Attitudes toward the Third Mission

A selection of Interviews from Seven Universities in Sweden

Patrik Asplund
Niklas Nordman

CERUM
Working Paper No. 15:1999
Free Internet Edition
Printed edition can be bought from CERUM

CERUM
Centre for Regional Science
SE-901 87 Umeå
regional.science@cerum.umu.se
Fax +46 90 786 51 21
Phone + 46 90 786 60 79

Umeå University
CERUM
Centre for Regional
Science

Attitudes toward the Third Mission:

A Selection of Interviews from Seven Universities in Sweden*

Patrik Asplund & Niklas Nordman
Department of Economics Umeå University

March 1999

CERUM Working Paper No. 15
ISBN: 91-7191-677-6
ISSN: 1400-4526

Address: CERUM, Umeå University, SE-901 87 Umeå, Sweden. Telephone: +46 90 786 60 79, Fax: +46 90 786 51 21.
www.umu.se/cerum regional.science@cerum.umu.se

Abstract

The third mission is closely connected with issues of economic growth and a subject of importance on the political agenda. The purpose of this study is to shed light on customary attitudes among people involved in higher education concerning this major change within the university organisation. An investigation based on approximately eighty interview sessions with researchers and personnel in leading positions in four different departments, conducted at seven universities in Sweden, is presented. The analysis is built on the answers received from a standard questionnaire and contains information on ideological, practical and organisational matters. The results indicate that most people in the departments of concern respond in a positive way to the changes of the organisation. However, there are no significant differences between departments or universities in general.

Table of Contents

1 Introduction

Recently the Swedish system for higher education has been given a third mission, a formal obligation to interact with surrounding society and economic life. The two other missions are, as usual, education and research. This development is closely connected with issues of economic growth and the struggle to bring the country out of a situation with unusually high rates of unemployment. General competition is strengthened with a demand for competence and a need for extended accessibility to education in all parts of society. Obviously this represents qualitatively new conditions and a major change in the arena for the universities. As a consequence, an intensified interest has been directed towards universities and their resources, their goals, and their interaction with society. From many points of view, there obviously exist reasons to take a closer look at the university structure and its prospects for achieving current objectives and fulfilling new goals. The new goals are set in response to ongoing changes in the determinants behind localisation and interaction.

This task brings into focus the classical discussion between ”academic freedom” within independent universities and ”the university in service of society”, although in a new environment. However, even independent universities have to follow and analyse ongoing changes with increased intensity in order to meet shifts in demand among students, staff and potential fundraising partners. Hence, common attitudes among staff and university strategies in their broadest sense are in the focus of this study. Although brief, this introduction gives a background and motive for this report on the relationship between Swedish universities and its surrounding environment, both concerning the economic life and the society as a whole.

The report is a result of seventy-eight interviews conducted at *Umeå University* (UmU), *The Technical University of Linköping* (LiU), *Örebro University College* (ÖH), *The Royal School of Technology* (KTH), *Karolinska Institutet* (KI), *Lund University* (LU) and *Karlskrona/Ronneby University College* (RH). Our primary interest, concerning the level of suitability for outward relations, has been focused on the following actors: Department of *Computer science*, Department of *Physics*, Department of *Biology* together with representatives for *administrative units*. Further, the selected persons within the sample are drawn from the following populations: *Heads of departments*, *Directors of studies* and *officials* responsible for administrative issues. In the sequel, the structure and headings used in the paper roughly follow the standard questioner from the interview sessions. Each university is presented separately and we close with a joint summary in the end of the paper. For the readers convenience, the main results are summarised in *table 1*, page 34. The opinions in the report are those of the authors and the impressions are obtained from the interviews and a few strategic documents. Hence, they are not authorised or checked by the actors within the selection.

2 Örebro University College

The college was founded in 1977 and is located at the centre of Sweden, about 200 kilometres from Stockholm. The staff consists of approximately 800 employed, including fourteen professorships, which serves 10.500 students in most faculties. The government funds are close to 51 Million SEK, but the complete turnover is expected to be much higher. The college has recently applied to become a full-scale university, which has been approved.

2.1 Ideological aspects

All respondents have knowledge about the third mission and a majority put connections to the society in general first. However, the technical institution is more focused on specific relations with enterprises, both locally and in a wider perspective. The impacts of the third mission are in general expected to be positive. The daily activity at the university is expected to be adjusted towards more real-world oriented issues, and the increased contacts may provide for an alternative source of financing. The negative effects are related to the present lack of time of the employees and the increased amount of stress that it brings along. There is also an obvious risk that areas of economic interest will be favoured and that other fields, less suitable for commercial use, will experience a less good development.

> *"…It is an obvious risk that increased contacts with enterprises will lead to a bias towards areas of economic interest. A potential threat to the academic freedom."*

It is clear from the interview results that all three missions are thought to be essential to the activity as a whole and that they are complementary and operate side by side. The Third mission is very important for small universities like Örebro, not to say indispensable, in speaking of gathering funds. There seems to be an ongoing debate about the university's growing relations to the economic environment, concerning both practical matters and questions of ideological character. In this particular case, the discussion is focused on the tight connection to the local military industry, *Bofors*, and the multinational company *Nestle*.

> *"The college may be designed to fulfil the needs of the labour market, not in its role as a producer of knowledge."*

The number of researchers involved in activities with enterprises has increased over the past years and the trend is definitely upward sloping. The attitude towards engagements beside the work at the university seems to have changed as well, which brings more speed into the process. Once again, this development is especially important for a small university in order to prove itself in times of hardening competition. There is some enterprise activity among the members of staff going on, but it is not so com-

mon. There also seems to be a lot of ideas for private firms at hand but no time or practical options to make them develop. The typical construction is a one man firm, developed from private incentives. Certain agreements on institutional basis have also been developed, which involves researchers. However, the representatives of the administration are of opposite opinion.

> *"The current burden on researchers and teachers has the effect that a lot of good ideas do not develop into products or projects."*

Most of the respondents are indifferent between the present structure of ownership and private alternatives. The positive effects from better financial terms are outweighed by the less secure situation for non-commercial areas of research. Almost all respondents claims that more resources are necessary in order to make the mission work as effective as possible. According to the majority, it is better to place effort in the structure of the staff rather than just raise more funds. The result is primarily depending on a major change of present attitudes towards skills from the outside. Less good conditions for venture capital constitutes a slight problem as well.

2.2 Questions of practical nature

A majority is only in contact with firms in their place at work, but a small fraction also has some sort of private connections. The usual relations involve transferring different inquiries to people that are suited for answering them and dealing with matters concerning students. One positive effect of extended relations is that the close links to reality brings the research to a new level. The problems are simply stated in another way. The education that the College provides will also be of more actual nature. However, there is a risk that the research activity will be forced into certain directions, and this is the case for education as well. Projects initiated by the industry are not always particularly stimulating to work with. It may also create hardening competition when it comes to competent teachers, which will make it hard to keep on to skilled employees within the organisation.

> *"The college has much to gain when it comes to the recruitment of competent people from the outside. The best teachers are often those with experience from relations with the industry."*

In general, there are no explicit problems connected to the way people distribute their time between different assignments. The opinion is that every single case must be discussed separately. Once again, it has been pointed out that the time for activities outside the college is scarce. The knowledge about the jurisdiction surrounding patents are quite low, but almost everyone claims that there is an ongoing discussion. This may depend on the fact that the college is young compared to other universities. The common opinion is that people within the organisation are satisfied with the way it works currently. The students are assumed to benefit from closer connections through better and reality-adjusted education and get increased opportunities to work with real world oriented problems. Although, education and popular-oriented information are in slight conflict of interest. The College also runs a risk to experience an outward flow of highly skilled teachers.

"There is a trade-off between patents and the ability to publish scientific results, which works as a dampening factor for potential growth. No one wants secret science."

2.3 Organisational issues

Almost everyone appears to know that the college has founded a separate unit for matters related to enterprise, but there is a lot of uncertainty about the services provided. At the department level, strategic incentives are less formalised and depend mostly on contacts made on an individual basis. Örebro seems to have taken actions rather slowly within these matters and is suggested to be a bit behind its competitors. Private contacts are viewed upon as the superior form of strategy, and the central unit is believed to be overrated compared to the capacity of the departments. There is a common opinion that one should act more and talk less. A specific document concerning ethical guidelines is under development, with aim to avoid pitfalls in the co-operative activities. A schedule for business appointments and a certain goal for visiting firms has also been developed exclusively within the technical department.

"Private contacts are definitely viewed as the best source to development..."

There are experience from connections with all different sizes of enterprise, but small firms seems to show lack of routine and are more sceptical to co-operation with the university. Multinational corporations are common partners but it is highly unusual with connections to strictly foreign firms. The private sector is as expected dominating. Everything that concerns the European Union seems blurred and indistinct. Almost everyone shows lack of knowledge when it comes to opportunities to financing and support from the European Union. Furthermore, the mutual exchange between the Nordic countries is almost negligible. Connections with foreign firms are rare but between universities the rate of exchange is better. Finally, relations to the economic life are primarily formed on a regional basis.

3 Umeå University

Umeå University has during its thirty years of existence expanded to over one hundred departments and 3.800 employees in most faculties. The number of students involved in education is about 24.000, including 6.000 in distance learning programmes. Distance education is in the university's interest, while such forms give opportunities to maintain and expand the network to students and hence the area of recruitment. Currently the revenues for the university from the government are around 1,3 billion SEK, while 0,5 billion SEK are obtained from external sources.

3.1 Ideological aspects

A large share of the respondents states that the presentation of new scientific findings is the primary task within the Third mission. At second place relations to the economic life are brought up to question. The sector of administration is slightly optimistic about the new opportunities, but the opinions are in general varied. The research is supposed to become closer to real applications, which is viewed as positive and the supply of available courses may also increase. The computer science sector finds this new assignment as a complete burden. The medicine sector experiences no difference from before and describes the Third mission as an administrative ”shot in the dark”.

> *“The third mission is purely an unnecessary administrative exercise that no one really cares about.”*

In general, all of the university's assignments are believed to be equally important. The department of Physics however seems to be more depending on a close relationship with external partners due to the engineering programmes, and thus more focused on the Third mission. There is an ongoing discussion about the new possibilities for the regular activity, widened opportunities for the students and so on. The administration is focused on the strategies for an effective leadership from the top, while the main discussion otherwise concerns the need for a fundamental change in attitude among all levels within the university. Once again, the medical sector demonstrates their disappointment.

The number of researchers involved in private enterprises beside their regular job at the university has increased and the trend is positive. There is also a better climate for private incentives nowadays, which is much more accepted than before. A large share of newly started business has been generated since the science-park *Uminova* was founded, mostly in shape of small one-man firms. Still, there is not to any common knowledge that business has become usual within the university.

"A centralised organisation for contacts with the economic life is important only in the questions concerning patents. This is an alternative source of support that we approve of."

The choice of terms for ownership depends on the specific kind of people within the particular organisation of interest, and the direction of specialisation. The majority is satisfied with the present system, but there is a spectrum of different opinions represented in the interviews. The universities need to fit their organisation to the rest of the society, and the system would perhaps run smother if all parties spoke the same language. The incentives for researchers to start business and make commercial use of their findings should be improved. A small fraction wants the Third mission to be centralised. The universities need more freedom to act independently and must get support from larger funds, according to the respondents. The medical representatives find no use for the government to interfere to any larger extent.

"The lack of personnel constitutes the real problem, because no backup may be provided in case of an increased demand from the enterprise."

3.2 Questions of practical nature

Most of the respondents are in contact with enterprise through their daily duties, while a small fraction do not have any relations to companies outside the university at all. Both of the interviewed medical representatives are involved in private enterprises, even if the firms are put on ice for the moment. Useful contacts may create long run effects and provide for a research based on real problems, suited for real conditions. It also widens the skill of the teachers and creates additional money, which is important to the development of other fields of research. The negative impacts are less accentuated but involve a fear for that such company relations may threat the academic freedom. It may also compete with fundamental research, which then will suffer a loss.

The ability to separate different activities effectively is a minor problem according to the respondents. It takes a lot of discipline and control to make it work. A few do not think it is possible to make a clear distinction at all, because the burden of work will be too large. The general opinion is that the terms for patents are very generous, but that it is a juridical question beyond discussion. There are already an agreement formulated and a special unit at the university is working full time with this question only.

"It is pure waste of resources to bring out complex scientific results in a most trivial way for a broad audience...
…The third mission is unnecessary as an explicit assignment, because it already is an instrument within the organisation. This is a matter that is self-regulating and better off as it is."

About half of the respondents think that most of the joint staff are satisfied with the current system concerning the legal rights to findings, and that the question is free from conflict. The attitude has been improved since a special incentive agreement was signed. However, a large share claims that they never get in touch with such matters. Increased relations are also expected to gain students. It is easier to gather external funds and the education

will be improved through closer contacts with potential employers. The students are also able to establish valuable contacts during their learning period and create networks. The negative aspect is that the staff probably will face difficulties in how to spend their already scarce time.

3.3 Organisational issues

Most of the respondents know about the special unit for external relations, *Uminova*, which purpose is to inform, sell and do marketing. From the central university administration several kinds of documents, such as a goal- and strategic document for development has been produced. At the department level there is a clear ambition to develop strategies, but a very small amount of those have become formalised. In brief, people tend to prefer relations based on private networks. A small fraction is simply less concerned of firm related connections. A second vice-chancellor has been installed, with specific responsibility for the third mission. Most people are convinced that firms, especially small firms, have demand for tight connections. Furthermore, there seems to be a need for more distinct entries for contacts. However, a small fraction does not believe in a strong demand from firms at all.

> *"There is a strong demand from the industry for distinct relations, but it must be handled by certain persons and depend on private entries from case to case. We ought to talk less and act more."*

The typical firm for exchange is of small or medium size, primary located in northern Sweden. Although, a few corporations of multinational character is of interest in the area of medicine. The relations rely heavily upon a regional basis, but all types of national enterprise are represented. Questions concerning the European Union and the Nordic countries seem to be quite mysterious. Most of the respondents believe that there is some sort of financial backup to apply for in the frame of a network within European Union, but this seems to be of minor importance. However, the department of Physics has a special representative within the European Union, which has achieved good results.

4 Royal School of Technology

KTH was founded in 1827 and at present time about one third of all engineers in Sweden graduate from here. Approximately 10.000 students attend to regular education, provided by 2.800 employees. The school has today a 2 billion SEK turnover. KTH is located in the heart of Stockholm, the most densely populated area in Sweden.

4.1 Ideological aspects

The larger part of the sample persists that the relations to the society are the most important. A few interviewed have experience from external contacts since before. The major gains expected from the Third mission are improved terms for gathering enough funds. It might also provide for a stimuli injection in the regular activity. However, it may make the areas of research more applied, which is both positive and negative. Certainly, the strategy for research will be directed towards a short-run perspective. All assignments must co-operate in order to obtain the best results possible. The Third mission is not in any prior position according to some of the respondents. A large share also stresses the risks with increased external relations. The fundamental research may get into a low-prior position and the integrity might be threatened. It may also cause problems with how to handle different questions from outside. Some accentuate a complete loss of discussion, and lack of interest for all that matter.

> *"Areas that are well suited for commercial exploitation will force aside other fields of science."*

The level of entrepreneur-ship definitely seems to be higher than before. There exists newly started business in all sectors, but the apprehension about the usual canals for contacts seems to be confused. Different people at the same workplace give different statements. Although, the typical business form is a consultant firm, initiated on private incentives. The great majority finds that the forms of ownership does not matter, or is simply satisfied with the way it works at present time. The opinion about the level of involvement from the government split into three different categories. The first group find that the Third mission is the universities responsibility alone, while the second group believe that the government should support larger funds in order to make it work. The third category has the opinion that other actions are necessary, such as introducing a smother legal system and an injection of personal with a high level of competence.

> *"We must support the third mission with changed routines and keep an open mind towards new challenges."*

4.2 Questions of practical nature

A surprisingly large share of the respondents has private relations with enterprise, but most of them are in contact through their duties only. A small fraction even finds this subject uncomfortable to talk about. Increased connections to the industry imply, besides increased focus on real problems and a better economic situation, better teachers as well. The negative part relates to increased lack of independence and the risk that researchers will become too narrow-minded in their activity. The basic research may also face harder conditions in proving the itself.

> *"Our way to handle patents creates problems when is confronted to international praxis."*

There seems to be no problem with the question of differentiated activities. However, a few are convinced that such a split is impossible to make. Almost all respondents agree upon the current patent system, which gives the researchers exclusive rights to their findings. This matter has not been brought up to any debate and people seems to take this for granted. The main part believes that the students will gain through closer relations, partly due to better teachers and partly through their important step into the future labour market. The only negative aspect is that the industry always gets a grip of the best resources, such as skilled personal, equipment and housing.

> *"…The best teachers are those who are involved in relations with the industry."*

4.3 Organisational issues

Several strategic actions have taken place, which also seems to be of common knowledge among the respondents. There are existing programmes for further education directed towards staff and special working units for external contacts have been organised. Furthermore, some additional effort are put in external education. At the department level there has been specific agendas produced, in favour to interested actors. Explicit formalised material produced at the department level are rare. A substantial fraction are involved in networks tied to innovation parks and similar organisations. Most of the relations are based upon private connections and firms usually makes contact with acquaintances within the university.

> *"The industry is very keen on close relations, but these matters are best handled between special persons, on first name basis. A central unit for external relations is highly overrated."*

The business of interest is usually of large or medium size, but small firms are represented as well. There are mostly national companies, in the private sector, that pick up relations. The local enterprise is by far the most important. There seems to be a strong demand for relations from the industry, both concerning direct co-operation and students. Furthermore, the relations with the European Union are surrounded by much confusion. There are said to be a specific formulation stating that the terms for European enterprise should be improved towards USA and Japan. In addition, a

network for technical universities within the Nordic countries are expected to be established as well. A Nordic industrial foundation has also been established.

> *"Large companies are hard to work with. Their organisation is slow and circumstantial."*

5 Karolinska Institutet

The institute is located to Stockholm and was founded in 1810 and is since then strictly directed towards different medical activities. Approximately 1.700 researchers and 7.000 students are involved in education and further research on a regular basis. About 200 researchers per year, or 30 percent of all Ph.D. students in medicine in Sweden, graduate from Karolinska. The institute recently achieved university status.

5.1 Ideological aspects

The interviewed personnel are either heads of departments, director of studies or personnel linked to collaboration with private enterprises. All respondents but one are informed about and familiar with the third mission and they define the concept as an obligation to co-operate with the entire community and not just the industrial life. A common opinion is that the third mission gives incentives for better research. A more general attitude focuses on more generous conditions for the institute and improved relations towards the community. All of the representatives believes that the third mission have a positive effect on the organisation as a whole, concerning influences to both learning and research.

> *"I am convinced that a larger department may provide better research. A small department is not in position to attract the best researchers and equipment. The most important issue for each department is to have a critical mass of knowledge, in other words to be large enough."*

Due to changed attitudes in the community in favour to increased co-operative actions together with the industry, the discussions surrounding this matter seems to decline in time. All respondents agreed upon the fact that researches have stronger relations with the industry today compared to the situation ten years ago. Consulting commissions and private involvement in enterprise are more common at present time than before as well.

> *"The terms of ownership for the University do not matter as long as we are able to attract the best researchers."*

A large majority of the interviewed representatives believe that the terms of ownership are less important for the way the organisation works. A general issue pointed out is that the main question of concern is about to be able to recruit internationally competent researches. A few proposed means the government could use to improve the third mission is among others to supply more resources, act to change attitudes about spare-time occupations and stimulate increased connections between university and community. For instance, such actions may result in establishing commonly owned organisations, i.e. different institutes.

5.2 Questions of practical nature

A substantial fraction of the researches interviewed works as consultants or are involved in own enterprises, and in a few cases both. The positive aspect of this engagement with economic life involves larger network and deeper knowledge about more effective methods of research for the staff. One single, although major, disadvantage that was mentioned concerns decreased academic freedom. In summation, the advantages outweighs the disadvantages.

> *"Connections outside the university are both essential and positive. But there may be a risk that the academic freedom will become violated if the companies gets too much influence."*

One half of the interviewed staff considered the problem in distinguishing between working time between firms and the regular service at the department as minor. The attitudes towards the legal rights to the possessions for possible discoveries are the same. One may note that Swedish policy differ from other countries since the individual researcher get the patent on her own, instead of the university or the department. All interviews emphases that the institute encourage staff to involve in firms and spare time occupations. Ph.D. students are expected to gain from co-operation with the industry due to larger networks, while students at the undergraduate level probably remains rather unaffected.

5.3 Organisational Issues

A specific holding-company (*Karolinska Innovation AB*) has been established, which handles contacts with industry in the short run, and the *Centre for Medical Innovations* (CMI) is engaged in long run relations. A common strategy for departments is to go through their existent connections once a year and follow up completed projects. This type of feed-back is essential in order to reduce costs down to a minimum. Co-operation between industry and the institute faces a strong demand from both sides. A majority of the researches believe that firms demand intense relations and shows a strong need for up-to-date knowledge. There is no typical pattern for the making of these connections, the flow runs in both directions.

> *"We have connections with small as well as large private enterprises, and our co-operations with foreign firms are rather large."*

Researches and personnel experience that most of their contacts involve enterprise of large and medium size. Generally speaking, small companies are only of interest for co-operations if highly specialised. Non of the respondents have any specific knowledge in the role played by the Nordic countries concerning the connection between industry and university. A modest fraction are familiar with the fact that the European Union finances projects for this kind of purpose, but the degree of interest is rather low.

6 Linköping University

Higher education was brought to Linköping in the 1960´s and the former college became a university in 1975. Approximately 20.000 students together with 1.200 researchers serves their daily duties at the university. Today the turnover is as large as 1.7 billion SEK. Linköping is located in the middle of Sweden, within close range from both Örebro and Stockholm. The *Ericsson* multinational corporation is also located nearby.

6.1 Ideological aspects

Most part of the interviewed staff are familiar with the Third mission, which they define and interpret as co-operation between university and society. All of the respondents believe that the Third mission affect the university in a positive direction, for instance by expanding networks and stimulating co-operative research projects with the industry. The introduction of industrial Ph.D. programmes are also of great significance. None of the interviews indicated that teaching and research could be separated from the Third mission. Several discussions have been held about the Third mission, mainly concerning the suitable level of involvement between departments and the industry, and about the declining fund-flow for basic research in favour to more applied research. Most part of the representatives thought that the co-operative actions with the industry had increased over the past ten years and that this trend probably will continue in the future as well.

> *"There have been a lot of discussions concerning the fundamental research. The personnel involved in basic research think that they are discredited."*

Researchers at the university are involved in own firms to large extent. The typical firm are often small and directed towards business of consulting. A majority believes that the terms of ownership for the university is of minor importance, but a significant part still think that a private owned university would receive advantages in questions of co-operation with industry. The government ought to do more about the third mission according to the answers in the interviews. Two major issues are mentioned. First, the departments should be compensated with increased resources when dealing with the third mission, and second, a change of attitude ought to be stimulated concerning recruiting competence from the economic life. Unfortunately, involvement in projects outside the university is it not viewed upon as positive nowadays.

6.2 Questions of practical nature

Hardly anyone among the interviewed staff have experience from private enterprise of their own. Most of the connections to the industry are related to regular work at the different departments. The positive reflections drawn from the interviews about commitment in private enterprise concerned

increased understanding in how companies works and the possibility to apply theoretical knowledge. The most significant negative argument are that intense relations with industry might interfere with the service at the department. In summation, the response are less negative than positive concerning involvement with the industry.

> *"The students respond enthusiastically to outward connections. They experience good relations with the industry, at least in our discipline, physics."*

Approximately one half of the interviews indicated that there might be a problem in separating working time between the industry and the department. Another minor problem is related to the legal rights to potential discoveries, but discussions about patents are quite rare in these departments. Most part of the staff believes that both the university and the individual departments encourage its personnel to increase their involvement in connections with the industrial life. In general, students are believed to gain from expanded relations, at the undergraduate as well at the postgraduate level. An implication of the Third mission is a better climate for contacts, and increased prospects for interesting final papers. In addition, it might imply increased possibilities for students to achieve lucrative employment in the future.

6.3 Organisational Issues

The university has founded special Ph.D. programmes and a central division dealing with issues concerning the Third mission. Some of the researchers argue that contacts made with industry through different research teams are more useful than contacts established through the central organisation. Obviously, these researchers strongly question the value of this central division at the university.

> *"The companies demand for clear connections to our department are strong, but the contacts should go through the leader of the research team. I do not believe that a central division could take care of these things."*

A majority of the connections are established with firms of large or medium size, both private and public to nature. Generally speaking, small firms are only interesting for collaboration if highly specialised. Non of the representatives believes that the Nordic countries plays any significant role nor has anything to do with the Third mission. Some of the respondents appears to be aware of the fact that the European Union offers financial support for projects run in a co-operative manner, but a majority claims that the process of applying for these projects are too demanding relative to the result achieved in the end.

7 Lund University

Lund University was founded in 1666 as an attempt to integrate the southern parts of Sweden, which for some years had been under Danish command. The university is today one of the largest educational organisations in Scandinavia with seven faculties and different research centres. The main part is located in Lund but some departments involved in education and research is located elsewhere, for example in Malmö.

7.1 Ideological aspects

The common opinion is that the Third mission primarily concerns a broad interaction with the surrounding society. Specific relations with the economic life are simply a natural implication of good outward relations in general. A large share of the respondents finds that the explicit formulation of this new assignment does not affect the university in any substantial way. Moreover it seems like an additional burden to many of the people involved. However, it has brought important issues up to question. The potential effects are also depending on whether the department is of technical character or not. All three assignments must be co-integrated and are obviously complementary to each other. There are mostly positive reactions in question of the Third mission but a common objection is that the subject shows lack of academic importance. A new project for information to the public concerning research, *SAFARI*, is a frequent subject for discussion within the different departments.

> *"Collaboration with the economic life has continuously increased during the past years and might by now be regarded as fully accepted."*

The relations towards industry and economic life has continuously increased over the past ten years and nowadays outward relations are almost completely accepted. People involved in basic research, however, claims that their situation is nearly unchanged. All departments, except those concerned with basic research, have experience from enterprise connected to their field of research. The general scenario is that single scientists brings their own results into some kind of business. Contacts are however established in both ways and do generally work in a co-operative manner. The terms of ownership for the university only play a minor role for successful contacts with the surrounding society. A frequently commented issue is that the system of public finance is needed in order to secure non-commercial fields of research. As expected, most people demand increased funds to fulfil the obligations of the Third mission, in order to create the best results possible. However, more funds does not provide for a satisfactory solution to the problem. Some respondents would like to see increased independence towards the government in terms of free disposal of their current resources. Furthermore, the additional paperwork is viewed upon as unnecessary and a substantial cut-down would be welcomed. The department of Computer

science stresses the use for wage differential between Ph.D. candidates in the technical sector and those involved in social sciences, as an implication of their difficulties in student recruitment. They are also most positive to industrial financing within the sample.

> *"What there really is a need for is a change in policy, allowing for wage differential between different disciplines."*

7.2 Questions of practical nature

Involvement in co-operative activities with enterprise are quite common among the respondents. Explicit firm involvement, however, are rare. Most contacts are handled by the respondents in their roles as research consultants or student supervisors. The problems concerning contacts with the industry seems mainly to be related to the scarce time resources among the staff. Other obvious negative side effects are that the field of research risks to become rather limited. Although, the departments may benefit from industry relations in several ways. The possibilities in getting to work with interesting problems of high actuality and receive instant feed-back on their research increases. The teaching process also becomes more adjustable towards real-world oriented areas, which tends to gain the students. However, there might arise a conflict of interest when the involvement in enterprise becomes too large. The criterion for outward relations is somehow vague and it is up to each individual to make a fair distinction.

> *"…my experience from the US gives me the impression that the Swedish policy for the legal rights to scientific findings sometimes feels lose and indistinct."*

A majority of the respondents are fairly satisfied with the rules concerning the legal rights to research findings. The medical sector, however, find the present system unsatisfactory. The knowledge of patent questions among researchers in general seems to be limited. A recurrent opinion that arises in the interviews are that the Swedish system for patents is rather blurred compared to the regulations in the US. As one would expect, researchers involved in basic research are seldom confronted with this type of questions. Colleagues across the departments seems to be unified concerning the matter. The students are thought to gain much from increased relations. They get unique opportunities to write their final papers in a stimulating environment and to be confronted with their future labour market. The bad part relates to the fact that the best teachers tends to leave the university organisation when the relations with firms are intensified.

7.3 Organisational issues

On the average, outward relations are less formalised and most contacts are built upon an informal basis in terms of individual relations. However, there seems to have been several attempts to establish co-operative discussion units with firm representatives, which has been more or less successful. The department of Physics, for example, believe that there is a strong demand from firms in case of distinct entrances for contacts and a one-man office has been established in order to handle these questions. This is also the case for the Biology department, with the exception that they have experienced less enthusiasm from the industry. Their work have instead become more

oriented towards public informing. When it comes to a central unit for making contacts the opinions differ. The demand for research competence are often related to specific projects, which are not well suited for central administration. However, the research centre *Ideon* has been proven successful and constitutes the proper forum for a majority of the departments.

> *"I believe that there are several possibilities for financial support from the European Union, but it appears to be surrounded by too many administrative difficulties."*

The typical partner for co-operative actions are domestic enterprise of large and medium size. Small firms are in general not able to make use for the specialised knowledge and may not provide for projects of satisfactory interest. None of the departments interviewed have any experience from foreign relations. Specific Nordic co-operative activities are almost non-existent. The vast majority of respondents seems to have very limited information, and interest for all that matter, in the case of possibilities to foreign relations. Obviously, there is indirect an international perspective and minor activities of co-operative nature within all sorts of research. The opportunities to fund raising from the European Union is thought to be of less interest since bureaucracy and cultural differences are major obstacles. The massive paperwork simply outweighs the potential gains from EU-financing. For domestic projects involving firms, however, a certain programme within a European Union framework has provided substantial funds. The Swedish board for economic development, *NUTEK*, has proven to be helpful in terms of financial support as well.

8 Karlskrona/Ronneby University College

The college in Karlskrona/Ronneby was founded in 1989 and has over its ten years in operation expanded to approximately 3.000 students and 330 employees, including eleven professorships. The university college has a distinct proliferation towards applied computer science. From this year the university collage is able to graduate Ph.D. students in technical subjects.

8.1 Ideological aspects

All interviewed personnel have knowledge about the Third mission and the majority interpret the definition as connections with the entire society and not just co-operation with firms. The opinion about the Third mission appears to be that it does not affect the organisation in any substantial way because well developed contacts with the surrounding area already has been established. In general, each of the three assignments are viewed upon as equally important and are thought to be complementary to each other. There have been discussions about the Third mission concerning the growing relations to enterprise and the debate is focused on ideological as well as practical matters. Surprisingly enough, most of the discussions takes place at the central administration, where a major concern are that the departments puts to much effort in these connections.

> *"The third mission is completely ineffective as a separate mission and must be integrated with the regular duties to become meaningful in a natural way. Certainly it plays a most vital role for the organisation."*

Most respondents believe that the number of researches involved in business parallel to their regular service has increased over the past years and there seems to exist business activities in almost all departments at the university college. Students and researchers does not involve in such activities in the same proportion and differ in their way of anticipation. Students generally start up their own companies, while researches more often gets contacted by companies of large or medium character. It should be pointed out that RH has been extraordinary successful in generating innovative students and makes great progress within this area. Ownership does not matter in the short run concerning the departments search for projects outside the academic world, but in the long run it might be easier to gather funds if the terms of ownership relies on private incentives. In order to increase the impact of the Third mission the government ought to improve their financial grants to small universities, and especially to technical departments, according to the interviews. Finally, it seems like both the departments and the administration are positive to a centralised institution for external contacts.

8.2 Questions of practical matters

A minority of the respondents have some kind of business on their own and almost everyone have regular contacts with companies. These connections are often established on the personal level and through involvement in different research teams. In general, the administration is more positive than the single departments concerning external relations. The department representatives brings both positive and negative aspects forward, while the administration only mentions positive contributions. The positive effects as a result of expanding relations are thought to be inflow of new knowledge and increased possibilities to keep up with the current development. Furthermore, it is positive for both teaching and research and the organisation as a whole. The problems that might arise from these connections are that projects often are demanded to be carried out instantly and it is possible that such projects risks to require too much time and effort from the teachers. Only one single person believes that it might be a problem to distribute time between different assignments, while the others think that it is a strictly neutral relationship.

> *"The problem of ownership to research findings is only a minor problem. Before entering a specific project you have to work out the details in advance. A potential difficulty that might arise relates to projects that involve several researches as a team."*

A share of the staff interviewed are familiar with discussions concerning patents. The discussions are usually concentrated on the jurisdiction surrounding patents. Today it might arise problems if a team of many researchers wants to share a patent. In general, it is too difficult and expensive to apply for the legal rights. Most of the respondents are positive to external relations, even if there seems to exist enviousness among the staff. The students are expected to benefit from external relations due to a more attractive education and increased possibilities of reaching god employment offers.

8.3 Organisational issues

All personnel are familiar with the central unit for external relations. However, the departments are trying hard to establish research projects in co-operation with industry on their own. The different departments have clear ambitions to develop strategies for an increase in external relations. The department of Biology even has regular meetings with firms where education policies and other relevant questions are discussed. Firms, especially of small and medium size, seems to have demand for a clear entrance to the university concerning co-operative activities. The connections are most often based on private networks, but a substantial part is handled through the central administration as well. Although, it is more or less impossible to establish which kind of connections that dominates.

> *"There exists several opportunities to financing within an European Union framework, but the system are way too bureaucratic. You must almost appoint somebody to handle all the paperwork. We believe that we have less to gain from this type of fundraising."*

A majority of the respondents apparently work with all sorts of companies, both domestic and foreign. However, foreign firms seems to be under-

represented. The exchange between the Nordic countries is negligible according to all representatives. Almost everyone interviewed knows that the European Union is a potential source of financial support in the connection between universities and companies, but the major opinion is that the bureaucratic difficulties associated with the issue makes it less interesting to apply for such funds.

9 Discussion

Sweden stands for approximately one per cent of the worlds total expenses in research and development (R&D) and has held a leading position in terms of amount GDP invested compared to other countries. This rather delicate situation is however expected to change over the next coming years and the Swedish research society now faces some difficult structural problems. First, a large share of the Swedish R&D expenses are financed by the private sector represented by large companies of international character. There is a substantial risk that parts of this research will be moved to foreign countries, for various reasons. The present merger between the Swedish pharmaceutical company *Astra* and its British counterpart *Zeneca* constitutes an example of this kind of development. Another familiar example is the merger between *Pharmacia* and *Upjohn*, also in the medical sector, which took place last year. Second, the Swedish military industry has also contributed to a large share of total R&D. These figures are expected to decrease since the development of JAS39-Gripen (the new high-tech fighter aircraft) determinates, together with the fact that the defence budget faces a substantial cut-down. Third, the currently released report *Research 2000* states that the R&D financed by the government suffers from severe structural problems as well. The report concludes that basic research unfortunately has been forced aside in favour of demand oriented research. Policymakers have according to the report tried to evaluate results from research in advance and then make priorities in the perspective of results useful to the society.

Research 2000 proposes a slight alteration in the paragraph of law concerning higher education in Sweden. The universities three missions ought to get a more distinct design, where the Third mission is reduced to include information to society alone. The universities will be responsible for preserving scientific findings and make sure that they becomes suited for practical use. In brief, this implies that relations focused on the industry and economic life will be given a new meaning. Research directed towards commercial innovations will no longer receive financial backup from the universities basic share of funds, which places new restrictions upon the firms involved. Thus, projects directed by firms must get proper financial guaranties from the beginning until the end. This somehow implies a change of direction in the attitudes towards outward relations and contradicts the opinions captured in the interview material. Some of the respondents also demonstrates their disapproval with the proposal presented in the report and describes its content as a major step back to a regime out of date. Furthermore, the report brings up the question of the legal rights of research findings and suggests that each university of concern is the rightful owner. The immediate response on this issue is that the legal rights to scientific findings ought to remain the individual researchers property. Without this licence, incentives to innovation tends to be washed out, and the universities risks to loose much of their competence to other types of organisations. To put it bluntly,

it seems as *Research 2000* has not been embraced by a majority of the research community, on the contrary, the reception has been rather cool.

In this context, it is appropriate to comment a few reflections upon the system for higher education in Sweden as a whole. At present time Sweden got twenty-nine facilities for higher education, which out of nineteen are university colleges like Örebro and Ronneby. Does the Swedish population really constitute a sufficient base, large enough to create a demand that match such a large supply? Higher education is apparently used as a political tool for many purposes, for example to fight unemployment and to level out regional differences. With the subject as a political instrument it seems hard to achieve the best terms possible for research that stands out in international competition. The debate runs both high and low and has also become a question of conflict within the system, between the small university colleges and the larger well known universities. However, a frequently raised and popular opinion is that research runs best free from political involvement.

10 Summary and conclusions

As an attempt to classify the material we may, although making a simplification, say that the small university colleges (ÖH and RH) share many similarities. All together, the Third mission is viewed upon as an obvious, as well as essential, task for the colleges to prove themselves. The technical departments seems to be more directed outwards than others. In the case of ÖH the prior history of close relations with the surrounding economic environment has caused reactions concerning the ethical aspect of the matter, as a potential threat to the independence of the university. This type of discussion has not been brought up at RH, which also tend to be slightly more directed outwards, probably as a consequence of specialising in the area of technology. No significant differences may be shown within our material concerning practical issues. The questions surrounding patents are not problematic to nature, and all respondents feel that the third mission will have a positive impact on students.

The level of heterogeneity is much larger concerning the rest of the material. However, all the universities, including KTH, are quite much alike one another. KI makes an exception due to its rather narrowed specialisation in medicine. To begin with, note that the interpretation of the concept "the Third mission" differ between the definition stated in *Research 2000* and most of the people interviewed. The Third mission apparently feels more like an extra burden for many of the respondents. Although, the opportunities outweighs the expected negative effects. At KTH the administration and people in leading positions at departments tend to be more positive towards the Third mission, an attitude that are common at the other universities as well. Approximately one half of the respondents at LiU claims that there is discussions about decreasing founds for the fundamental research going on, which tend to be particularly strong at the department of Physics. This is also the case for KTH, where the department of Physics accentuates it role within the area of fundamental research.

The medical sector at UmU claims their disapproval of formalised relations, which is interesting since the vast majority of formalised external relations at the university are between medicine and the large hospital. The core question seems to be changed attitudes within the universities themselves. In the medical field, staff in general has more experience from enterprise and outside relations, which is a clear effect of the past structure of the economic life in Umeå. The representatives for medicine at UmU disapproves of the system with top steering, but believes in a very strong demand for relations from firms, based on private and personal connections. They have also brought forward their own document for strategic planning concerning patents. In general, the questions concerning patents are thought to be a potential source of problematic issues, but the present system works well. A majority of the representatives has the opinion that the students will gain from the development of increased relations, while the others simply believe

that it is a neutral relationship. At LiU, however, the department of Computer science are more sceptical.

The department for Computer science at UmU focuses on relations with large corporations but seems to miss a certain strategy to follow. Declining supply of competent personnel is of major concern. At KTH the department for Computer science is more directed towards small firms, but there are no significant differences otherwise. Every single department interviewed at LiU have different strategies for the Third mission. At KI the interview material indicated that co-operative activities with industrial companies have been established in different directions. No clear distinctions are possible to sort out among the different departments. The departments are mostly connected to larger firms, often foreign. Relations to small firms occurs as well, but then only in case of more specialised enterprise. On the average, there seems to be a lot of confusion about every issue that relates to the European Union. Neither the Nordic countries nor the European Union play any important role for KI in matter of the Third mission and that is the case for LiU as well. The European Union is not to any practical involvement at KTH and the situation may be described as follows: everybody knows something, but no one knows for sure. The common opinion is that too much bureaucracy is involved. The co-operation between the Nordic countries is not that accentuated either, at least not in the present state of development.

As we have described above, the opinions among respondents, as well as departments, differs widely and it is not straightforward to identify any mainstream relationships. Some of the interviews we got also contained contradictory answers, and a surprisingly large share of the respondents were unwilling to do the interviews in the first place. However, people in general have strong opinions concerning the Third mission, and we believe that the answers we got represents the truth. Based on our observations we may conclude that:

- Co-operative activities between the Nordic countries are almost non-existent. Moreover, the absolute majority shows lack of knowledge concerning everything that has to do with the European Union. The common opinion is that the regulations surrounding fundraising and other related matters are too complicated. The amount of bureaucracy is too large and kills all incentives.

- The contents of the Third mission are of necessity to small university colleges like ÖH and RH. They need to reach out in order to gather external funds and meet the competition from other universities. The funds raised by the government are simply not enough to make the wheels turn.

- There has been a clear change in the attitudes toward external relations during the past years. But if the Third mission should create the best effect possible, an even more liberal view upon private enterprise has to be introduced. It should definitely be considered as a qualification to have experience from enterprise when recruiting personnel.

- Increased relations with the economic life tend to create an increase in the competition of skilled personnel. The Computer science sector is at present time in need for good teachers, and the more they open up, the more people they loose.

- People seem to agree upon the fact that the best teachers available are those with experience from the economic life.

- Relations built on private connections are the only relations of interest. One opinion is that centralised organisations for external contacts are highly overrated. Firms with specific demands for certain knowledge directly confronts the individual departments of concern, instead of using a mainstream entrance. At KI they work with the concept of a holding company, which has proven to perform most effectively. Both researchers and people behind the business are most pleased with the current development.

- Time-pressure and massive burden of work upon researchers are major obstacles for the development of potential growth. The research-society continuously creates ideas or projects that are suited for commercial use, but have no time available to develop them.

- RH seems to be very successful in stimulating motivated undergraduate students to create new business and develop ideas into products, suitable for commercial use. Hence, the spin-off effects from the technical department relates primarily to students and not to regular research.

- The Third mission feels to many people like an extra burden of administrative exercise. One of the most natural activities (at least for the different sectors interviewed) has suddenly been turned into a annoying source of paperwork, i.e. more talk and less action.

TABLE 1 *Classification of attitudes toward the third mission*

	Less developed contacts	**Developed contacts**
Positive to the third mission	-Biology *Linköping* -Technology *Örebro*	-MBB *Karolinska* -Administration *Karolinska* -Administration *Linköping* -Administration *Umeå* -Applied Physics *Umeå* -Biomed. *KTH* -Administration *KTH* -Computers. *KTH* -Computers. *Örebro* -Biology *Örebro* -Administration *Örebro* -Administration *Lund* -Computers. *Ronneby* -Administration *Ronneby* -Biology *Ronneby* -Mech.eng. *Ronneby*
Negative to the third mission	-Physics *Örebro* -Biology *Lund* -Physics *Lund*	-Physics *Linköping* -Computers. *Linköping* -Computers. *Umeå* -Applied Cell Biology *Umeå* -Physics *KTH* -Physiology *Karolinska* -CMB *Karolinska* -Computers. *Lund*

References

Holm, E. & Wiberg, U. [1995], "*Samhällseffekter av Umeå universitet*", Regional Dimensions Working Paper No 1, CERUM, Umeå. (in Swedish)

Karolinska institutet [1997], "*Karolinska institutet –ett medicinskt universitet*", Gotab, Stockholm. (in Swedish)

Kungl tekniska högskolan [1997], "*KTH in Your Pocket -A guide to research projects at KTH Stockholm Sweden*," Nordstedts tryckeri AB, Stockholm.

SOU 1996:70, "*Samverkan mellan högskolan och näringslivet*", Nordstedts tryckeri AB, Näringsdepartementet, Stockholm. (in Swedish)

SOU 1996:89, "*Samverkan mellan högskolan och de små och medelstora företagen"*, Nordstedts tryckeri AB, Näringdepartementet, Stockholm. (in Swedish)

SOU 1998:128, "*Forskningspolitik*", Nordstedts tryckeri AB, Utbildningsdepartementet, Stockholm. (in Swedish)

Documents

Högskolan Karlskrona/Ronneby [1999], "*Årsredovisning för budgetåret 1998-01-01 till 1998-12-31*", Karlskrona/Ronneby. (in Swedish)

Högskolan Örebro [1997], "*Högskolans tredje uppgift*", Wellins tryckeri AB, Örebro. (in Swedish)

Kungl tekniska högskolan [1994], "*Bisysslor –Riktlinjer*", Stockholm. (in Swedish)

Kungl tekniska högskolan [1997], "*Patentpolicy*", Stockholm. (in Swedish)

Linköpings universitet [1999], "*Linköpings universitet i samverkan med det omkringliggande samhället –ett handlingsprogram*", Linköping. (in Swedish)

Person- och adresskataloger för universiteten och högskolorna [1998]. (in Swedish)

Umeå universitet [1998], "*Umeå universitet och den tredje uppgiften*", Umeå. (in Swedish)

Note: The interview material, in Swedish, is in the possession of the authors and may be handed out upon request.

CERUM Working Papers

No. 1 Einar Holm and Ulf Wiberg (Red.), *Samhällseffekter av Umeå universitet*, 1995.

No. 2 Örjan Pettersson, Lars Olof Persson and Ulf Wiberg, *Närbilder av västerbottningar - materiella levnadsvillkor och hälsotillstånd i Västerbottens län,* 1996.

No. 3 Jeanette Edblad, *The Political Economy of Regional Integration in Developing Countries,* 1996.

No. 4 Lena Sahlin and Lars Westin, *Prissättning av subventionerad kultur. Vilka är de internationella erfarenheterna?,* 1996.

No. 5 Lars Westin and Mats Forsman, *Regionerna och finansieringen av infrastrukturen: Exemplet Botniabanan*, 1997.

No. 6 Erik Bergkvist and Lars Westin, *Estimation of gravity models by OLS estimation, NLS estimation, Poisson, and Neural Network specifications*, 1997.

No. 7 Niklas Nordman, *Increasing Returns to Scale and Benefits to Traffic. A Spatial General Equilibrium Analysis in the Case of Two Primary Inputs,* 1998.

No. 8 Lars Westin and Niklas Nordman, *The dialogue of universities with their partners: The case of Umeå University, Sweden,* 1998.

No.9 Robert Sörensson, *Systemanalys av godstransporter. Simulering av en uppgraderad Inlandsbana,* 1998.

No.10 Carina Sundgren, *Beräkning av bruttoregionprodukter för Sveriges regioner. En analys av metodvalet och regionindelningens betydelse,* 1998.

No.11 Erik Sondell, *Halvtidsutvärdering av Interreg-projektet Virtual Education Environment MittSkandia*, 1999.

No.12 Erik Sondell, *Det regionala uppdraget: En fjärde uppgift?*, 1999.

No.13 Örjan Pettersson, *Population Changes in Rural Areas in Northern Sweden 1985-1995,* 1999.

No.14 Robert Pettersson, *Foreign Second Home Purchases- The Case of Northern Sweden, 1990-96,* 1999.

No.15 Patrik Asplund och Niklas Nordman, *Attitudes toward the Third Mission: A Selection of Interviews from Seven Universities in Sweden*, 1999.

No.16 Kent Eliasson, Magnus Johansson och Lars Westin, *European Integration: Eastern Europe and the Swedish Regions,* 1999.