likely to pay off in a corresponding increase in external funding over time, thus making CIR and their research groups less dependent on merely the conventional (albeit prestigious) funders of research, in particular basic research (*grundforskning*).

5. Productivity

Publications

Given the limited amount of time and internal resources provided within a research profile that lacks its own doctoral degree programmes, levels of productivity and quality are difficult to assess. Also, there is no formulated strategy for where to publish and where to have an impact. Nor is there any self-reflection on this in the CIR annual plans and reports, and we have not, within our assignment, been able to make a qualitative and comparative analysis of the individual-by-individual publication data compiled by the DU library. These data are not related to each research group, and there is no CIR-related verbalization on the themes, and theoretical and methodological approaches applied in the publications, nor on the kinds of publications. The annual reports (2011-2013) mention that each active researcher publishes on average about two items per year, which is not very telling since no group-specified qualification is given in terms of publication form: reviewed article, book, book chapter, conference paper, in-house report, etc. The bibliometric analysis provided by the DU library reports 61 peer-review articles published by 42 researchers 2009-2013, that is to say 12 articles per year. The total number of books is 26 and book chapters amount to 118. Considering the reported number of "active" researchers (as many as 77 in 2013, all but three PhDs), the output in quantitative terms is far from impressive. However, more problematic is the lack of qualitative publication analysis related to each group or focal theme of CIR. Quantity itself is not a measure of quality, and what we ask for is rather a self-reflecting analysis and discussion of how each research group and CIR as a whole assess their position(s) in relation to relevant scientific discourses and research fronts.

External research grants

In the last five years (2010-2014), at least six grants spanning 1.5 – 6 million SEK each have been taken home by CIR researchers. In addition, the *Audiovisual Studies* group in 2010 received 10.9 million SEK in EU regional funding. However, in relation to the amount of research money applied for, the picture is not that rosy, as illustrated by a very low application success in 2013, when only two small private foundation grants out of 19 applications were approved. Notably, most of the applications in 2013 were sent to the prestigious Swedish Research Council and the Swedish Foundation for the Humanities and Social Sciences (both with a very low success rate) – less than ten percent for research in the Humanities and Social Sciences.

We have found no strategy on targets or prioritizations as to where to apply for external research funding, something that should be urgently addressed by CIR and DU overall. Due to the difficulty in obtaining grants from the more prestigious founding bodies, CIR should be keen to exploit the growing market for practice-orientated research. Thanks to its broad multidisciplinary competence, including more than 70 PhD-educated teachers and researchers, CIR has a great potential for

meeting such demands from local, regional and national actors in the public sphere, as well as in business and civil society. Often such research is, by necessity, very empirical and theoretically shallow; however, it may at the same time produce unique data for refinement in peer-reviewed articles, book chapters and books.

6. Quality of Research

The broad multidisciplinary competences represented in CIR also constitute a great potential for a concerted effort to develop a common and coherent research profile that positions itself at the international research forefront. The written material that the panel received, including CIR's vision for the future described on one page, is very meagre on this point, and as mentioned above, the oral presentations given at the three-day panel visit focused on the research groups and the research projects of their members. While many of the project presentations offered glimpses into very interesting research of high quality, they did not give a clear picture as to any common reflections on CIR as a research collective or as to the development of its general research quality in terms of theoretical and methodological depth.

In its vision for the future, CIR states that research practices within its five research groups centre around the common theme Intercultural Studies, described as studies of cultural encounters and problematics related to cultural encounters. This overarching theme of cultural encounters is further described as encompassing three subordinate themes: interculture, cultural identity and cultural representation (*gestaltning*).

This more introductory indication and brief explanation of a few concepts should be further developed into a much more coherent and clearly defined profile. Intercultural studies, which is taking form and which is being institutionalized around the world, is an interdisciplinary field characterized by a high level of theoretical reflection, and CIR needs to position itself more precisely in relation to central theoretical, analytical and methodological discussions. We want to suggest the following in order to exemplify what direction we mean:

- Basic discussion of and positioning in relation to ontologies and epistemologies, including such notions as 'epistemologies of the South', as well as discussions about essentialism, constructionism and realism in relation to core concepts like culture, identity, intercultural communication, intercultural competence, representation and *gestaltning* (which is the term in the Swedish title of the profile. Its meaning, however, is only partially similar to that of the English term 'representation'). Discussions about methodologies like positivism, structuralism, phenomenology, hermeneutics and critical theory (or critical perspectives more generally), including discussions about methodological nationalism and possible alternatives. An important part of such basic discussions would be positioning in relation to the interdisciplinary movement of Cultural Studies.

- Selection, discussion and positioning in relation to specific theories and analytical approaches with respect to dimensions of Intercultural Studies: reflections on the concept of cultural encounters, including critical awareness of practices of culturalization or culturalism in relation to studies of cultural encounters and intercultural communication. Reflections on the role of categorization and power, both in society as well as in the research process. Discussions of philosophical, social-psychological, discursive and historical theories of identity and subjectivity. Strategic discussions concerning the range of sociocultural identity parameters prioritized in the profile: for example, nationality, ethnicity, race (including 'whiteness'), language, gender, sexuality, class and religion, as well as considerations of their intersections. Positioning of the profile in relation to the diverse field of global and post-colonial studies: economic, social, cultural, literary, linguistic, etc., and reflections on how much importance will be put on mobility, migration and the transnational, both thematically and in data generation and analysis. Discussions of practices of inclusion and exclusion, discrimination, stereotyping, othering, minorization, ethnification, racialization and xenophobia. Discussions of political, social and sociolinguistic theories of multicultural and multilingual society and of national, cultural and global citizenship.

- Discussions of research methodology and concrete methods in the field of Intercultural Studies: qualitative studies, ethnographic studies, document studies, ethnomethodology, interactional sociolinguistics, conversation analysis, critical discourse analysis, social-semiotic analysis, and others. Of special importance in the field of Intercultural Studies is the need for reflexivity, not least researcher reflexivity: the idea that the relationship between the researcher and the research object is always a cultural encounter involving different personal and cultural perspectives and complex power relations. Another important point is the role of language in the research process: the design of a project, the accomplishment, data generation, analysis and communication of the results may be carried out in different languages, and therefore issues of interpreting, translation and switching between languages may be crucial. Here, the large number of languages and cultures investigated in CIR may prove to be a decisive asset for the whole profile.

In the development of the scientific basis of CIR and in the design of a strategic step-by-step plan, it will probably become more transparent how the research groups (or preferably themes, see below) relate differently to the overarching Intercultural Studies profile, adding different disciplinary knowledge areas and approaches to the profile: approaches originating in literature studies, language studies, media and audiovisual studies, sociological studies, etc. It might even be possible to develop a common, but diverse, 'trans'-perspective: in many parts of CIR, we see indications that researchers are working within perspectives that in various ways transgress bor-

ders: transition, transnational, transmedial, translingual, transcultural, transgender, transreligious, translation, transdisciplinarity, etc.

This would be one example, among many, of an endeavour that could create a united vision for CIR in which the groups or themes could cross-fertilize one another. It could also serve as a parameter in the more systematic process of quality assessment of applications and publications from CIR.

7. Impact and Relevance

Although we have not assessed the quality of individual applications and publications in-depth, our impression is that research within CIR is relevant – both within academia and society in general – and that the overall quality is good.

Given the time and resources available, CIR researchers have been successful in attracting external research funding from competitive and prestigious research funders such as the Swedish Research Council. At the same time, both the volume of funding should and can be expanded – for example, by targeting a greater diversity of funding bodies as well as by writing more extensive applications (e.g., *programmestöd*). This presupposes, however, another type of and a higher level of administrative support (see point 2).

Considering the limitations of the bibliometric analysis, scientific impact as measured in terms of publications is questionable – although there are great variations between various researchers and between research groups. The CIR researchers' involvement in and contribution to scientific and political debate have a societal impact. CIR also contributes to the scientific foundation of education and the scientific socialization of students. The research within CIR is important for the local and regional community. In this context, the research group in Audiovisual Studies stands out positively.

This being said, more can be done. CIR needs to work more systematically with its position and visibility as a whole (i.e., CIR) in the academic community as well as with visibility and systematic cooperation with local and regional stakeholders. Given the differences between the groups in terms of impact and relevance, we strongly suggest more collaboration within CIR – where those more experienced and successful share good practice with others.

8. Vision for the Future

The vision of the CIR profile as stated in the official DU documents is strongly focused upon creating a PhD educational programme in Intercultural Studies. This should be finalized "within a few years", using a master's programme as a vehicle by which to take the final step. As there is currently no basic level, both programmes have to lean on and exploit CIR's qualitatively strong and, in terms of disciplines, diverse

research competence. However, as no clear strategy for realizing this vision has been formulated in the documents, we will now suggest a possible road towards doing so.

To concentrate resources initially on developing a PhD research education programme in Intercultural Studies (or a similar label) may risk redirecting creative people's motivation and resources away from writing research proposals and articles in favour of devoting time to internal organizational, administrative, financial and lobbying activities needed for such a challenge. This is why we propose an alternative first step.

Redirecting available resources, and possibly adding some that are new, would make it possible to strengthen leadership at the CIR and research group level in order to sharpen the overriding profile as well as to identify research programmes and themes defining the five groups in terms of research focus, and theoretical and methodological identity. Notably this should be done with an eye to formulation of themes that are understandable and attractive for potential research funding (see point 11 below, and our proposal for a "trans"-orientated set of themes, which would give the profile a more coherent and attractive signpost). Refining the theoretical and methodological foundations of multidisciplinary research on highly relevant "transition issues" would signal the presence of a corpus of profiled researchers at DU, capable of initiating and developing high-quality research as well as transdisciplinary knowledge production in cooperation with non-academic actors in the public sphere as well as in business and civil society.

This first step is necessary for a short- and medium-range perspective; otherwise, it would not be realistic to apply for a doctoral degree programme in Intercultural Studies – see further below, point 11.

9. Other Issues

We are skeptical of the term 'minority' in the title Minority, Identity, Authenticity (MIA). First, the term 'minority' is actually a word for the result of a process of minorization carried out by societal bodies, often state authorities seeking categories on which to form politics. Instead, we propose the activity-laden term 'minorization' so as not to conceal the social process and the power relation. Secondly, the terms 'minority' and 'minorization' cannot be understood without relation to a specific polity, most often a state. People who, for example, identify themselves as some sort of Muslim may be seen as a minority in Sweden, but in a specific part of a Swedish city, they may be the majority. Further, in certain other states in the world, they form the majority.

10. Overall Assessment

Considering all the above aspects, the panel's overall assessment is that, as a whole, and at this point in time, CIR is a research profile of great potential, yet of intermediate *(medel)* quality.

11. Recommendations for the Future

A great deal of good quality, highly relevant research is being conducted within CIR. Yet, there is a need to sharpen the CIR profile. Such an approach must be solidly anchored among the CIR researchers and must serve both to broaden and increase scientific productivity and quality, as well as to strengthen the funding basis for research. This being said, a more concrete *strategic plan* needs to be formulated. Such a plan should include two interrelated parts: one *depicting the scientific basis for CIR*, the other *addressing strategic considerations* for the creation of a viable and competitive research profile.

For part one this means:

1 formulating the scientific (ontological, epistemological, theoretical and methodological) basis for CIR;
2 moving from today's image of CIR in terms of vague scientific concepts towards sharper, more illuminating and thematic labels;
2 creating the internal and external image and role of Intercultural Studies as exhibited by CIR; and
4 positioning CIR in a national and international academic context.

Under the leadership of the Research Leader supported by thematic research leaders, this commitment should be put to the entire research collective to implement over a period of one year. Arguably, such a concerted effort would imply a crucial move forward towards a coherent, competitive and visible research profile. At the same time, we think it is premature to initialize the work to submit an application to grant doctoral degrees in this area. Within a time span of three years, however, this might become a more realistic task. However, considering the great number of CIR people with PhD competence in a broad set of interrelated humanistic and social science disciplines, we would suggest first developing an undergraduate programme in Intercultural Studies. This could become a broad and strong platform for developing master and PhD programmes in this field. Considering the size of CIR, such a programme, including a common basis and a number of additional special courses, might become a great asset for DU as a whole, notably drawing upon and further developing its well-demonstrated capacity for web-based education.

For part two this means:

1 positioning CIR within DU as well as within a local, regional, national and international context;
2 relating CIR to the existing educational programmes at DU – including those outside the humanities and social sciences;
3 making strict, strategically motivated prioritizations in the internal research budget;
4 creating a transparent and effective system for allocating and following up the use of research funding at the individual level;
5 prioritizing those who will use their research time within the scope of the profile;
6 formulating an action plan for internationalization;
7 formulating an action plan for co-production/co-creation;
8 formulating an action plan for scientific publication;
9 formulating an action plan for external research funding;
10 formulating an action plan for ensuring long-term competence provision; and
11 forming a tighter managerial team for CIR that meets frequently, adopts a more proactive role, and makes strategic and operational decisions. This group should include the Research Leader, professors and a research coordinator (*forskningsamordnare*).

These actions are necessary if CIR is to establish itself as a competitive research profile. If they are carried out, there needs to be a firm leadership to implement the plan and ensure its legitimacy. Success relies heavily on the Research Leader and the professors. The scientific leadership must be one that combines ideology, mentorship, manager and internal "politician".

In addition, DU – and in particular the School of Humanities and Media Studies – should consider changing the external infrastructure of the profile:

1 develop stronger support for researchers (e.g., a Grants Office) with the ambition to apply for international, European and larger national funding; and
2 review and modify the structure of the CIR website to make it more consistent with the ideas and content of the profile.

Furthermore, in her introductory remark to the panel, the DU Vice-Chancellor said: "DU is the least regional of all universities in Sweden." This fact is an asset that should be highlighted as a trademark. The panel thinks that the unique breadth of competence in language education has an extraordinary potential to be allied with CIR research on "trans-orientated" themes. Hence, we suggest a move from concepts, groups and individuals to a more flexible, thematic make-up for CIR. There are several interesting cross-cutting research themes that are of great potential for scientific innovativeness, competitiveness, external funding and societal relevance. If approached from an intercultural angle, such themes could be:

- Social, cultural and political *transition*. Investigating local consequences of (long and short distance) mobilities of people and ideas, and reflecting on the meanings of the social metaphor 'transition' as opposed to 'change'.
- *Transitions* and hybrid governing systems (TICS). Transitions towards or away from democratic national political systems, as well as transitions within and between multi-scalar/multi-level, governance systems from the local to the global, including the increasing habit of transversal governance between actors in the public, private and civil society spheres in towns, cities, regions and nations.
- *Translation*, bridging languages and cultures. Investigating translation as a linguistic, cultural and social process: who translates what for whom in the world, and what is not translated?
- *Transcultural* worlds. Investigating dilemmas of identification and authenticity in cultural representation: literature, film, video or web-based media.
- *Transreligious processes* and encounters. Investigating issues of dialogue, conflict and translation within and between religious systems and practices, as well as between the spiritual and the religious on one hand and the secular on the other.
- *Translanguaging*. Investigating multilingual subjects where several of CIR's languages are mixed to explore a multifaceted life world.
- The university, a site of *transnational* education. Investigating transnational flows of academic knowledge. More and more students, teachers and researchers are transnationally mobile, using English as a lingua franca, while disseminating Western knowledge.
- *Transdisciplinary co-production*, and application of knowledge. Investigating, and experimenting with, the flow of ideas and discourses across disciplines and across the academic/non-academic border. What are the pros and cons with regard to scientific quality and integrity versus social relevance and applicability?

EDUCATION AND LEARNING

The research conducted within this profile is on teaching, learning and fostering from both a contemporary as well as a historical perspective. Most of the research is conducted with close connection to educational practice by researchers implementing studies in schools and preschools. Research within the profile is to a great extent produced in close cooperation with various regional school bodies and stakeholders.

There are four prominent fields of research: a number of projects focus on one of these, namely leadership in educational practice; the second examines the environment in which this practice occurs; the third concerns the relationship between educational policies and their practical application; and the fourth field examines the role of different media in teaching and learning practices. This fourth field forms an integral part of Dalarna University's investment in "Next Generation Learning".

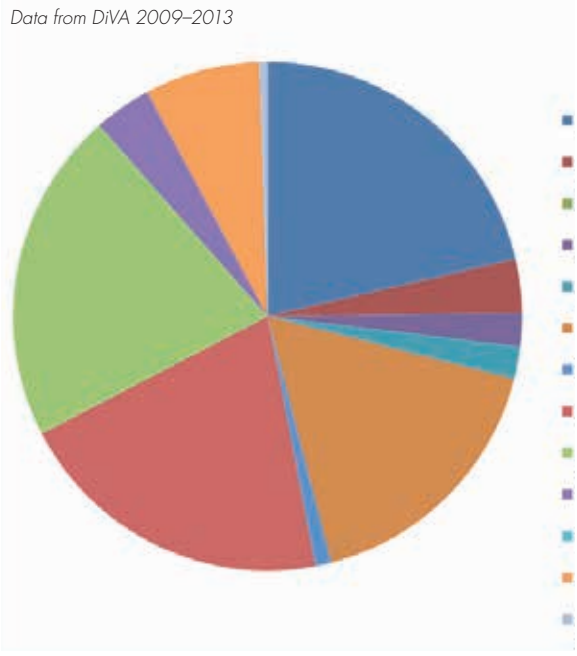
Education and Learning Basic Facts

	2012	2013	2014
Professors			
Number of individuals	3	3	5
Number of full-time employees	2.6	2.6	3.2
Female/Male	2/1	2/1	4/1
Visiting Professors			
Number of individuals	0	0	1
Number of full-time employees	0	0	0.3
Female/Male	0	0	0/1
Adjunct Professors			
Number of individuals	0	0	0
Associate Professors			
Number of individuals	4	4	6
Number of full-time employees	3.5	4	5.2
Female/Male	3/1	3/1	3/3
Doctors			
Number of individuals	35	28	32
Number of full-time employees	30.8	24.8	28.33
Female/Male	25/10	20/8	23/9
Licentiates			
Number of individuals	1	1	3
Number of full-time employees	1	1	2.2
Female/Male	1/0	1/0	2/1
Doctoral Students			
Number of individuals	14	26	35
Female/Male	12/2	22/4	27/8
Doctoral Theses			
Total number	2	2	4
Licentiate Theses			
Total number	0	0	6
Funding (SEK, millions)			
Internal/External	5/2	7/2	7/4

Education and Learning Bibliometric Profile

Publication Types

Data from DiVA 2009–2013

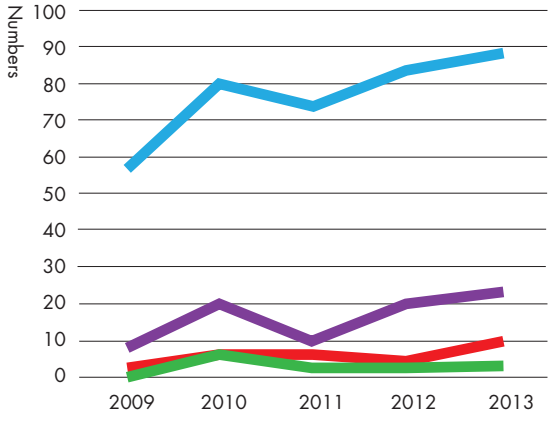


- *Article in journal, peer-reviewed 82*
- *Article in journal, not peer-reviewed 13*
- *Article in journal, review 0*
- *Article in journal, book review 8*
- *Book 8*
- *Chapter in book 65*
- *Edited book 4*
- *Conference paper, peer-reviewed 78*
- *Conference paper, not peer-reviewed 81*
- *Thesis, doctoral 14*
- *Thesis, licentiate 0*
- *Report 28*
- *Other academic publications 2*

Total 383

DiVA is a publishing system for research and an open digital archive for publications produced by researchers and students at DU. It is mandatory for researchers employed at DU to register any publications in DiVA.

Publication Trends



- *Publications in DiVA*
- *Level 1 publ. – Norwegian list*
- *Level 2 publ. – Norwegian list*
- *Articles in journal, peer-reviewed*

Norwegian list documents publication channels such as book publishers, academic journals and series to estimate scientific impact. Each channel is evaluated according to certain criteria established by the Norwegian Association of Higher Education Institutions. It is divided into two levels: level 1 contains 80 percent of the publication channels in a given field, level 2 contains, approximately, the top 20 percent publication channels in the same field.

Key Indicators

The number of publications in DiVA, full counts	383
The number of publications in DiVA, fractionalized	237.38
The mean number of annual publications in DiVA	76.6
The mean number of authors per publication in DiVA	1.93
The percentage of total publications at DU	17
The number of publications in WoS, full counts/fractional counts	27/9
The number of citations in WoS	89
The percentage of publications with at least one citation in WoS	63
The average field normalized citation rate in WoS	0.93 *
The percentage of publications among the top 10 percent most cited within the discipline in WoS	1 *
The percentage of publications among the top 25 percent most cited within the discipline in WoS	33 *
Journals´ average field normalized citation rate in WoS	1.27
The percentage of publications that have been published in journals which are among the 20 percent most cited within the discipline in WoS	19
The percentage of internationally co-authored publications in WoS	40

**Based on a small amount of data and should be interpreted with care.*

Web of Science is a bibliographic database from Thomson Reuters, Inc.
The statistics include both full counts, i.e. each publication/citation is counted as 1 regardless of the number of authors co-authoring the publication, and as *fractional counts*, i.e. the author's fraction of each publication/citation is counted (1/number of authors).
Field normalized citation was used to compensate for the different publication patterns in the profiles. It normalizes for the variation of citation pattern.
Journals' average field normalized citation rate. This indicator shows the citation impact for the journals in which the unit has published.

Education and Learning Panel Report

OWE LINDBERG, PHD, ÖREBRO UNIVERSITY (CHAIR)
SVEIN LORENTZEN, PROFESSOR, NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY
INGEGERD TALLBERG-BROMAN, PROFESSOR, MALMÖ UNIVERSITY

1. Summary

In spite of its many positive and interesting activities and strong development, in our estimation this profile as such is still in its early formative stage, and faces a number of choices that will be crucial for its future, and therefore is still not mature enough to host a PhD programme. When this will be possible depends on the choices that will be made. With our recommendations in terms of those choices, the profile should be in a position to apply for the rights for third-cycle level education within the next two to four years.

Our suggestions for which path to follow are, in brief, that the profile invests in

- Developing a third-cycle level subject area with a basis in the practice- and school-related research being conducted,
- Focusing on the didactical questions in this work – the theory and practice of learning and teaching in general as well as of specific school subjects,
- Doing this from the perspective of "Next Generation Learning",
- Developing a theory base for this initiative that a) makes it possible to bring together the different interests and dimensions into one coherent concept and b) creates the conditions for a common direction for the profile and the new subject area, and
- Giving senior researchers in the profile key roles in this work.

Together, this would enable Dalarna University (DU) to develop an interesting and unique third-cycle level subject area for which there is demand.

That the profile, so far, finds itself in an early formative stage and is experiencing rapid development is, we feel, evident in, for example, the different ways in which it has featured during our work. The written documentation that we had access to during our review illustrates a profile that has many small and, relative to each other, different environments that have no ties. The focus groups that form the profile appear in the documentation to be somewhat abstract and to be umbrella constructions that are vaguely defined in relation to the presented research. The on-site visit, on the other hand, provided a picture of a lively environment, one where discussion takes place and one that is characterized by a strong pioneering spirit. That which appears in the documentation to be unlimited and weak has in fact shown itself to be inclusive

and enabling in the meetings with various profile representatives. Yet, the oral presentations made during the visit make it difficult to see where the profile is heading.

For many of the assessment aspects that are part of this evaluation, we have chosen to think in terms of local, national and international. Most of the research that is being conducted is locally oriented – school-related and practice-related. Examined from such a perspective, the impact appears to be high. The research that is conducted has often a local connection and is significant in a local context, something that was pointed out in discussions with external collaborative partners, represented by two chief education officers. It is therefore reasonable to maintain that relevance too is high from the local perspective.

All research that is conducted within the profile is also relevant for the teacher-education programmes at the University, be it to varying degrees and in various ways. Whatever the case, the research that the teacher-education programmes most require is another and more difficult question to answer. The question as to the research connections of the teacher-education programmes is itself a wide and complex field of research. Yet, there should be good bases on which to develop research that has significant relevance and importance for teacher-education programmes and schools.

2. Environment/Infrastructure

We would like to highlight the following points here: meeting places for colleagues, internal organization, management structure, staff constellations, doctoral studies environment, and collaboration at the management and board level.

Meeting places for colleagues

The Higher Seminar in Educational Sciences. The profile highlights this higher seminar as being important to the infrastructure that the aim is to build. Such a seminar, when functioning well, is a central meeting place in the inner life of a research environment, and the ambition is thus commendable. In all meetings with profile researchers, the higher seminar was mentioned in such a way as to indicate that it holds a central position in the collective self-image. Our interpretation is therefore that researchers find the seminar to be an arena where important discussions are held and that they themselves can use it in a constructive manner. At the same time, when participation is considered, the seminar is a more complex phenomenon. Besides the head of research, there are very few who participate frequently – not least when it comes to the senior researchers (professors and associate professors), where this fact is quite evident. Only two senior researchers of the 11 who at the time of comparison were noted as being senior researchers on the homepage have a somewhat high attendance rate – 27 and 15 of 42 seminars attended – while two associate professors and two professors have not attended any of the seminars.

Another two profile-related meeting places have, as far as we know, been established – the assembly of supervisors *(handledarkollegiet)* and the assembly of doctoral

students *(doktorandkollegiet).* Both of these have important functions for the profile. The assembly of supervisors offers senior researchers another meeting place, which can be important since the Higher Seminar in Educational Sciences, according to the participation statistics, appears not to be a prioritized meeting place for senior researchers.

Internal organization

The focus groups that are noted in the documents do not present any activity at the group-level. Nor is there any mention of any focus group leader or other person in a position of responsibility that might indicate a form of cohesion within the groups. The only documentation from the research groups is the listing of research projects that are sorted under each. Therefore, it is difficult for us to see them as a collective expression for existing research groups/interest groups. They appear more to have an umbrella function of trying to bring together researchers who fit under the profile due to their subject affiliation. As such, they have two problems at the same time: (i) vague demarcations and as a result also vague relations with each other; and (ii) it is unclear in which way they meet the need for a basis in research that exists in the teacher-education programmes.

Despite this, the picture that we have from our visit is that both the profile and the focus groups create a sense of belonging. It is as though the non-demarcated and vague contours of the focus groups have made them inclusive and open to opportunities in the everyday work. Presentations during the visit and the work that preceded them have also shown new dimensions in, and thematization of, the research being conducted and the dividing points within and between the different focus groups. In this way, new possibilities have been created for the organization and running of the profile. The work leading up to the evaluation has in this respect been very productive, and it is our judgement that the presented material ought to be able to be used as a foundation for an internal discussion in the profile about how to proceed and develop and synthesize the focus group work. In order for the profile to continue to develop, we believe that such work is of utmost importance.

Management structure

There is a management structure for the profile as a whole. From the outset, it comprised one head of research only, but over time a steering group has been added that includes the research leader, the pro-dean (also an associate professor in the profile) and the head of development for Teacher Education. Beyond this, there is no formal leadership organization for the profile and therefore, for example, no functions of responsibility and no inner organization in the focus groups. In order for the profile to develop into being a profile in the sense that the University's research strategy postulates, there ought to be clear responsibilities and duties at a lower level than just at the profile leadership level – not least because the profile remains characterized mainly by individual subjects, areas and researchers' work than by any unified organization.

Staff constellations

Teacher education institutions have, by tradition, a weak research base and a small proportion of teachers with PhD degrees. Although DU and the profile Education and Learning have been successful in the recruitment and retainment of teachers with PhD degrees, the research competence among teachers as a whole remains unsatisfactory. The research base of the teacher-education programmes is generally speaking weak, and the orientation in terms of content of the research competence only partially meets the needs of teacher education. To retain and develop the existing teacher education programmes at the University, the knowledge base among teachers in the profile needs to increase. One particular need is for specialized professors.

Doctoral studies environment

In relation to the supervisory competence and research activities within the profile, there are at present quite a number of doctoral students within Education and Learning. Such a situation commonly risks doctoral students ending up in a sort of no-man's land. The connection to the subject environment at the educational institute where the doctoral students are registered becomes more difficult when they conduct their daily work at another institute – their home institute – and if the research environments in question at this institute are not particularly strong, the home base can easily become too weak.

From the perspective of the profile, there are no real risks posed by the present situation even if in the long run there looks as if there will be a somewhat lower number of doctoral students than might be desired. Doctoral students do not see any problems with the present situation either – in fact the contrary is true. In the doctoral student advisory group that exists in the profile, there has never been any reason to discuss problems concerning the situation of doctoral students within Education and Learning at any meeting. Doctoral students, according to those we spoke with, are generally very happy with their situation. There are two points that were highlighted as being of particular importance in terms of doctoral students: for example, supervisors are easy to reach when they are needed and the Higher Seminars in Educational Sciences fill their function as open, integrative meeting places for the doctoral students. Another possible reason for the positive feeling that the doctoral students convey might be that more or less all doctoral students participate in a research school and as such are also part of one and the same unit group.

Despite this positive picture provided by profile representatives and doctoral students, there are no strong research environments that are met by the doctoral students within the profile or that they have the opportunity to belong to. On top of this, the profile is as of yet much too divided.

Collaboration at the management and board level

Both the head of school and the dean, from the short discussions that the visits have allowed for, give a picture of collaboration that works. No indication has come from the profile either of any difficulties in these relations.

As with so much in this profile, the infrastructure can be said to be under development. We feel it to be of great importance that this happens. The stories we heard during our visit have a great many similarities, so much so that they can be seen to be variants of one and the same collective story, where everyone subscribes to one common project. One dimension in this is a sort of pioneering spirit where it is hard to move away from the impression that a considerable amount of the work done is above and beyond what is part of the obligations of the position. Such situations are not sustainable in the long term.

3. Research Network

The profile presents a host of networks in which its researchers are members. A number of them are large collegial networks, the type of which researchers are normally members in, given that the researcher is conducting a certain type of research without having to demonstrate any great activity in the networks besides attending conferences and submitting contributions. Among these are EARLI and NERA/NFPF and SWERA. In a number of other networks, such as the national *Specialpedagogik och kvalificerade samtal*, researchers from the profile have a more active role. In two networks, the profile aims to be at the forefront: these two are *Nationellt nätverk för pedagogiskt arbete* and *Nordiskt nätverk för forskning om läsning och skrivning*.

Just fewer than half of the 27 networks provided are Swedish; one-third are Nordic; and the rest, about one-sixth, are international in a broad sense. There is no mention of any connection to the large American educational research organization AERA or to the European equivalent EERA/ECER or to any of the other large international research organizations within the field.

Since the networks can be assessed as important and are also highlighted as such in documents, they should be able to have an increased position in the criteria for the allocation of funds. They are there, but it is difficult from the decisions on allocation to see that they have a more prominent role.

Arguably the most important type of network for this profile is that of the research schools for doctoral students. A number existed before the profile was established and others have formed since then. Here, the profile and those organizations that preceded it have been very successful. It is uncommon that a single field at a university the size of DU has so many doctoral students placed there and in many cases with their head supervisor there too. The discussions from the visit indicate that the presence of doctoral students at a university is extremely meaningful for the vitality of the higher seminar. It is our judgement that these networks are going to be important for a long time into the future. Even if the profile is successful in terms of

its ambition to secure the rights to have third-cycle level education, there will still be much to gain from more experience with research-school programmes and the wider choice of courses that these networks represent.

One more type of network or research collaboration ought to be mentioned. In at least one case, research is conducted within the framework of organized international collaboration.

4. Third-Stream Activities

Our opinion is that this is perhaps the profile's strength. All indications are that the collaboration with regional (municipal) school bodies, schools and teachers is unusually well-functioning and is of quality for all parties involved. It probably has few, if any, equivalents in Sweden. The School Research Fund *(Skolforskningsfonden),* with its annual announcements about research funding, and the financing of the research school *Skolnära,* with a licentiate degree as its final goal, are two particularly significant results of this collaboration. It is not the profile that developed this collaboration – it has existed for more than ten years and has developed throughout that time – but the profile is in charge of managing it and so far has done well doing so: this, at least, is the impression we get from the chief education officers. Currently, there is keen interest among researchers in the profile in the announcements put out by the School Research Fund *(Skolforskningsfonden)* and thus also competition for the funds.

Given the profile's background and current position, this type of research close to school practice that the external relations allow and call for is perhaps the best path to success.

5. Productivity

There are quite an extensive number of publications. In the period 2009 – 2013, there were 383 publications from active researchers in the current profile, which equates to about two publications per researcher and year. Keeping in mind the limited volume of ongoing research, this is not a bad number. The 2012 – 2014 report further shows an increase in publications. However, this is simply too short of a timespan for us to be able to say anything definitive about developments in the area of publication. It should also be noted that about 50 percent of the publications are conference contributions and reports, and the conference contributions alone comprise just over 40 percent. It is possible that this high proportion of conference material can be seen as an expression for the development of a research culture that is taking place within the profile. Such work demands that teachers who have completed their third-cycle level education are given the opportunity to be part of larger research communities that are offered by research conferences and that they there have their own texts read and examined. It is also possibly reasonable to regard the researchers' productivity

pattern as being influenced by high and double ambitions – to be active at the level of school practice, and to be part of the national and international research discussions by way of their texts.

At the same time, it is difficult to evaluate the aggregated publication level because it is not clear how the publications relate proportionally to the different researchers in the profile. A look at the aggregated and then the individual researchers' publication lists shows that the publication frequency is very different, as is the character of the presented research. When it comes to WoS, it is based on small volumes and is therefore difficult to interpret, especially in terms of tendencies.

6. Quality of Research

Initially, the profile's research consisted of that which the incoming researchers brought with them. Generally speaking, it can be said that this research varies in terms of focus, theoretical ties and foundation, methodology and publication arenas, as well as in quality. With but one exception, little of this research has been carried out in collaboration, and there are few co-authored publications. For example, in the publications we had access to, not one text was written by a professor with a researcher active in the profile. Therefore, it is difficult at this point in time to ascribe the profile or specific research groups any definite quality; rather, the quality is sustained by individual researchers. During our visit, the profile management stated how, during the profile's three years, there has been a successive increase in research collaboration but that it takes time for this to be visible in the publication lists. Also during the visit, we were able to learn about current research being conducted in collaboration between profile researchers.

The capacity to attract funding has so far been limited to the local/regional level. The close collaboration over many years with the municipalities in the region have resulted in, among other things, the so-called *Skolforskningsfonden,* which contributes annually with research funding in a number of areas. As a result of this, researchers from the profile have an exclusive arena for research funding. The fact that the *Skolforskningsfonden* has even been established can be seen as evidence that the research is attractive for the region's municipal school bodies. Discussions with representatives for school heads confirm this. Outside of this local and regional context, the profile has difficulties with regards to research financing.

As with all comparisons, the selection of objects for comparison and the system used are central to the outcome. The room we have in which to make a qualified selection of research texts; to compare environments at other institutes of higher education; and to take a systematic approach is particularly limited. Therefore, we have chosen to examine three points in the presented research texts and on that basis, conduct a review of the strengths and weaknesses of the profile's research.

Our overall impression is that it looks professional. At the same time, the character of the research is very different. The two researchers with clearly the largest number

of publications, almost all of which are co-authored, have a clear orientation towards follow-up research *(följeforskning)* and evaluation. Most of what we have seen has a clear bearing in some way or another on schools and the work of teachers. Analysis and the use of theory vary, but as a whole, are still well-done.

7. Impact and Relevance

As we pointed out earlier, the answer depends on the standpoint taken when the questions are being answered. In relation to the region and its schools, both impact and relevance are high according to the chief education officers we spoke with. From a national and international perspective, the result is different. What might have a great impact and relevance at a local level may not be cutting-edge research at a national or international level. Yet, within the profile, there is also research that claims to be valid that ought reasonably to be tested in a national and international perspective – not least research in the field of mathematics didactics.

All research being conducted within the profile is, be it at a varying level or in a varying way, relevant for teacher education. Formally speaking, the connection with the University's teacher education programmes is strong in that a large proportion of the research being conducted is financed with internal funding on condition that this funding goes to research that is in line with/conforms to the focus of the profile. From this follows the fact that it has formal relevance. Seen from another perspective, it is, however, doubtful whether the research being conducted best benefits the teacher education for which the University is responsible. Seen against the background of the ambitions of the programme and the close collaboration between the profile and teachers, schools and school management in the region, there ought to be a sound basis on which to build research that is relevant and important for teacher education and schools. What is especially important is the large amount of interest in school- and practice-related research, an interest that exists among researchers from a number of different areas. The school- and practice-related research could also serve as a hub for the development of a future area for third-cycle level education. Coupled with the more norm-critical and other more strongly theory-based research that also exists in the profile and the knowledge that is generated in NGL and the Research School TKP, there are the foundations of a unique area of third-cycle level education seen from a Swedish perspective. As well, in a Nordic, European and international perspective, this would be a particularly interesting area for third-cycle level education.

However, and this is an important point, the profile is not at that stage yet. Our assessment is that a consolidation of the successes achieved so far in the profile is required as well as a consistent investment in this direction from both the profile itself as well as from the University. For the University, it is mostly a question of providing the economic bases for a senior multidisciplinary environment with particular focus on school practice.

8. Vision for the Future

The vision for the period until 2020 includes

- Qualitative development
- A broader external finance base
- A greater number of publications (of good quality) nationally and internationally
- Fully developed third-cycle level education
- Developed forms for research communication
- Improved social benefit by means of collaboration with society at large

In the evaluation assignment and in the University's strategy, the focus is on the relationship of the research profile to the University's teacher-education programmes and the need for a research foundation for these programmes. There is little of this in the future vision. Focus is on the establishment of a third-cycle level subject area.

When it comes to the ability to realise these set ambitions, with the exception of the ambitions regarding the third-cycle level education, it is difficult to determine since the strategy to a large part lacks concrete descriptions of key aspects/questions and tools. In terms of the ambitions of third-cycle level education, our assessment is, after our visit, that a base exists here on which to move forward but that there is a great deal of work ahead – work that must be done at a number of levels. There are almost no such questions and analyses of this sort in the future vision of the profile. Naturally, this can be due to different interpretations of what constitutes a vision for the future conditions; however, it can also suggest that the profile has not yet had time to address the challenges that come with the development of a third-cycle level subject area.

Regardless of which, a great deal of work lies ahead – not least considering the starting position. Despite the good work described during the visit of bringing researchers together, it is hard to dismiss the impression that the profile still comprises many small areas of research that are weakly related. The fact that there are, according to the website, 12 senior researchers in the profile – professors and associate professors – is not the same as there being 12 senior researchers within one field for third-cycle level education within the profile.

9. Other Issues

During our visit, the significance of the research leader for the development that has taken place since the establishment of the profile was brought up time and again. The direct and indirect references to the research leader were, it can be said, a consistent theme throughout the visit. The significance of the leader who serves to enthuse, interest and create a sense of belonging and community is well-known, and much of what we highlight as possible factors for success is without a doubt rooted in the work of the research leader. This is of course a strength for the profile to have such a

research leader; however, it is also a weakness and poses a risk. There are limits to just how far such dedication from one individual research leader can be the key to success. Therefore, as far as we are concerned, it is particularly important that the profile is organized as an institution. If this is not done, there is a risk that development loses its momentum and perhaps even stalls.

In the evaluation assignment, the focus groups are highlighted as a central building block in any future third-cycle level subject area. As noted, we found it difficult, based on the presentation of these in the documentation and on the website, to see that they could fill any function. The discussions on the research within the focus groups that took place during the visit showed that research is taking place that is quite significant in its scope, be it in most cases within the framework of somewhat limited projects, and that there is active discussion on this research. Our assessment is that the focus groups in their current form, despite the expressed weaknesses, have filled an important function in the set-up of the research that has been conducted and that is being conducted. However, they hardly constitute a basis on which to build a third-cycle level subject area. Therefore, it is interesting to note, as we have done earlier, that the accounts and the work that preceded these showed new dimensions in and thematization of the conducted research and the points of intersection within and between these different focus groups.

10. Overall Assessment

As stated, our assessment is that the profile finds itself in an early formative stage with important choices to make in terms of future development. As such, it would be counterproductive for us as evaluators to present a strong summative evaluation in a comparative perspective. Therefore, we would instead like to present a collective evaluation from a developmental perspective in which we highlight both opportunities and risks.

Two different pictures of the profile have developed during the evaluation, one in the documentation and one from the visit. The latter is a clearer picture than the former. The documents present a picture of a very loose construction. More to the point, it could be described as a temporary meeting place for a number of people heading in different directions. The visit revealed a sense of belonging and strong engagement, a kind of pioneering spirit. Further, it showed mutual research interests and collaboration – such that could not be noted from the documentation. Together with the strong collaboration with school bodies within the region, with focus on school- and practice-related research, and with the digital competence at the University and the research on digital learning (the research school TKP), there are opportunities for a stronger coherent formation of the profile and, in the long term, the establishment of a third-cycle level subject area.

At the same time, the profile has so far been fragile, which ties with the formative situation in which it finds itself, where there is a lot coming but where little has yet

found its form. Certainly there is the higher seminar, a group of supervisors and a group of doctoral students. An advisory group of professors is also to be established. However, there are no leadership functions or functions with responsibility besides the profile leader. The leadership group of a further two people that the research leader has at her side is mainly a support for her and does not perform any operative leadership work. Therefore, in terms of responsibility for developing and running the profile, which comprises some 40 researchers, this comes down to one person.

In future work to develop the profile, it will be necessary for more people to have clear areas of responsibility. Of particular importance for future development is engagement and involvement from professors and associate professors within the profile.

11. Recommendations for the Future

We suggest that in terms of a future path, the profile chooses to invest its time in

- Developing a third-cycle level subject area with a basis in the practice- and school-related research that is being conducted,
- Focusing on the didactical questions in this work – the theory and practice of learning and teaching in general as well as of specific school subjects,
- Doing this from the perspective of "Next Generation Learning",
- Developing a theory base for this initiative that a) makes it possible to bring together the different interests and dimensions into one coherent concept and b) creates the conditions for a common direction for the profile and the new subject area, and
- Giving the senior researchers in the profile key roles in this work.

We look upon our suggestion as a packet, where each individual suggestion for a choice to be made supports the other and where no individual part is strong enough to stand alone but where they together are the basis for creating something that would be an asset to research in the field of Educational Sciences in Sweden. In this respect, each suggestion for a choice to be made is as important as the next. At the same time, it can be said that the key point in our packet of suggestions is the development of a theory base. This is the basis for development and success. This work has two main dimensions or sides: the first is the content – that is to say, the thoughts and ideas around which it will be built; the second, and just as important one, is the social element. It is not enough to draw up application documents to express the thoughts and ideas of the theory base. If the theory base is to have any meaning for the third-cycle level subject area and the profile, it must be alive in the profile. From this perspective, the drawing-up of a theory base is about the development of a profile-wide orientation towards everything from subject didactics and general didactics to the understanding of school-related and practice-related research. Therefore, it is work in which the whole profile needs to be engaged.

To invest in such a way means long-term, hard work. Our assessment is that if the work is initiated right away, or at least in the near future, and is carried out at full capacity, a reasonable time-frame is two to four years. If, for whatever reason, it is not possible to work at full capacity on this, then it is doubtful whether the profile should consider investing its time in the development of a third-cycle level subject area. However, even if the work can be conducted at full capacity, the project is not a simple one and is not without risk. In the following, we aim to highlight three possible risks that come with investment in the development of a third-cycle level subject area that we suggest.

The first risk is that of conflict between the work involved in developing the third-cycle level subject area for the purpose of attaining the rights for third-cycle level education and the task of anchoring the research in the teacher-education programmes. A decisive difference between these objectives relates to the relation between the breadth and the focus of the profile. A strong basis in research of the teacher-education programmes requires a comprehensive breadth to the research since these programmes cover a large and wide field of knowledge. Naturally, it would be positive if there also were prominent points of focus in this research; however, if there is no research that suits the breadth of content of the teacher-education programmes, then it becomes difficult, at the present time, to defend the rights to teacher education. For the construction of a third-cycle level subject area that will win approval, the relation is basically the direct opposite. A third-cycle level subject area that will fit the breadth of content of the teacher-education programmes would be an impossible construction. On the other hand, a third-cycle level subject area with a sharp, relatively narrow and clearly defined profile that stands out and becomes something in the national landscape of Education Sciences can risk furthering research that only partially anchors the teacher-education programmes in research. The profile faces a great challenge in this respect.

The second risk we would like to point out is that the work to secure the rights to offer third-cycle level education may limit the freedom of the individual researchers and thus undermine the pioneering spirit. As we described earlier, we were met by an enthusiastic pioneering spirit. To a certain extent, we relate this to the experience that everybody has the freedom to steer his or her own research interest in the direction of those questions that are dear to him or her. And this in turn we have, to a certain extent, connected to the way in which the profile's research funding is allocated. If efforts are made to develop a third-cycle level subject area, conditions for each researcher will change as will the division of research funding. In the coming few years, that which promotes the third-cycle level education must take precedence. This would mean that everything would no longer be equally important. The somewhat open and liberal position on the question of what is in line with the profile's orientation and goals that we were able to note in the division of research funding will need to be tightened. The risk with this is that some will feel excluded and that the pioneering spirit dissipates. Even here, the profile has quite a challenge ahead of itself.

The third risk we would like to point out is that the research collaboration with Karlstad University, Umeå University and Örebro University (as well as other such collaborations) may risk being pushed into the background as a result of the work to secure the rights to third-cycle level education. This would be unfortunate. The wealth of experience with third-cycle level education and the large course selection that the networks represent will be required as a supportive framework, at least during the initial years upon securing the rights to third-cycle level education.

The three risks we have now highlighted do not in any way change our recommendations; however, it is important that the profile begins its work to develop a third-cycle level subject with open eyes and does not turn a blind eye to the risks that the project poses. An awareness of the risks means being able to meet them in a constructive way.

***

A consistent theme in our text is that Education and Learning is a profile that is experiencing movement and change and that is in an early formative stage. As indicated in our introduction, we have also strongly adopted the formative orientation of the evaluation that was emphazised in the assignment. The outline assigned in the instructions, and which has structured our presentation here, has, we feel, another orientation. It has a more summative tone. This has meant that our text does not always fit the headings. Nevertheless, we chose to work with the given headings instead of using the opportunity to adjust the outline. The latter, we feel, is not really a solution. One consequence of our choice is that the respective heading and text may appear to pull in somewhat different directions; however, the various sections of text are placed throughout where we judged them to be best suited both in relation to the headings and to the text as a whole.


FROM REACTOR

ENERGY, FORESTS AND BUILT ENVIRONMENTS

Research comprises energy technology and systems, utilization of forest resources and sustainable buildings. Forming the foundation of the research are technology and the natural sciences, with strong contributions from the social sciences by way of their examination of the role of different players in energy transformation processes. Competence in the research related to the social sciences is found in social anthropology, political science and human geography. Specialization within technology and the natural sciences is found in solar technology, microsystems for biofuel combustion, forest plants and energy efficiency in buildings.

International collaboration is conducted mainly as part of EU projects in which profile researchers are involved. Most of the projects are run in close cooperation with companies in the industries of energy technology, power and heat production, and the construction and forestry sectors. Wider efforts with regards to company cooperation are made at the industrial research school Reesbe, which is run as a joint venture between Dalarna University, the University of Gävle and Mälardalen University.

The research profile has its base in programmes and courses in the two-year Master's Programme in Solar Technology and the bachelor-level engineering programmes, one in energy technology and one in construction.

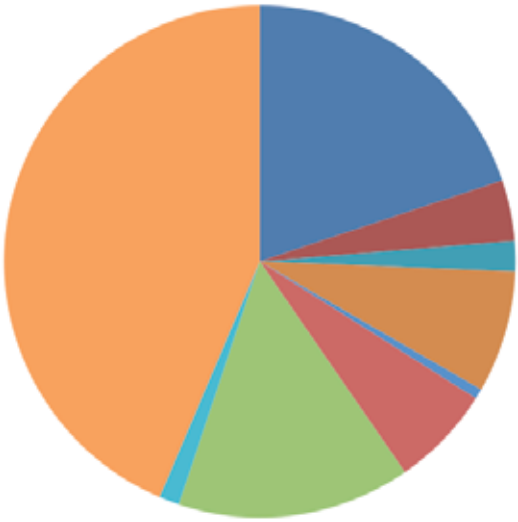
Energy, Forests and Built Environment Basic Facts

	2012	2013	2014
Professors			
Number of individuals	2	2	3
Number of full-year employees	0.75	0.5	1.45
Female/Male	1/1	1/1	1/2
Visiting Professors			
Number of individuals	2	2	3
Number of full-year employees	0.75	0.75	1.4
Female/Male	1/1	1/1	2/1
Adjunct Professors			
Number of individuals	1	1	1
Number of full-year employees	0.3	0.4	0.4
Female/Male	0/1	0/1	0/1
Associate Professors			
Number of individuals	5	7	5
Number of full-year employees	5	4.05	3.05
Female/Male	2/3	4/3	3/2
Doctors			
Number of individuals	10	7	8
Number of full-year employees	7.55	5.1	5.55
Female/Male	1/9	1/6	1/7
Licentiates			
Number of individuals	2	3	3
Number of full-year employees	1.5	2.5	2.5
Female/Male	0/2	0/3	0/3
Doctoral Students			
Number of individuals	9	13	13
Female / Male	2/7	4/9	4/9
Doctoral theses			
Total number	1	0	0
Licentiate theses			
Total number	0	1	1
Funding (SEK, millions)			
Internal/External	5/7	6/8	6/7

Energy, Forests and Built Environments Bibliometric Profile

Publication Types

Data from DiVA 2009–2013

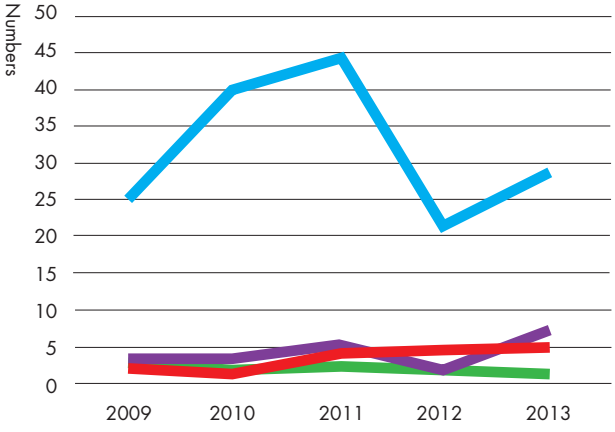


- *Article in journal, peer-reviewed 31*
- *Article in journal, not peer-reviewed 6*
- *Article in journal, review 0*
- *Article in journal, book review 0*
- *Book 3*
- *Chapter in book 12*
- *Edited book 1*
- *Conference paper, peer-reviewed 10*
- *Conference paper, not peer-reviewed 23*
- *Thesis, doctoral 0*
- *Thesis, licentiate 2*
- *Report 68*
- *Other academic publications 0*

Total 156

DiVA is a publishing system for research and an open digital archive for publications produced by researchers and students at DU. It is mandatory for researchers employed at DU to register any publications in DiVA.

Publication Trends



- *Publications in DiVA*
- *Level 1 publications – Norwegian list*
- *Level 2 publications – Norwegian list*
- *Articles in journal, peer-reviewed*

Norwegian list documents publication channels such as book publishers, academic journals and series to estimate scientific impact. Each channel is evaluated according to certain criteria established by the Norwegian Association of Higher Education Institutions. It is divided into two levels: level 1 contains 80 percent of the publication channels in a given field, level 2 contains, approximately, the top 20 percent publication channels in the same field.

The number of publications in DiVA, full counts	156
The number of publications in DiVA, fractionalized	100.15
The mean number of annual publication in DiVA	31.2
The mean number of authors/publication in DiVA	3.08
The percentage of the total publications at DU	7
The number of publications in WoS, full counts/fractional counts	26/11
The number of citations in WoS	102
The percentage of publications with at least one citation in WoS	73
The average field normalized citation rate in WoS	1.19*
The percentage of publications among the top 10 percent most cited within the discipline in WoS	9*
The percentage of publications among the top 25 percent most cited within the discipline in WoS	21*
Journals'average field normalized citation rate in WoS	1.33
The percentage of publications that have been published in journals which are among the 20 percent most cited within the discipline in WoS	27
The percentage of Internationally co-authored publications in WoS	42

**Based on a small amount of data and should be interpreted with care.*

Web of Science is a bibliographic database from Thomson Reuters, Inc.
The statistics include both full counts, i.e. each publication/citation is counted as 1 regardless of the number of authors co-authoring the publication, and as *fractional counts*, i.e. the author´s fraction of each publication/citation is counted (1/number of authors).
Field normalized citation was used to compensate for the different publication patterns in the profiles. It normalizes for the variation of citation pattern.
Journals' average field normalized citation rate. This indicator shows the citation impact for the journals in which the unit has published.

Energy, Forests and Built Environments

Panel Report

ANNE GRETE HESTNES, PROFESSOR, NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY
BENGT HILLRING, PROFESSOR, HEDMARK UNIVERSITY COLLEGE
SVEND SVENDSEN, PROFESSOR, TECHNICAL UNIVERSITY OF DENMARK (CHAIR)

1. Summary

The research profile Energy, Forests and Built Environments was evaluated in February 2015 by an international expert group. The findings of the group are that the quality of the research carried out by the profile is of the same level as for other similar groups. The profile also has a high success rate in procuring external funding. The production of publications is acceptable, but the number of articles in international peer-reviewed journals has to increase. The large education section is a very good environment for development of the research profile.

The profile plans to apply for a PhD programme. The evaluators agree that at least for the energy section, this should be a goal. However, we feel it essential that the whole profile be involved in such an application. More "in-house" supervisors of PhD students are required to provide a closer contact between the PhD students and their supervisors.

Obvious problems exist with the recruitment of skilled people to the profile, especially people with competence to supervise PhD students. The University is hiring people to part-time positions for teaching. Potential applicants for the positions at DU will typically have to apply for external funding to do research and to get full-time positions. Although this is how the system works today, changes need to be made. The University ought to guarantee full-time permanent positions in order to make the positions more attractive in competition with those positions offered at larger universities, in industry and at universities in other countries.

SERC (the Solar Energy Research Center) holds a unique position as it is the only national solar-heating system research group. It conducts high-quality research and has two degree programmes. It also has many projects, both independent research projects and collaborative projects with industry.

The forestry and wood technology group also has unique expertise, in its case in plant production in forestry, both nationally and internationally. A number of group experts will be retiring in the next few years, which means the group needs to be looking at recruitment. What is more, the group seems somewhat isolated from the other groups in the profile when it comes to teaching and research projects. They are far from heavily involved with courses and programmes; however, they do have good

ties with industry. We suggest that they broaden their scope towards more general biomass production and that they physically move to the Borlänge campus.

The group Energy Efficiency in Built Environments has very strong ties with the building sector; it also has a number of programmes. It needs to develop on the supervision side, and it also needs to develop a new, higher level education programme. The Reesbe project, with four PhD students, is highlighted as a very positive example of development.

The social science research group has had some success within and outside the profile at DU. However, the group is very small and to us the connection to the profile is somewhat unclear.

Plans for the next five years are very good with respect to growth to a sufficient size by the organization in three thematic research areas. New visions and strategies for future development are recommended that should be developed in close cooperation with university management.

2. Environment/Infrastructure

The theme *Solar Energy Research Center (SERC)* links to the One- and Two-Year Master's Programmes in Solar Energy Technology and to the Reesbe Graduate School (in four PhD projects in solar energy). Research and education involves about 15 people from the subject Energy Technology.

The theme *Energy Efficiency in Built Environments* links to the two Bachelor's Programmes in Construction and in Energy Technology. Research and education involves about 15 people from the subjects Construction and Energy Technology.

About 10 people from the subject Energy Technology are involved in both themes above.

The theme *Forestry and Wood* is linked to a few free-standing courses. Research and education involves about seven people from the subject Forest and Wood Technology and one from Energy Technology.

The large number of courses and programmes delivered by DU means that a very good environment exists for development of the research profile. University management is able to contribute to the stimulation of development of the research profile by using research funding for the strategic employment of new full-time faculty members whose responsibility it would be to build up the research areas.

The infrastructure for the research profile is very good as many relevant experimental facilities have been established at Campus Borlänge. Facilities for the forestry and wood technology group should also be established at Campus Borlänge so that they can be physically located with the other groups in the research profile.

Plans exist to apply for a PhD programme in the research profile Energy, Forestry and Wood Technology and Energy Efficiency in Buildings. Sections within the

profile are definitely in the position to apply, especially the energy section. However, there are some doubts about the volume of PhD students and also about the number of supervisors. We think it is necessary that the whole profile be part of such a programme in order to increase the number of people involved. It is very important to have a high-ranking profile. This means that all sections of the profile cannot have the same relevance from the beginning, although that should be the goal in the long-run. We also feel it important that more supervision be done "in-house". This would result in a clearer situation for PhD students, with clearer roles and closer relations. It is a challenge having two to three supervisors and one to three positions to relate to. The "in-house" supervision could also be expected to increase the number of published papers and shorten the time to examination. However, it may take some time to build this up.

3. Research Network

The research profile has an extended network both nationally (with many common PhD projects) and internationally (with participation in several EU-funded projects).

4. Third-Stream Activities

The thematic research area Solar Energy Research Center collaborates with small companies that produce or install solar-heating systems, PV-systems, heat pumps and wood-pellet boilers.

The thematic research area Forestry and Wood Technology has good collaboration with forest industries and has great potential for the future for the use of timber in industrial house production and energy factories that produce liquid fuels for transport and raw material for polymer production.

The thematic research area Energy Efficiency in Built Environments has a great deal of collaboration within EMC (the Energy and Environment Knowledge Center) and Reesbe (Resource Efficient Energy Systems in the Built Environment) with housing companies and district-heating companies and, as part of Byggdialog Dalarna, with companies working with small-house manufacturing.

5. Productivity

Based on the bibliometric analyses for 2009–2013.

The production of reports (68) and conference papers (33) is acceptable, but the number of articles in international peer-reviewed journals (31) must increase significantly in the near future. This can be expected as several PhD students will be finishing in the next few years and should be producing articles with their supervisors.

6. Quality of Research

The quality of the research is at the same level as that of other similar groups, and the research profile has a high ranking when judged by its success in securing external funding from EU programmes.

7. Impact and Relevance

The thematic research area *Solar Energy Research Center* has a unique position as the only research group in Sweden working with solar-heating systems. The thematic area offers two international programmes: the One-Year Master's Programme in Solar Energy Engineering and the Two-Year Master's Programme in Solar Energy Engineering. The thematic area works together with companies in solar-heating systems, PV systems, heat pumps and pellet boilers used in small houses.

The thematic research area *Forestry and Wood Technology* has an expertise in plants that is special at both a national and an international level. The field of study is very useful for the forestry industry. The field forms the basis for the new worldwide focus on the use of biomass from new types of forests in biorefineries that produce ethanol and methanol for biofuels for transport and as a new source for the polymer industry as a new source of fibres to replace synthetic fibres (see: http://www.star-colibri.eu/publications/star-colibri-publications/ Joint European Biorefinery Vision for 2030).

These new biorefineries can also be combined with district heating and power production using the waste heat from bio-chemical processes. The theme has great potential to become a future growth field of study at DU, but the initiation of this development cannot be expected to come from inside the existing group as it is about to see many of its members retire. University management can, however, stimulate the process by establishing new positions in the group with special focus on using the expertise in the group in relation to a new type of forestry that is of interest for the new biorefinery use of biomass. The group may also be stimulated in the process by moving to the campus in Borlänge. At present, the thematic area is not involved in courses and programmes at the University, but programmes and courses for 'new forest engineers' may become relevant once the vision is being realized.

The thematic research area *Energy Efficiency in Built Environments* has a sound foundation in the courses and programmes for energy specialists within the Building Engineering Programme at the bachelor level and the planned Magister in Buildings. The thematic area has very strong connections with the construction sector as well as with housing companies and district-heating companies. These sectors are very large and have a strong interest in the supply of qualified building engineers with specialization in energy-efficient buildings. The companies need to have more research-based knowledge in the development of the new generation of buildings and district-heating systems. The thematic area would, therefore, be in a position to build up more education and research activities if the group were to employ more

newly educated PhD candidates with specialization in energy-efficient buildings and district heating. To overcome recruitment problems, the new staff should be offered fully paid positions – 50 percent financed by teaching activities and 50 percent financed by internal research-initiation money from central university management for a five-year period as extra support.

The Reesbe project, with four PhD students in the thematic area Energy and Built Environments, can be highlighted as a promising example of the research profile's active participation in establishing a new research area that is very relevant for local housing companies and district-heating companies as well as for society in general. This is an area that may be extended in the future, and similar new initiatives may form the basis for a separate PhD programme for the research profile.

The social science researchers within this thematic area have had some success procuring projects in cooperation with other groups at DU and with local companies and organizations, and their cooperation with the researchers in the area of education seems to be a promising initiative. The group is, however, very small and therefore vulnerable, and its connection to and cooperation with the other researchers in the profile is rather unclear. Management should therefore consider whether this group should be strengthened or whether it at this stage represents an unnecessary broadening of the profile. Leaving it as it currently is does not seem to be a viable strategy.

8. Vision for the Future

The described plan for the next five years is very good with respect to the building-up of groups of PhD students and senior researchers who can supervise PhD students so that the groups are sufficient in size. The organization in three thematic research areas is also very good.

New visions and strategies for more ambitious future development of the thematic research areas should be developed in cooperation with the leader of the research profile and university management.

9. Other Issues

Evaluation of the risk with implementing a new ambitious strategy compared with following a more business-as-usual strategy is expected to result in the conclusion that the business-as-usual strategy has a higher risk of failure than the ambitious strategy. This is based on the fact that two of the groups may disappear due to the generation shift and a lack of personnel.

A more ambitious strategy can be implemented by employing more people. They may be very successful, with a significant increase in research activities, or they may be less successful, with a small increase in research activities, but still with enough external funding to cover the cost of their employment.

In the vision for the University, the Vice-Chancellor states that DU shall have its own PhD programmes in strategic areas. If the problems are considered, this requires that the central management of DU has to support the selected strategic areas in special ways to make this happen. Another vision, in addition to creating the next generation of learning, is to have good relations with society at large, including small, medium and large companies. Our judgement is that this is one of the strengths of the research profile, although there is always room for development. There is a risk that this kind of activity at a university takes focus from the research. This is not always the case when business networks are being built up or when there is participation in processes at the local or regional level, as such activities also generate data to use for research activities.

Working with large companies includes ongoing rationalization that is very clearly exemplified by the closure and movement of strategic business areas in early February 2015 at the company SSAB. This includes the business area of painted metal plates, which was an example of cooperation between DU and SSAB. This is a risk that must always be taken.

Obvious problems exist with the recruitment of skilled people in the field of research and supervision. Recruitment of university staff in the fields of engineering and technology is difficult due to the competition posed by private industry, which pays higher salaries but which, in some cases, offers a somewhat more uncertain future. Competition also exists with other universities, both nationally and internationally. In some more closely-located countries – i.e., Norway and Denmark – fixed professor positions are offered, and these may be more attractive than positions where employees must secure their own money. The focus then might be on the personal situation rather than on the building of research activities, such as with the offered position at DU. Large national universities are also more interesting in terms of an academic career; therefore, there has to be something special that would make skilled professionals choose DU. The fact that the relation between education and research is something like 80/20 in the DU budget, positions will always include teaching. This demonstrates the importance of creating good programmes that attract students, something which is not the case for all fields within the research profile.

The three thematic areas together form a group that today has a sufficient number of senior researchers who can act as supervisors for PhD students in a PhD programme at DU in the research profile Energy, Forests and Built Environments with focus on energy efficiency in buildings; production of forest products for use in the construction sector and in the bioenergy industry; and distribution of energy in the built environment using new types of district-heating systems. The actual number of PhD students is also almost enough to form the required research school environment.

There is, however, a need to develop and implement a strategy for ensuring that the research profile maintains and improves its position as qualified to run a PhD

programme – especially with respect to securing a sufficient number of qualified supervisors as permanent staff members and also with respect to establishing educational programmes for engineers with expertise in the field of the research profile who are directly qualified to become PhD students in the programme.

There is a need to employ more personnel who are or who soon will be qualified for supervision of PhD students and who can teach in new fields that can be feedchains for the PhD programme.

There is a further need to make sure that the results of the research are also published in international journals with peer review. Recent research and innovation results and processes can also serve as a knowledge resource that can be reported in articles.

The thematic areas of *SERC* and *Energy Efficiency in Built Environments* may be developed to provide educational programmes at levels that qualify participants to pursue PhD-level studies and that produce candidates who are needed for further development in the building sector and the energy sector within the field. This may be most urgent for the Energy Efficiency in Built Environments field, but it would be natural to also expand on the courses and programmes in Solar Energy so that they become broader and include future HVAC systems in buildings and future district-heating systems as a specialization for energy engineers.

The thematic area of *Forestry and Wood Technology* needs support so that it can prepare for the number of retirees at the senior researcher level. This should be combined with initiatives to extend the research area to include production of biomass for use in the generation of new types of biomass-based energy and materials. The need for and the possibilities for the education of specialists in this area should be investigated and realized if possible.

In general, central DU management must play a more active role in the realization of the strategy to have PhD programmes in this particular field of this research profile. Special actions and investments are needed to achieve this.

10. Overall Assessment

The research profile is evaluated as being of medium quality but also as having great potential to see this increase to high quality.

11. Recommendations for the Future

It would probably be worthwhile for DU to follow a visionary and ambitious strategy.

If a business-as-usual strategy were to be followed, the result may be a disintegration of the profile and a loss of attractiveness for both students as well as researchers.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HEALTH AND WELFARE

The research focuses on the actions of individuals and society to enhance health and well-being, and to improve health care and social services as a means of supporting evidence-based practice. Research focuses on aspects of health at all stages of life, including public health, physical capacity, disease-related risk factors, ageing and life-long ill-health. Health and welfare processes include the implementation of research in practice; in consumer, client and patient involvement; in the health-care environment; in sexual and reproductive health; and in gender perspectives in health care and social services.

The strength of the research profile is its diverse competence combined with specialist competence in nursing and sports science, close collaboration with regional partners in the health-care and social-services sectors, and laboratory resources in sports science.

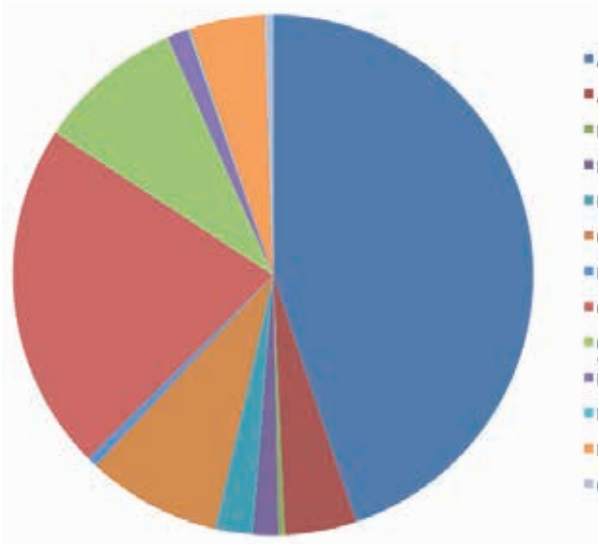
Health and Welfare Basic Facts

	2012	2013	2014
Professors			
Number of individuals	6	6	6
Number of full-year employees	4.5	4.5	5.2
Female/Male	2/4	2/4	1/5
Visiting Professors			
Number of individuals	0	2	2
Number of full-year employees	0	0.9	1.05
Female/Male	0	1/1	1/1
Adjunct Professors			
Number of individuals	0	0	0
Associate Professors			
Number of individuals	4	7	13
Number of full-year employees	4	4	12
Female/Male	0/4	3/4	9/4
Doctors			
Number of individuals	29	28	30
Number of full-year employees	26.2	25	27
Female/Male	23/6	24/4	25/5
Licentiates			
Number of individuals	0	0	1
Number of full-year employees	0	0	1
Female/Male	0	0	1/0
Doctoral Students			
Number of individuals	20	16	18
Female/Male	16/4	13/3	15/3
Doctoral Theses			
Total number	4	3	2
Licentiate Theses			
Total number	0	1	0
Funding (SEK, millions)			
Internal/External	10/4	10/8	11/14

Health and Welfare Bibliometric Profile

Publication Types

Data from DiVA 2009–2013

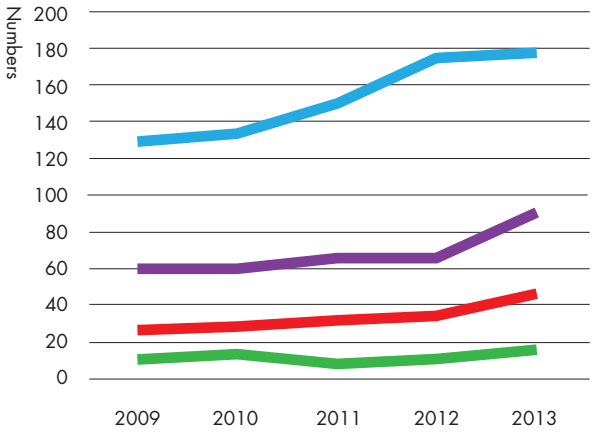


- *Article in journal, peer-reviewed 344*
- *Article in journal, not peer-reviewed 34*
- *Article in journal, review 3*
- *Article in journal, book review 12*
- *Book 18*
- *Chapter in book 64*
- *Edited book 5*
- *Conference paper, peer-reviewed 166*
- *Conference paper, not peer-reviewed 70*
- *Thesis, doctoral 10*
- *Thesis, licentiate 1*
- *Report 36*
- *Other academic publications 4*

Total 767

DiVA is a publishing system for research and an open digital archive for publications produced by researchers and students at DU. It is mandatory for researchers employed at DU to register any publications in DiVA.

Publication Trends



- *Publications in DiVA*
- *Level 1 publ. – Norwegian list*
- *Level 2 publ. – Norwegian list*
- *Articles in journal, peer-reviewed*

Norwegian list documents publication channels such as book publishers, academic journals and series to estimate scientific impact. Each channel is evaluated according to certain criteria established by the Norwegian Association of Higher Education Institutions. It is divided into two levels: level 1 contains 80 percent of the publication channels in a given field, level 2 contains, approximately, the top 20 percent publication channels in the same field.

Key Indicators

The number of publications in DiVA, full counts	767
The number of publications in DiVA, fractionalized	361.31
The mean number of annual publications in DiVA	153.4
The mean number of authors per publication in DiVA	3.65
The percentage of total publications at DU	34
The number of publications in WoS, full counts/fractional counts	255/78.8
The number of citations in WoS	1760
The percentage of publications with at least one citation in WoS	69
The average field normalized citation rate in WoS	1.51
The percentage of publications among the top 10 percent most cited within the discipline in WoS	17
The percentage of publications among the top 25 percent most cited within the discipline in WoS	39
Journals´ average field normalized citation rate in WoS	1.28
The percentage of publications that have been published in journals which are among the 20 percent most cited within the discipline in WoS	28
The percentage of internationally co-authored publications in WoS	38

Web of Science is a bibliographic database from Thomson Reuters, Inc.
The statistics include both full counts, i.e. each publication/citation is counted as 1 regardless of the number of authors co-authoring the publication, and as *fractional counts*, i.e. the author´s fraction of each publication/citation is counted (1/number of authors).
Field normalized citation was used to compensate for the different publication patterns in the profiles. It normalizes for the variation of citation pattern.
Journals' average field normalized citation rate. This indicator shows the citation impact for the journals in which the unit has published.

Health and Welfare Panel Report

STINA JOHANSSON, PROFESSOR EMERITA, UMEÅ UNIVERSITY (CHAIR)
MARIT KIRKEVOLD, PROFESSOR, UNIVERSITY OF OSLO
PER-OLOF SANDMAN, VISITING PROFESSOR, KAROLINSKA INSTITUTE

First of all, we are honoured to be invited to do this evaluation. The writing of the evaluation was facilitated by the fact that everyone we met was willing to share his/her experiences in a trustworthy manner, thereby assisting us in our mission.

1. Summary

- Our impression is that there is a great deal of support for the overall idea behind the profile Health and Welfare, and that there are great expectations with regard to what the collaboration between the different areas may contribute with. This seems to be very strongly connected to the systematic and supportive leadership of the head of Health and Welfare. We were struck by the fact that we heard so few critical opinions and comments with regard to organization and leadership of this profile area.
- The infrastructure in terms of work space, library, sports lab and so on seems to provide good conditions for development of the research area.
- The organization, which seems to rely on good personal relations, is difficult to grasp. It is hard to understand how the three leadership structures interact and cooperate.
- The way resources are allocated generates a situation of potential bias that could be problematic to handle.
- The administrative organization in relation to the research activities seems relatively extensive. The overhead costs suggest that the organization has a great deal of running costs.
- The principles for allocating resources need to be critically reviewed. Currently, resources seem to be allocated based primarily on strategic decisions to develop the formal qualifications of the staff, whereas research quality and relevance seem to be given less weight.
- Too little attention seems to be given to support promising new researchers who have the potential to build strong research areas and groups.
- There is a need to increase external funding. We were unable to uncover any analysis or strategy related to increasing external funding as a means of strengthening the University's competitive edge.

- We heard of examples where researchers from different research fields had started to collaborate with each other in order to identify common research questions and studies.
- There is strong collaboration between the county council and the municipalities at the leadership level. We gained a strongly positive impression of the ability to provide research-based knowledge in relevant clinical areas. However, this impression was less clear in our dialogue with the clinical staff.
- KIPS *(KunskapsImplementering och PatientSäkerhet)* and RECALL, The Research Centre for Aging and Later Life (in the following called "the centres") seem to be important. Many researchers seem to have an ambition to be affiliated with KIPS. RECALL appears to be less clear in its research profile and seems less able to attract researchers from different areas of research.
- The research area does not seem to engage clearly with education and teaching but for a few exceptions (for example, social work).
- It is hard to judge whether the quality of the research is systematic, and reliable data were not available for such an assessment to be made. It is also hard to judge from the provided material how the institution seeks to develop research quality.
- The researchers that we met had a hard time identifying and operationalizing research questions generated from their understanding of Health and Welfare as an integrated research area. The research in welfare was not as clearly articulated as the research in nursing science.
- The material that was provided for the evaluation was primarily descriptive. It lacked a more critical and problematizing standpoint.
- Documents describing visions for the research area could be developed. The current document has more or less the same content as previous action plans and cannot be considered as particularly visionary.

2. Environment/Infrastructure

The physical environment at the University offers very good prospects for development. The physical proximity provides opportunities for spontaneous meetings, and the senior researchers felt that such meetings occurred frequently. The fact that the researchers' offices are in the same location and that they meet for coffee has in some cases led to productive collaboration across disciplinary boundaries. The sports lab brings with it enormous opportunities, but the impression is that it is under-utilized. There was no evidence to suggest that it has been used resourcefully to build joint projects across disciplinary boundaries.

The connection of the profile to courses at the University is unclear. An example that supports this statement is that senior researchers have little involvement in undergraduate education. After initial discussions and based on the accompanying documents, it can be assumed that the research aims more at utilization in practice

than at contributing to the development of the different main areas of the training programmes. Participation in the development of education differs between subjects, and social work deviates positively from the others. Some good examples were presented in which researchers in social work initiated relevant development projects related to the social work programme.

The most successful scientists seem to have a somewhat small role in education at both the undergraduate and graduate levels. More precise targets for integration between research and education were not to be found in the documents reviewed. Conversations with students from the undergraduate and graduate levels strengthened that impression. They describe how the researching teachers, if they are identifiable, often teach about methodological issues and rarely go into more substantial issues about the core knowledge in the different disciplines, such as nursing and social work. It is our view that the senior researchers need to take a more active role in ensuring that the training be linked to research. One concrete request from students, for example, was for more open lectures, where current research is presented, and for more opportunities for the PhD students to teach, perhaps in the role as a supervisor of graduate theses. It is unclear how the activities at the centres KIPS and RECALL link to relevant educational programmes of DU. There is a risk that these centres focus more on the link to practitioners and less on the link to education. This may relate primarily to KIPS.

Student reviews of the doctoral environment as described in conversations with the students are mostly positive. An open atmosphere with good seminars is described. All students have experience in seminar activities from the universities where they are enrolled, and the perception among PhD students is that the seminars are better organized and conducted at DU. On the question as to whether there are areas that could be improved, the following points were noted: lack of career opportunities and lack of post-doc programmes. As well, better support for research grant applications is desirable. They also feel that access to databases is poorer at DU. This illustrates the importance of a critical mass of senior researchers that would allow the PhD students to receive critical comments on their work that could broaden their subject-specific skills. There is a risk that the workshops may just focus on methodological issues. It is possible that environment includes only two graduate students. It may be the case that there are only two graduate students, which may limit and localize teaching. The graduate students need mentors and critical seminars that are well-tailored, but the lack of a critical mass in several areas is a major limiting factor that must be compensated in a conscious way to offer PhD students primarily subject-related deepening but also broadening. It seems that it is easier to find synergy in terms of methodological issues. Furthermore, it is not entirely clear to what extent they participate in each other's seminars.

We interviewed professionals in management positions in local government, and they described strong collaboration between the University and the county council

and the municipalities respectively. They give a very positive impression of the ability of the University to assist with research-based knowledge in the key areas of their activities. Difficult to ascertain are the processes that lead to a new area being introduced as a means of benefitting another – i.e., how long an external centre can exist and what opportunities exist to establish new ones. There is thus great confidence that the University can use scientific knowledge to contribute to knowledge development in key areas. Also, expectations as to help with care development were formulated. Are such demands consistent with what the University is willing and able to take responsibility for? A somewhat different view is described by the middle-level university managers/professionals we met. They expressed a lack of commitment and interest from the academic environment. They would like more organized measures that would allow for better contact, not only at the highest level. There are also examples of successful interaction with a wish, for example, to find procedures for how the clinic can suggest topics for bachelor- and master-level (magister) theses.

A management structure that is built on good relationships is elusive. It is difficult to understand how the three management structures (line, matrix and collegiate) co-exist. However, no internal criticism of the current organization was expressed, but in case there is any contradiction, there are good personal relations that enable solutions. Some researchers have described the existence of large overhead costs at the University, which in some cases means that those who have the opportunity to do so place their funding at another university. One should analyze whether the administrative superstructure is relevant in relation to the operations at the University. Our sense is that it creates a relatively costly organization, which is also what the high overhead costs suggest.

The disciplinary groups described in this profile are different in number. This also applies to the groups of graduate students and post docs. Researchers who do not belong to a centre may have difficulties finding their roles and getting credit for their work. A research group in its initial phase is always difficult to describe in terms of what it is or where it belongs, and we were also left groping for clues. At what point can a group be defined as a research group? When is the critical mass reached? At what point does one become a research group leader? Here, we lack any sort of vision.

We tried to answer the question on how the thematic orientations can be further integrated with each other as a means of developing a coherent research and research training environment. It is important that the University, in clearer and more concrete wording, describes how this interaction is to be promoted. At present, this seems to be done occasionally only, without any awareness as to structures or processes that promote or discourage such interaction.

3. Research Network

Many of our informants reported their participation in national and international research networks, such as networks dealing with the development of knowledge in implementation practices, psychiatry, epidemiology, women's and children's health, to name some of them. Networks were mentioned without any clarification as to what type of collaboration they involve.

We have a question about the time researchers spend in networks in relation to the profile results in the form of published articles and ongoing research projects. We wonder if the researchers are perhaps involved in too many networks, which take up their time and which give them less in return than they had expected. We ask whether limitations must be set when it comes to participation in scientific networks if the individual researchers want to maintain a high level of scientific production. One idea could be to follow up on what is going on to see how important networking is in relation to the individual's job.

Another and in this case very relevant way to understand the concept network is to describe the entire research profile as an internal research *network*. We have understood that within the organization, there are certain expectations: according to the researchers, these are that there will be a sense of belonging to the profile; that there will be spontaneous networking; and that there will be coffee-table interaction as a means of building collaborative relationships. Perhaps the expansion of recent years has led to a need to formalize these meetings and to create formal venues that allow for collaboration.

There are many individual players in the profile. For some that we have met, it seems that the networks outside the University are more important than the internal networks. When it comes to making use of professional competency, one could ask whether it is optimal that researchers carry out their research at an institution other than DU. We also understand that the balance between remaining with the profile and acting alone and perhaps not always in the obvious mainstream of the profile can be a delicate one and that maybe a clear strategy is needed when it comes to discovering and encouraging quality so that there is less risk of losing staff or funding.

The University seems to lack an explicit strategy for what collaboration with other universities should involve. There are reasons to discourage research questions that are developed in local, small environments. Because the organization has grown, the use of its aggregated competency must be given a rethink. If the use of staff competency is to be optimal, formal meeting places are needed.

The development of sustainable collaboration with a department located at one of our bigger universities is something to consider. A number of such attempts to build collaborative relationships were found, for example with Uppsala University: this would be worth a follow-up to find out if such collaboration could be extended.

4. Third-Stream Activities

The research profile Health and Welfare collaborates extensively at the local level with external institutions and departments, primarily those within the county council (Landstinget) and the municipal sector in the region of Dalarna. There is also collaboration with some private firms. Collaboration has developed over several years, and encompasses both education and research.

Collaboration has recently resulted in the establishment of two research centres, KIPS and RECALL, which are jointly financed with external and internal funding, and which have a common steering group consisting of members from the county council, Region Dalarna, the municipality and DU. The research focuses of the two centres have been jointly developed by the University and central leaders/actors in the external institutions. Both centres address key issues related to patient safety and improved health and social care. KIPS focuses on the implementation of evidence-based care generally, whereas RECALL addresses issues related to older people, ageing and care for the elderly. There are also several research projects that relate to both centres.

A particular feature of the two centres is that the position of the director of each centre is a "bridging position": half of the position is held and financed by the University, and the other half is held and financed by the county council (KIPS) and/or the municipality.

KIPS, which focuses on research on methods and factors that facilitate/hinder the implementation of evidence-based practice in nursing and social care/social work, appears to have broad support and collaboration across a number of institutions and clinical areas at both the county council and municipal level. Although particular emphasis is on nursing care, there is also significant attention and research directed towards social work. Several of the researchers within social work expressed an interest in joining KIPS.

RECALL does not appear to be integrated with the county council and municipalities to the same extent as KIPS, but RECALL does have several research projects related to the improvement of the quality of care and well-being of older people. RECALL seems to have a less-integrated approach in its research. The different research studies appear to be clinically relevant, though somewhat isolated and fragmented. However, the intention is to direct more concerted attention towards eHealth and Frailty in the years to come. The social care/social work issues seem to be less developed. Generally, the health aspects seemed to receive much more attention than the "social inclusion" theme. Topics within the latter were research on loneliness and informal care. Even if the treatment *(bemötande)* and the user perspective *(brukarperspektiv)* were represented, we lacked a presentation of their relation to general welfare theory. We also heard suggestions for collaboration with social work researchers in the areas of psychiatry, and alcohol- and drug-abuse issues.

Even research not directly related to the two centres seemed to have extensive external relations with clinical institutions. For example, the research related to women and reproductive health seemed to be conducted in close collaboration with local clinical institutions. Similarly, research on patient participation seemed to be conducted with external partners in social and health-care services not only locally but also nationally within a research network.

5. Productivity

The information provided makes an assessment as to productivity difficult. Scientific publications, oral and poster presentations, textbooks, textbook chapters and popular articles are reported together. Furthermore, publications are reported on an individual basis despite the fact that several of the researchers are co-authors of the same publications. This way of reporting hinders analysis of productivity and decision-making regarding effective ways to stimulate productivity.

A manual sorting of the provided publication lists gives the impression that productivity varies widely among the professors, senior researchers and junior researchers. The majority of the output of international publications in high-quality journals seems to be produced by a few researchers. The table of publications for possible PhD supervisors in the application for the PhD programme within the area of Health and Welfare indicates that three of the 22 potential supervisors at the University were responsible for 44 percent of the refereed publications within the last ten years, whereas one of the 22 researchers was responsible for 30 percent of the refereed articles in 2014. Based on the information in the table, the average yearly output of scientific articles is two articles per researcher for the years 2004–2012 and three articles for 2014. The material provided also indicates that some of the researchers seem to publish mostly in Swedish and that there seems to be an imbalance between conference presentations and scientific publications. In particular, some researchers seem to spend too much time attending conferences with limited output of scientific publications. It is hard to untangle the reasons for the great variety in productivity from the information provided, as there is no consistent relationship between the time provided for research and research productivity.

6. Quality of Research

It is not possible to evaluate the quality of research based on the publication lists nor to give a general opinion about the research quality given that quality is valued in such different ways in the defined profile disciplines. There are not any generally accepted criteria for all disciplines as to how quality should be measured. A look at the bibliometric analysis indicates that there are relatively few publications in the

highest ranked journals. In addition to this, we find the material too preliminary to be able to make a profound assessment of quality.

We have identified a dilemma that has to do with the design of the profile Health and Welfare. Being part of a cross- or multidisciplinary profile could lead to several delicate issues related to quality that must be identified and for which a solution must be found. The reason is that researchers included in the profile must also obtain legitimacy outside the profile where the values of what is good quality are organized on a disciplinary basis and differ. Researchers who publish within the profile must also be able to apply for research funding or to publish in relevant journals. They will then be evaluated according to the criteria for quality established within each disciplinary field. They need to gain legitimacy for their publishing both within and outside DU. Currently, much is happening within the social sciences that is relevant to social work, sociology and political science, something that can be found in the instructions of the research councils directed to the applicants for funding of research projects. We recommend that managers keep themselves updated especially on the discussion about the quality of the social sciences and that they also develop a publishing policy for co-publication that takes into account the diversity inherent in the disciplinary composition of the profile.

7. Impact and Relevance

We have only had the opportunity to check the impact of research in local municipalities and in education itself at DU.

With regards to the impact of the local context, we note that there is considerable impact in the county council context, but less so in the municipality context. There is a strong demand for clinical research, and representatives from the county council are included in different research contexts. Collaboration within the primary municipal contexts is less developed, and involvement in this collaboration is not as extensive as it is with the county councils. However, there is an interest from municipalities to develop collaboration on welfare issues, and university researchers are also interested in development in this area. As we see it, it is about both priorities and skills. There are plenty of scientists at DU who have health-oriented training whereas there are fewer researchers who have well-being training. Furthermore, the proportions between the practitioners seem to be similar. The competence to "order" research and to collaborate on projects is more solid in the county council context than in the local municipality context. There is an obvious need to steer up the resources to attain a better balance in the impact of the profile.

The impact of education at the undergraduate level is more difficult to assess. There is not always a clear connection between what is being done and how it is perceived by students. Sometimes special intervention in terms of education is needed to achieve a desired effect.

8. Vision for the Future

Two areas of knowledge linked with "and" – namely Health *and* Welfare – represent the profile of research. We assume that the intention of integrating these fields of knowledge in the title that specifies the focus of the profile is to develop an added value made possible by the interaction of the components. The material we have received for our evaluation contains information on how to proceed to create the conditions for this line of research through the recruitment and development of staff. The vision is uncritically expressed in quantitative measures. An increase in the production of articles, the hiring of more research graduates, and the attainment of more PhDs, lecturers and professors through internal funding has been put forward. A vision of how this relates to a development of the added value within the profile is needed. Nowhere is it expressed what kind of knowledge is expected when the four components of nursing, medical science, sports science and social work intersect. What knowledge would be desirable to develop? From our conversations with the staff, we interpret the expectation of employees to be that they themselves will find the research questions and that "anything goes".

This expectation has so far been successful in many cases. We believe that it is admirable that so many joint projects have emerged spontaneously. At the same time, we believe that a more directed discussion is needed for knowledge to be aggregated to this specific field. At a general level, it would be desirable to set up a profile of possible theoretical collaborative scenarios to concretize the concepts of integration, inclusion, participation, equality, to name but a few that are found in the material. These concepts are operationalized differently within the health and welfare sector, and it would be both productive and necessary to take advantage of the different perspectives in order to attain the added value of the merger of the health and welfare perspectives and the way the field can be operationalized in terms of new issues and research projects.

9. Other Issues

We want to draw attention to an observation that is partly a result of what we have written under the heading "Visions": this requires its own critical consideration. It is about the imbalance that exists between the disciplines within the profile, with nursing having the majority position and the other three having a minority position. The disciplines are out of sync in terms of when and how they were established, and it is clear that the disciplines of social work, sports science and medical science are lagging behind. The imbalance between the disciplines may threaten the recruitment of the necessary experts and thus also prevent the added value of interdisciplinary research from emerging. Balance between subjects is the best breeding ground for developing the desired added value that we perceive lies in the vision for the Health and Welfare profile.

10. Overall Assessment

We have done our best to answer the question as to how the research profile is relevant to the thematic specializations that make up the intended field. The question is difficult to answer because the field is so diffusely described.

Based on the presentations of current research and analysis of the publication lists, it is our view that research oscillates between low and medium quality, but that there are exceptions with research that may be deemed of high quality from a national perspective (e.g., implementation science) or even in one case, a global leader (medicine). Some of the research presented is very praxis-oriented and cannot be regarded as particularly advanced or innovative from a theoretical perspective.

11. Recommendations for the Future

- Clarify the relationship between research leaders (centre leaders) and project leaders.
- Clarify the relationship between the disciplines and the research profile.
- Formalize meeting points for researchers in order to locate opportunities for collaboration between the different research groups.
- Make career paths visible and accessible.
- Think through strategies for networking: what is their purpose?
- Build up the relationship between education and research.
- Consider whether the present focus on professionals, nurses and social workers and their demands for improvement in their work practices have the "right" priority in the organization.
- Do not be afraid to steer research!!
- Think through the strategies for publication.
- Formulate rules for joint publication that neither favour nor disadvantage any of the included disciplines.
- Write fewer conference reports and more original articles in refereed journals.
- Consider introducing an external advisory board for reading research applications.
- Think through the strategies for staff recruitment in order to achieve a better balance between the disciplines within the research profile.

STEEL FORMING AND SURFACE ENGINEERING

Our research comprises the fields of metal working, metal forming, tribology and surface engineering. Within the fields of metal working and metal forming, our research focuses on the development of physically-based models of the microstructural evolution of carbon and stainless steels during plastic deformation. Mechanical characterization using, for example, thermo-mechanical compression testing as well as microstructural characterization using high-resolution scanning electron microscopy in combination with electron backscatter electron diffraction (EBSD) are used to obtain input parameters for the modelling. We carry out our work in close collaboration with the Swedish steel industry.

Within the fields of tribology and surface engineering, we concentrate on the mechanisms of friction and wear and the way in which the microstructural design of materials and surface engineering can be applied to obtain improved performance in different types of applications such as metal forming, metal cutting and rock drilling. The research is diverse and includes advanced methods for mechanical and tribological testing, state-of-the-art techniques for microscopy and surface analysis, friction and wear modelling, and surface engineering. The research projects are often performed in close cooperation with industry and universities.

We are active within two undergraduate engineering programmes, including a wide range of materials science courses, as well as in a graduate school.

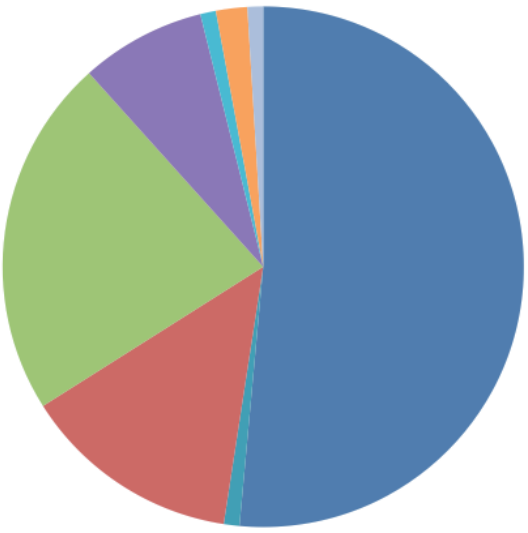
Steel Forming and Surface Engineering Basic Facts

	2012	2013	2014
Professors			
Number of individuals	3	3	3
Number of full-year employees	1.8	1.6	1.3
Female/Male	0/3	0/3	0/3
Visiting Professors			
Number of individuals	0	0	0
Adjunct Professors			
Number of individuals	2	2	2
Number of full-year employees	0.4	0.4	0.4
Female/Male	0/2	0/2	0/2
Associate Professors			
Number of individuals	2	2	2
Number of full-year employees	2	2	2
Female/Male	0/2	0/2	0/2
Doctors			
Number of individuals	2	2	3
Number of full-year employees	2	2	2.5
Female/Male	0/2	0/2	1/2
Licentiates			
Number of individuals	1	1	1
Number of full-year employees	1	1	1
Female/Male	0/1	0/1	0/1
Doctoral Students			
Number of individuals	10	10	13
Female/Male	5/5	5/5	5/8
Doctoral Theses			
Total number	1	0	0
Licentiate Theses			
Total number	1	1	2
Funding (SEK, millions)			
Internal/External	7/9	7/11	7/10

Steel Forming and Surface Engineering Bibliometric Profile

Publication Types

Data from DiVA 2009–2013

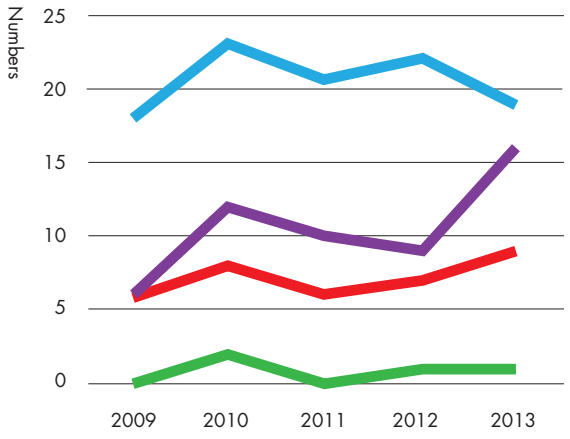


- *Article in journal, peer-reviewed 53*
- *Article in journal, not peer-reviewed 0*
- *Article in journal, review 0*
- *Article in journal, book review 0*
- *Book 1*
- *Chapter in book 0*
- *Edited book 0*
- *Conference paper, peer-reviewed 14*
- *Conference paper, not peer-reviewed 23*
- *Thesis, doctoral 8*
- *Thesis, licentiate 1*
- *Report 2*
- *Other academic publications 1*

Total 103

DiVA is a publishing system for research and an open digital archive for publications produced by researchers and students at DU. It is mandatory for researchers employed at DU to register any publications in DiVA.

Publication Trends



- *Publications in DiVA*
- *Level 1 publ. – Norwegian list*
- *Level 2 publ. – Norwegian list*
- *Articles in journal, peer-reviewed*

Norwegian list documents publication channels such as book publishers, academic journals and series to estimate scientific impact. Each channel is evaluated according to certain criteria established by the Norwegian Association of Higher Education Institutions. It is divided into two levels: level 1 contains 80 percent of the publication channels in a given field, level 2 contains, approximately, the top 20 percent publication channels in the same field.

Key Indicators

The number of publications in DiVA, full counts	103
The number of publications in DiVA, fractionalized	71.45
The mean number of annual publications in DiVA	20.6
The mean number of authors per publication in DiVA	2.86
The percentage of total publications at DU	4.5
The number of publications in WoS, full counts/fractional counts	43/28.3
The number of citations in WoS	114
The percentage of publications with at least one citation in WoS	60
The average field normalized citation rate in WoS	0.96 *
The percentage of publications among the top 10 percent most cited within the discipline in WoS	4 *
The percentage of publications among the top 25 percent most cited within the discipline in WoS	32 *
Journals´ average field normalized citation rate in WoS	1.16
The percentage of publications that have been published in journals which are among the 20 percent most cited within the discipline in WoS	19
The percentage of internationally co-authored publications in WoS	5

**Based on a small amount of data and should be interpreted with care.*

Web of Science is a bibliographic database from Thomson Reuters, Inc.
The statistics include both full counts, i.e. each publication/citation is counted as 1 regardless of the number of authors co-authoring the publication, and as *fractional counts*, i.e. the author´s fraction of each publication/citation is counted (1/number of authors).
Field normalized citation was used to compensate for the different publication patterns in the profiles. It normalizes for the variation of citation pattern.
Journals' average field normalized citation rate. This indicator shows the citation impact for the journals in which the unit has published.

Steel Forming and Surface Engineering
Panel Report

NIELS BAY, PROFESSOR, TECHNICAL UNIVERSITY OF DENMARK
UTA KLEMENT, PROFESSOR, CHALMERS UNIVERSITY OF TECHNOLOGY
CHRISTER PERSSON, PROFESSOR, CHALMERS UNIVERSITY OF TECHNOLOGY (CHAIR)

1. Summary

Steel Forming and Surface Engineering at Dalarna University (DU) consists of two areas of study: Metal Processing, which focuses on the modelling of microstructure development during deformation, and *Surface Technology,* which focuses on tribology and surface analysis. Thirteen PhD students (of which one is a University of Gävle [HiG] employee) are affiliated to the research profile through the *Steel Industry Graduate School.*

The physical environment at DU seems to be satisfactory for the PhD students. However, several PhD students work mostly at other sites, sometimes with the supervisors and examiners at a third site. The scientific environment would benefit significantly from there being more personnel – both PhD students and supervisors – on site at DU.

The *Surface Technology* group has a good publication record in journals and at conferences, but more should be expected from the *Metal Processing group*. The panel got the impression that some PhD students do not receive enough guidance and supervision. There has to be agreement on this point between the leader of the graduate school at DU and the external supervisors and examiners.

The research within the profile *Steel Forming and Surface Engineering* at DU has the potential for future success. The areas of study Metal Processing and Surface Technology are relevant both from a scientific as well as from an industrial point of view. However, the panel has identified a number of problems within the profile that need to be resolved: the profile lacks leadership; *Metals Processing* lacks leadership; the scientific output of *Metal Processing* with respect to scientific publications is low; the time for PhD students to finish their projects is too long; and the *Steel Industry Graduate School* lacks management. Even with a reasonable number of senior researchers, the research profile seems to be under-critical as many of the professors work part-time only at DU.

The most important action to take is to recruit a new leader for *Metals Processing* and to assign a leader for the profile with competence in the field. A strong academic environment with permanent senior staff involved in all aspects of academic work, including supervision, teaching and fund-raising, has to be established at DU.

The routines for supervision and guidance of PhD students have to be improved. It is especially crucial for PhD projects within the *Steel Industry Graduate School* to have good follow-up routines that are managed from DU. The time that PhD students have to finish their projects must be shortened to a nominal and general four years. For this to be achieved, better planning of publication activities in projects is required from the outset.

2. Environment/Infrastructure

The research profile *Steel Forming and Surface Engineering* at DU is divided into two areas of study, *Metal Processing* and *Surface Technology.* The *Metal Processing group* focuses on the modelling of microstructure development during deformation, while the *Surface Technology group* focuses on tribology and surface analysis. Even though the research profile has, on paper, five professors, two associate professors and three senior researchers (going by the numbers from 2013), the group seems to be under-critical as many of the professors work only part-time at DU (visiting or adjunct professors work 20 percent and 50 percent, respectively). Thirteen PhD students are enrolled in the *Steel Industry Graduate School (Stålindustrins forskarskola)*, which is linked to the research profile.

The research leader for the profile *Steel Forming and Surface Engineering* has a long career in the pulp and paper industry, but is not an expert in the areas of steel processing, tribology and surface analysis. The panel believes that this is a disadvantage for the profile and suggests appointing one of the professors within the profile as profile leader.

According to the panel, the local working environment within the research profile *Steel Forming and Surface Technology* seems to be satisfactory. Many of the PhD students are placed in an open-plan office, which should facilitate communication between them. Four PhD students are located in Sandviken. This makes contact with the other PhD students and with researchers at DU more difficult. During our visit, we met only one of the enrolled PhD students. We were therefore unable to gain an impression as to how the PhD students experience and view their working environment and the contact they have with fellow students and supervisors. Since DU does not have PhD examination rights, examiners and even main supervisors are mostly at other universities. The panel got the impression that the PhD students do not receive sufficient guidance and supervision. This is reflected in the low number of publications in some of the projects and the long PhD time, which is six rather than the four years at other universities. We also suggest that there be a common seminar for all PhD students (including all supervisors and examiners) once or even twice per year. During these, the aim and progress of the various projects should be discussed and goals should be set. These regular seminars should be organized by the coordinator of the graduate school.

There is a well-equipped laboratory for metal processing, including equipment for metallurgy, metal cutting and metal forming (300 tons press, hydro-forming machine, traditional and 3D roll forming machine, cold rolling mill, case hammers, furnaces, turning/milling/drilling machines, cutting and bending equipment, welding equipment, etc.). Moreover, there is a state-of-the-art tribology and surface analysis laboratory that includes a high temperature pin-on-disc tribometer, scratch tester, micro-/nano-indenter, interference surface profilometer, time-of-flight secondary ion mass spectrometer (ToF-SIMS), field emission gun scanning Auger electron nanoprobe (AES), field emission gun scanning electron microscope (FEG-SEM) equipped with detectors for energy-dispersive X-ray spectroscopy (EDX) and electron backscatter diffraction (EBSD). The experimental facilities, therefore, are of high quality and are competitive with those at other universities.

DU provides undergraduate education in the form of a Bachelor of Science in Materials Engineering *(Högskoleingenjör i Materialteknik)* and a Master in *Metallernas bearbetning*. Because DU is located in the iron- and steel-producing area of Sweden, the conditions for conducting research in close collaboration with surrounding industry are good. The panel was told that it is difficult to attract sufficient numbers of students to the programme. One recommendation, therefore, is that needs and expectations be discussed with representatives from the surrounding industry and that the programmes be adapted and advertised accordingly. For the steel industry, availability of a sufficiently large recruiting base of graduates and postgraduates with knowledge of and skills in materials science and steel industry processes is of utmost importance. Here, DU has a central role in the education of people from the region who are interested in staying and working in the local industry.

Organization-wise, the required structures seem to exist at DU. However, the panel believes that control functions and action plans have to be put in place and critically followed up on at regular intervals. It will be essential for the research profile to attract interested and qualified students to both education programmes and research projects. Moreover, the right mix of competent permanent personnel has to be available at DU, a mix that can guide and supervise the students, and (together with representatives from industry) identify relevant future research questions. The existing seminar series with presentations by PhD students and senior scientists can be used to strengthen the interaction and to create a common forum and identity for the research profile. This is considered important with respect to the breadth and variety of research topics, the fact that not all PhD students are located in Borlänge, and the reality that external supervisors are often busy with other duties.

3. Research Network

DU does not have PhD examination rights. Therefore, the PhD students of the *Steel Industry Graduate School* have to be enrolled at other universities. According to table 6.1, PhD students are enrolled mainly at the Royal Institute of Technology (KTH), Luleå Technical University (LTU), and Uppsala University (UU). One visiting professor at DU supervises four PhD students, while the two professors co-supervise three PhD students each. Co-supervisors of one of the PhD students is also one adjunct professor, one guest professor, one associate professor and one assistant professor. It should be mentioned that researchers from DU can be main supervisors of PhD students in the *Steel Industry Graduate School,* i.e., only the examiner has to be from the university where the PhD student is enrolled.

The way in which the *Steel Industry Graduate School* is organized means that the host universities of the PhD students receive substantial funding and increasingly benefit from the generated knowledge. However, the outcome for DU is limited. The number of publications from the PhD projects is in many cases unsatisfactory (compare point 6). The panel was also informed that the PhD time in many cases exceeds six years (compare point 2). This is not acceptable and better follow-up routines have to be implemented. For the future development of the *Steel Forming and Surface Engineering* research profile, it will be essential to have competent and engaged personnel on site (the research profile is under-critical with respect to personnel engaged in supervision). Research and PhD supervision cannot be done on a mainly part-time basis (a large number of visiting professors, adjunct professors, and researchers are involved part-time). Therefore, it will be important to attract committed researchers to DU (recruiting a new professor in *Metal Processing,* appointing a suitable research leader, etc.) and to involve the employed researchers in all aspects (fund-raising, supervision and education).

Historically, the research profile *Steel Forming and Surface Engineering* at DU has close ties with KTH. The *Materials Design and Engineering programme* is a Master of Science programme, conducted under the supervision of KTH both at DU and at KTH with different specialties. In addition, the *Surface Technology* group has close collaboration with UU and Chalmers University of Technology (Chalmers), which has resulted in a number of common publications. One of the professors is a recognized researcher, which is also reflected by the fact that he is currently affiliated with UU as a visiting professor (50 percent). He has also established relationships with Lund University (LU) and Örebro University (ÖU), and is frequently on evaluation boards for PhD defences at other Swedish universities. At an international level and according to the annual report of 2013, he has initiated collaboration with the Technical University of Denmark (DTU), the University of Tampere (Finland), and the Norwegian University of Science and Technology (NTNU).

In the *metal processing group*, close ties have been established with LTU. Two recent publications were authored together with a researcher at NTNU. Otherwise, international collaboration seems to be rather limited.

4. Third-Stream Activities

DU is in an exceptional position with its location in Dalarna, i.e. the heart of the Swedish steel industry. There is close collaboration with surrounding industry, which resulted in the involvement of the following companies in the graduate school (compare point 6): Böhler-Uddeholm, Outokumpu Stainless, Sandvik, SMT, SSAB and Suzuki Garphyttan.

Jernkontoret, the Swedish Steel Producers' Association, is a natural partner for both DU and the *Steel Forming and Surface Engineering* research profile. Other research institutions with which good relationships have been established are Swerea-MEFOS, Swerea-IVF and Swerea-KIMAB. The availability of engineering graduates and postgraduates with knowledge of materials science and steel industry processes is essential for surrounding industry. This is why Jernkontoret finances scholarships for students starting the Master of Science programme in *Materials Design and Engineering* at KTH and DU.

The Swedish iron and steel industry invests heavily in research at different universities and research institutes like Swerea-MEFOS and Swerea-KIMAB. With respect to research performed at DU, funding is in many cases received directly from industry partners. By intensifying collaboration with industry and other universities, participation in larger research consortia and in EU projects would be possible. The *Surface Technology group* is already collaborating with cutting tool manufacturers like Seco Tools (several common research articles). Therefore, in this case as well, the involvement in larger research programmes (a current trend in Swedish research funding) and EU projects can easily be anticipated.

5. Productivity

The panel was provided with a literature list for 2009–2013. The total number of authors in the list is 40. It can be assumed that all of them were not working at DU throughout the whole period. The literature list consists of 159 articles that in total appeared in 101 journal articles, 58 conference papers and 14 other publications, i.e. theses and reports. The actual number of articles is smaller as most articles were co-authored by researchers from DU. Therefore, the total number of journal publications is 60. Considering the five-year period, this gives 12 journal publications per year.

The bibliometric data supplied to the panel show a slightly lower number of journal papers, i.e., 53, and 37 conference papers. It is apparent that the number of journal papers has increased during the period, from six in 2009 to 16 in 2013.

Most journal papers were published in the journal *Wear,* followed by publications in *Surface and Coating Technology.* Other journals frequently used are *Steel GRIP Journal, Journal of Materials Processing, Tribology International, Journal of the Electrochemical Society, Lubrication Science* and *Advances in Tribology.*

The researcher with most publications has 38 journal publications (six as first author) and the second one 13 journal publications (one as first author).

The literature list indicates that most articles are published in the field of tribology and surface science. Considering the number of researchers in the area of *Metal Processing,* the outcome in the form of research papers is low and has to increase. There are a large number of PhD students who are just beginning their work. Therefore, a substantial increase in publications in the near future should be expected.

6. Quality of Research

In table 6.1, an overview of the PhD projects included in the research profile is given. Eleven projects are within *Metal Processing*, five within *Surface Technology* and one project falls outside these areas, which are focus areas at DU.

PROJECTS IN METAL PROCESSING		Project period	Supervisor	Co-supervisor	Journ. papers	Conf. papers	Reports
1	Experimental studies of deformation structures	2009–	KTH	DU	0	2	0
2	Forming of high-strength steel	2010–	LTU		0	0	0
3	Shearing and cutting processes for high-strength steel	Nov 2010–	LTU	DU	0	0	0
4	Optimization of cover flux and lining material for improved castability	Jan 2011–	KTH	DU	0	0	0[1]
5	FE simulation of residual stresses and deformation in sheet after hardening	Nov 2012–	LTU	DU	0	0	0
6	Hardening of thin matensitic carbon and stainless steel strip	Nov 2012–	KTH	DU	0	0	0
7	Deformation mechanisms in martensite steels	Nov 2012–	KTH	DU	0	0	0
8	Reduction of inclusions in nickel-based steel by ladle treatment	Oct 2013–	KTH		0	0	0
9	Microstructure development in hot rolling	Oct 2013–	KTH	DU	0[2]	0	0
10	Simulation of 2D roll forming with focus on machine development	May 2014–	LTU	DU	0	0	0
11	FE- and material modelling of multi-axial cold forming (rolling and straightening of tubes)	Dec 2014–	LTU		0	0	0

1 Listed MSc thesis does not count as a PhD publication.
2 Listed paper based on MSc thesis with different subject than the PhD project is not counted.

PROJECTS IN SURFACE TECHNOLOGY		Project period	Supervisor	Co-supervisor	Journ. papers	Conf. papers	Reports
12	Microstructural, mechanical and tribological characterisation of CVD and PVD coatings for metal cutting applications	2007–2012	UU	DU	5	2	1
13	Tribology in metalworking	2010–2013	UU	DU	3	1[3]	1
14	Wear of coated and uncoated PCBN cutting tool used in turning and milling	2012–2014	LiU	DU	1	0	0
15	Influence of metal working operations on the surface integrity and resulting properties of stainless steel surfaces	Nov 2012–	KTH	LiU DU	0	0	0
16	Modelling of friction and wear in metal cutting	Jan 2013–	UU	DU	0	0	0
OTHER PROJECTS		**Project period**	**Supervisor**	**Co-supervisor**	**Journ. papers**	**Conf. papers**	**Reports**
17	Supplier development for maintenance in the steel industry	2010–	KTH	HiG	na	na	na

Table 6.1: List of projects with number of publications

Metal Processing

As regards the metal processing projects, all except two are within the metal forming area. The exceptions are projects P4 and P8, which deal with metal casting. The forming projects cover primary processes, e.g., hot rolling of wire (P1) and plate (P9) studying microstructure evolution as well as secondary processes, some of which focus on phase transformation during sheet forming (P2, P6 and P7), while others deal with process analysis (P3, P5, P10 and P11) including shearing and cutting, sheet stamping and roll forming. The breadth in terms of research topics is thus satisfactory and the themes are well-matched with the needs of the Swedish steel industry considering the present state of art.

3 Two conference publications in the publication list that have the same title and similar content as journal papers are not counted.

The project P1, *Experimental studies of deformation structures,* has been running since 2009 and so far has resulted in only two short conference papers[4] at the same conference and only one with the PhD student as first author. This is an unsatisfactory and low output. Neither P2, P3 (which started in 2010) nor P4 (which started in 2011) have any publications to-date. This is also unsatisfactory.

The PhD project P3, *Shearing and cutting processes for high-strength steel,* was presented to the panel. The presentation included a demonstration of a well-designed experimental tool instrumented with vertical as well as horizontal load and displacement transducers for process analysis. The tool provided valuable results on process mechanics. A numerical model of the shearing process was established, which did not yet simulate the process mechanics in a sufficient way. Attempts to improve the model by calibrating with the experimental data were discussed with the candidate and later with the professor, who suggested adopting another software and fracture model. The candidate explained that the supervision of the project was insufficient. In one year, he had had only one meeting with his supervisor.

Since no material or further information has been provided about the metal processing projects P2 and P4-P11, it has not been possible to evaluate the status and level of these projects.

Surface technology

Three projects in *Surface Technology* deal with metal cutting. Two of these, P12 and P14, focus on ceramic tool coatings, whereas the third, P16, deals with modelling of friction and wear. Two projects, P13 and P15, are in tribology and surface technology in metal forming.

The project P12, *Microstructural, mechanical and tribological characterization of CVD and PVD coatings for metal cutting applications*, includes fundamental studies of nucleation and growth of CVD α-Al_2O_3 on Ti(C,N) coated cemented carbide, and of mechanical and tribological properties of PVD-coated cemented carbide using a new multipass scratch test as well as testing of such coatings in metal cutting experiments studying the influence of tool microtopography on the tribological characteristics. The project has resulted in five publications in high-level journals and two conference papers, which is a good outcome.

The project P13, *Tribology in metalworking,* focuses on the tool/workpiece interface in bulk metal forming. It has resulted in three papers published in high-level journals. One paper concerns the testing of potential PVD- and CVD-coated tool steel dies as substitutes for cemented carbide dies; the other two papers are about roll materials for the finishing stands of hot strip rolling mills for steel rolling studying microstructural, mechanical and tribological characteristics. Besides these three journal papers, the project has also resulted in three conference publications, two of which are identical to two of the journal papers. This is considered to be a satisfactory output.

4 Each paper includes four standard-size A4 pages.

The project P14, *Wear of coated and uncoated PCBN cutting tools used in turning and milling*, has resulted in only one publication so far, but again in a high-level journal. The paper studies the mechanical response and potential coating failure modes of PVD coatings of TiAlN deposited on different types of tool materials with the aim of improving cutting tool performance.

Since no material or further information has been provided on the surface technology projects P15 and P16, it has not been possible to evaluate the status and level of these projects.

Ability to attract external funding

During the introductory meeting, the profile leader provided information about the industrial partners in the PhD programme. These include Böhler-Uddeholm, Element Six, Ortic, Outokumpu Stainless, Sandvik Coromant, Sandvik Materials Technology, SECO Tools, SKF, SSAB, Suzuki Garphyttan, Uddeholm Tooling and Åkers. This is an impressive number of steel manufacturers and users, many of them located in Dalarna. As regards research institutions, collaboration is ongoing with Jernkontoret, Swerea-MEFOS, Swerea-IVF and Swerea-KIMAB.

The metal processing area of study obtained 1.9 MSEK for upgrading their cold rolling mill in 2008. In 2012, the Knowledge Center on Materials (Kunskapscentrum Material) obtained financial support for the Materials Technology Laboratory at DU, which enabled the acquisition of an Auger electron spectrometer as well as in-situ test equipment and equipment for test preparation. This large investment (8.3 MSEK) was made possible via financial support from Region Dalarna (5 MSEK) together with the Swedish steel industry (2.3 MSEK), counting many of the above-mentioned industrial partners. DU supported with the remaining 1 MSEK.

The panel has noticed that not all of the permanent-staff associate professors are involved in fund-raising. This needs to change. Co-applications regarding research projects should be sought together with other universities, for example, LTU, KTH and Chalmers.

7. Impact and Relevance

Referring to point 6, the prerequisites for collaboration with national industry are considered to be excellent. The many industrial partners in the Swedish steel industry testify to the impact and relevance of the PhD programme. The number of international scientific publications in *Surface Technology* proves the scientific impact in this field. The area of *Metal Processing* needs to strengthen, especially with respect to competence within numerical modelling of metal forming processes, including material properties aspects. International collaboration with universities and companies, for example in EU projects, is rare and ought to be strengthened.

8. Vision for the Future

According to the panel, the research profile *Steel Processing and Surface Technology* along with the two groups *Metal Processing* and *Surface Technology* should remain and be developed. The groups have to be led by group leaders with strong competence in the respective field. The groups also have to grow to a critical size on site at DU, and a common identity has to be formed. This includes opening career possibilities for young researchers from DU.

With regards to *Metal Processing,* competences should include numerical modelling of metal forming, characterization of microstructure, and its correlation with mechanical properties. The research should include primary as well as secondary processes. Research into metal cutting processes should be included as well. It is important to bridge the gap between microstructure characterization and numerical modelling aimed at improved understanding of the relationship between microstructure and mechanical properties during as well as after metal deformation. To support this activity, we recommend the purchase of, for example, equipment for physical simulation of thermo-mechanical processing, e.g., a Gleeble tester.

Within *Surface Technology,* competences in modelling and testing of friction and wear, advanced characterization of topography, as well as materials properties of surfaces are to be maintained.

PhD projects should be carried out in collaboration with industry, primarily located in the region, and they should contribute to the development of companies in materials technology without any compromise of academic quality. The projects have to lead to a sufficient output in the form of research papers. To strengthen the interaction between the academic environment and industry, a regular conference on materials research should be arranged. Collaboration in research projects with other national and international universities and research centres is anticipated.

9. Other Issues

The present evaluation has been complicated by the limited information on the research projects and the personnel involved. The panel attempted to remedy this by requesting that the publications so far be written by the PhD students. However, this was complicated by the fact that many projects have yet to produce any publications. Therefore, they could not be evaluated. In future research evaluations at DU, we recommend the following:

1. Make accessible all publications from the PhD projects
2. Provide a one A4-page description of each PhD project
3. Arrange for shorter project presentations by a number of PhD students

10. Overall Assessment

The research within the profile *Steel Forming and Surface Engineering* at DU has the potential to be successful in the future as well. DU is well-equipped with laboratory facilities. However, special efforts in the area of *Metal Processing* are required. The group needs a new leader, and senior staff must be activated and involved in supervision, education and fund-raising. These actions are crucial for the survival of the *Metal Processing group.* It is also important to increase the number of permanent staff working (100 percent) at DU. External supervisors and examiners have to be more involved in the activities.

The research activities in *Surface Technology* are well-documented in a reasonable number of high-quality research papers. The inspiring presentation showed that relevant research questions have been identified and dealt with. Collaboration with other universities and with industry can be strengthened even further.

There is a need for better leadership within the *Steel Industry Graduate School (Stålindustrins forskarskola)*. Follow-up routines have to be implemented to ensure good quality research within the intended time-frame for the PhD projects.

11. Recommendations for the Future

We regard the two research areas *Metal Processing* and *Surface Technology* as relevant from both a scientific and a technological point of view. *Metal Processing* has large relevance for industry in the surrounding region, and most of the research is conducted in Dalarna. Surface analysis and tribology research as performed in the *Surface Technology* group is not exclusive to DU, but the research is of high quality and has relevance for the industry in the region.

The vision for the research profile should be reasonable. A suggestion could be as follows: research performed within the selected areas should be at a good national and international level. Good contacts and information exchange with other small universities would be advantageous for the research profile at DU and the development of the *Steel Industry Graduate School.*

It is important to have strong and competent leaders for both the research profile and the *School of Technology and Business Studies* who understand the needs and can defend them. *Metal Processing* is lacking leadership, and there is a strong need to recruit a new group leader. *Surface Technology* has a strong leader, and the group seems to work well. DU has to ensure a good continuation for the group with adequate resources and support, and a good research environment. All staff have to contribute their time towards supervision, education and fund-raising. The possibility of garnering funds from the *Knowledge Foundation (KK-stiftelsen)* has to be explored.

There is a lack of leadership in the *Steel Industry Graduate School.* Follow-up routines have to be implemented to ensure good quality research within the intended time-frame of the PhD projects. The time for PhD students to finish their studies is

too long; the time has to be shortened to the expected nominal four years. The PhD students need more supervision, preferably from a senior researcher who is located at the same place.

There is a strong interest from industry for collaboration with DU. So as not to lose their trust, the research projects have to be coordinated and managed properly. There are also obligations towards the PhD students and commitments from both sides. For all involved partners, it is important that the PhD students complete their programmes.

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